

# LIMERICK DEVELOPMENT PLAN 2022-2028

## Volume 4

Strategic Flood Risk Assessment - Appendix D

Adopted June 2022



**APPENDIX D - Justification Tests submitted by Elected Members**

- 1. Greenpark LCC – C62 – 129
- 2. Shannon Mineral, Pa Healy Road LCC – C62 – 41
- 3. Downes Site, Pa Healy Road LCC – C62 – 55
- 4. Ballykeeffe/Mungret LCC – C62 – 206
- 5. Dooradoyle Crescent LCC – C62 – 149



**Greenpark**

**LCC – C62 – 129**



# GREENPARK MASTERPLAN, LIMERICK

## FLOOD RISK ASSESSMENT

IBE1706

Greenpark Masterplan FRA

D01

December 2020

## FLOOD RISK ASSESSMENT

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Andrew Jackson



18 December 2020

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Prepared by:

**RPS**

Diane McGinnis  
Associate  
Elmwood House  
74 Boucher Road, Belfast  
Co. Antrim BT12 6RZ

T +44 2890 667 914  
E [diane.mcginis@rpsgroup.com](mailto:diane.mcginis@rpsgroup.com)

Prepared for:

**Voyage Property Ltd**



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# 1 INTRODUCTION

RPS were commissioned by Voyage Property Ltd to carry out a Flood Risk Assessment (FRA) in support of Masterplan for previously undeveloped land at a site at the former Greenpark racecourse, with existing access from the Dock Road in Limerick. Greenpark was the home to Limerick Racecourse until it was relocated to Patrickswell, making way for the potential redevelopment of these lands and mix of use as prescribed in the City Development Plan e.g. office campus, housing, neighbourhood and leisure.

The purpose of this FRA is to define the flood risk to proposed development lands and demonstrate that with appropriate mitigation they can be developed in accordance with the requirements of 'The Planning System and Flood Risk Management' Guidelines' (DEHLG 2009).

The site is located west of Limerick city centre, between the N69 and the N18, adjacent to the Limerick Greyhound Stadium. The general location of the site is shown in Figure 1.1.

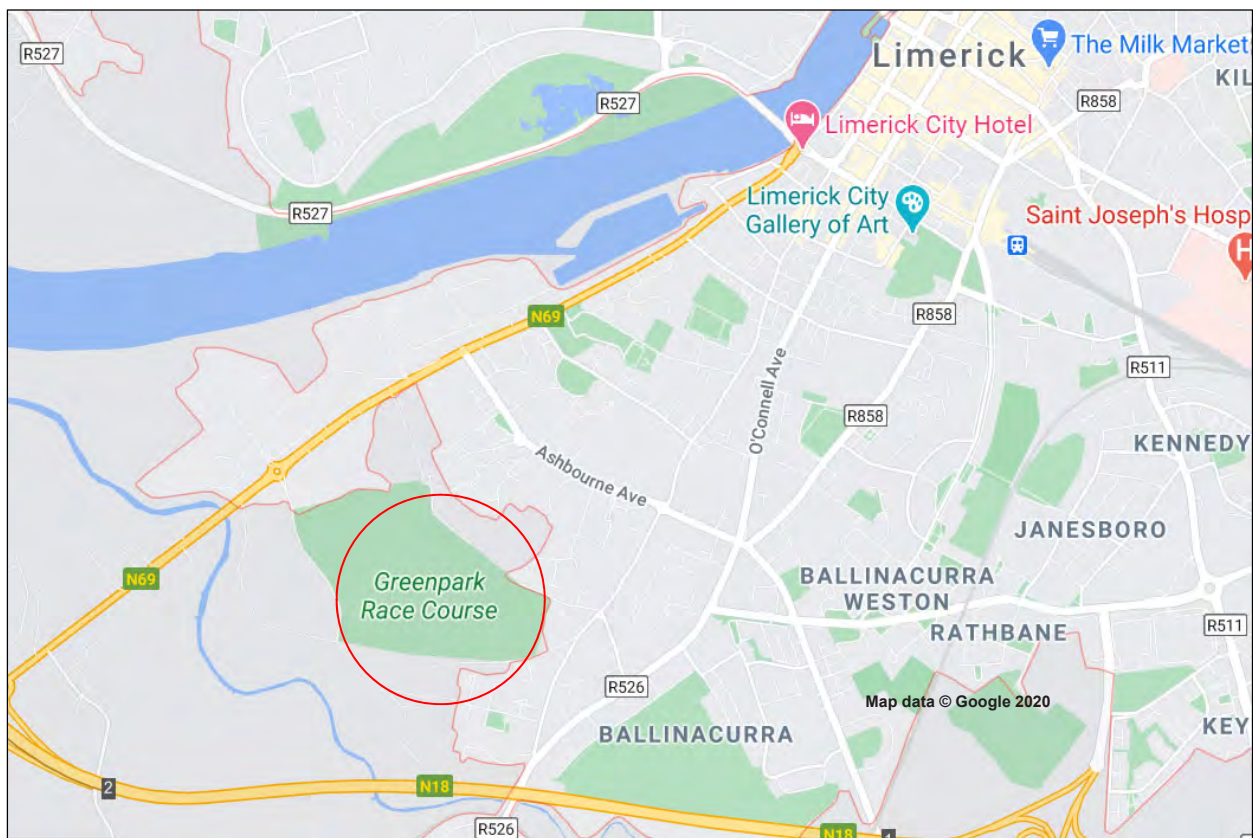


Figure 1.1 Location map

## 2 SITE DESCRIPTION

The existing site is part of the former Limerick Race Course. It is relatively low lying with respect to the Shannon Estuary and Ballynacloagh River. The majority of the site is flat with levels in the vicinity of 2.4m OD rising to above 7m OD adjacent to the existing Log Na gCapall development to the south east.

Limerick Greyhound Stadium is located adjacent to the site along with a large hardstanding area of car park and existing pond/lagoon located adjacent to the Ballynacloagh River. Figure 2.1 shows an aerial photo of the development site with the Masterplan area highlighted in red.



**Figure 2.1** Aerial photograph indicating the extent of the masterplan area

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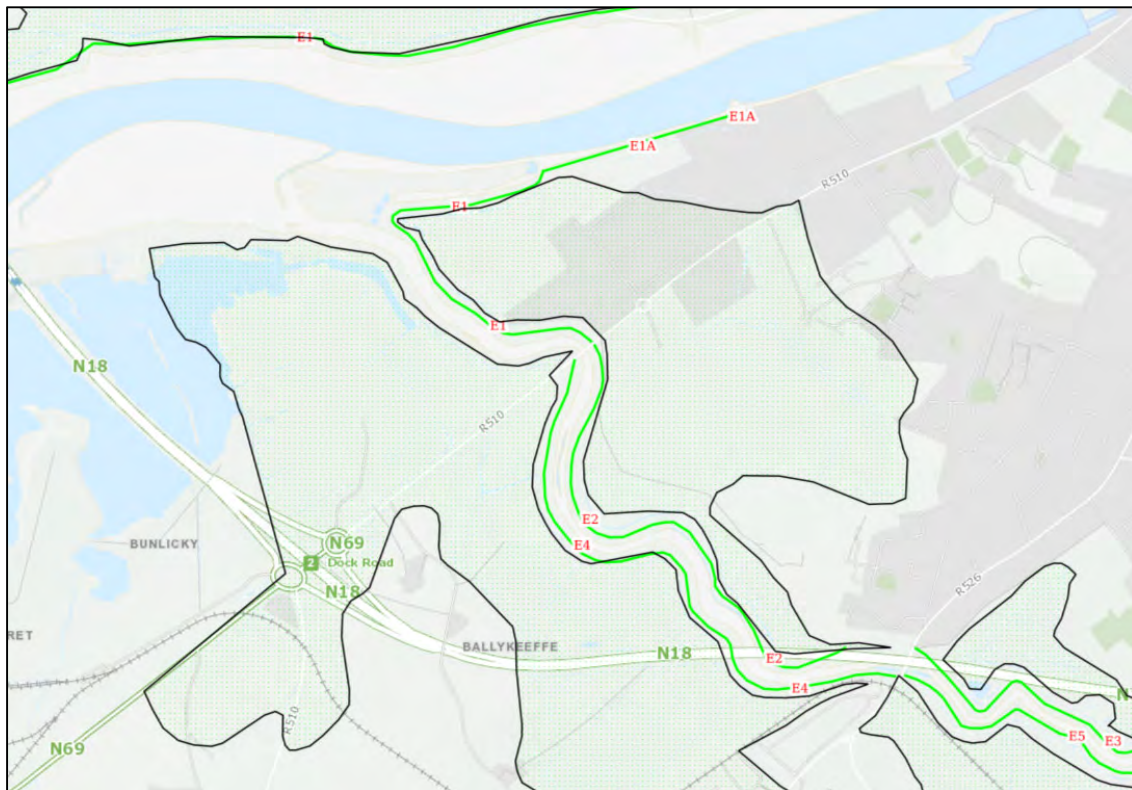
The River Shannon flows at a distance of approximately 500m to the north and, a tributary, the Ballynaclough River, flows along the western boundary of the masterplan area. There is a the line of existing flood defences along both the Ballynaclough River and the River Shannon which offer a good standard of protection to this area of Limerick. More detail on these is provided in Section 3.

## 3 EXISTING FLOOD RISK

The National Catchment-based Flood Risk Assessment and Management (CFRAM) Programme was developed by the Office of Public Works (OPW) to meet national policy needs and the requirements of the EU Floods Directive. As part of the Shannon Catchment-based Flood Risk Assessment and Management (CFRAM) Study, Limerick was identified as an Area for Further Assessment (AFA). This meant that the watercourses in the area were modelled and flood maps produced. The maps are available to download from the OPW Flood Info website and provide the best available information to characterise the existing flood risk.

### 3.1 Existing Flood Defences

The defences along the Ballynacloagh River and the Shannon Estuary were built by the OPW under the Arterial Drainage Act, 1945. Arterial Drainage Schemes were carried out to improve land for agriculture and to mitigate flooding. The intention of building the embankments was initially to provide protection against the 3 year flood but in many locations the embankments have been raised further over time and a much higher standard of protection is provided. That can be said of the embankments at this location which have been constructed along the estuary to a height of approximately 5.2m OD and along the Ballynacloagh River to a height in excess of 6m OD. Figure 3.1 has been extracted from the floodinfo.ie website which provides records of the various drainage districts and the embankments located within them. At this location there are three embankments which offer protection to the masterplan area denoted on Figure 3.1 as E1A, E1 and E2. The defences also continue further into Limerick towards Ted Russell Dock but these are in private ownership and are therefore not shown on this mapping.



**Figure 3.1 Extract of Arterial Drainage Districts mapping showing defences and benefitting areas**

The embankments are constructed of unknown material and indeed it can be assumed that they are constructed of varying grades and types of strata including estuarine mud which is known to have been used at various points along the estuary. These defences extend for miles down the estuary on both banks. At this particular location the embankments provide a good standard of protection to all properties along the Dock Road which would otherwise be frequently inundated to a significant depth. Despite there being no historical risk of breach at this location, it remains a possibility and therefore will be addressed in the mitigation measures required to ensure the safety of the masterplan area. RPS have not carried out any visual or intrusive testing of the embankments and instead will set out mitigation measures for the masterplan area to deal with the event of a breach.

### 3.2 Fluvial Flood Risk

The CFRAMS maps show that the site is not at risk of fluvial flooding. An extract from the CFRAM Study Fluvial Flood Extents Map is shown in Figure 3.2, and the full map is shown in Appendix A. Fluvial flooding is not therefore considered further in this report.



Figure 3.2 Extract from CFRAMS fluvial flood extents map

### 3.3 Coastal Flood Risk

The CFRAMS maps show that the site has areas which are defended from coastal flooding by flood embankments along the Ballynacloagh River which have a standard of protection of 0.5% AEP. There are some areas of the site which are at risk of coastal flooding in a 0.5% AEP event from the River Shannon to the north, as the defences in this area only have a standard of protection of 2% AEP. There are also some areas within the site that are not at risk of coastal flooding. Extracts from the CFRAM Study Tidal Flood Extents Maps are shown in Figures 3.3 and 3.4 and the full maps are shown in Appendix A.

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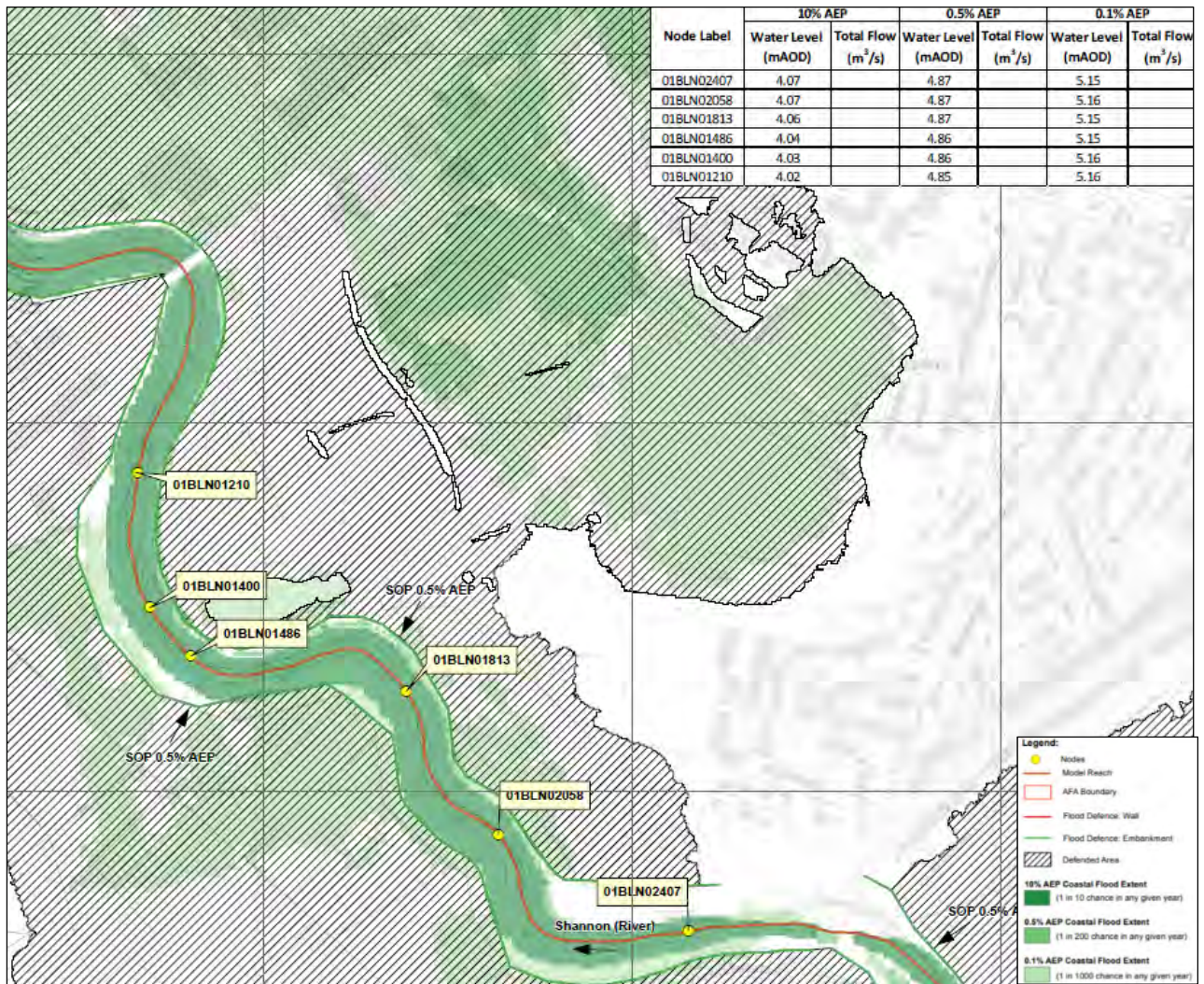


Figure 3.3 Extract from CFRAMS tidal flood extents map (Ballynaclough River)



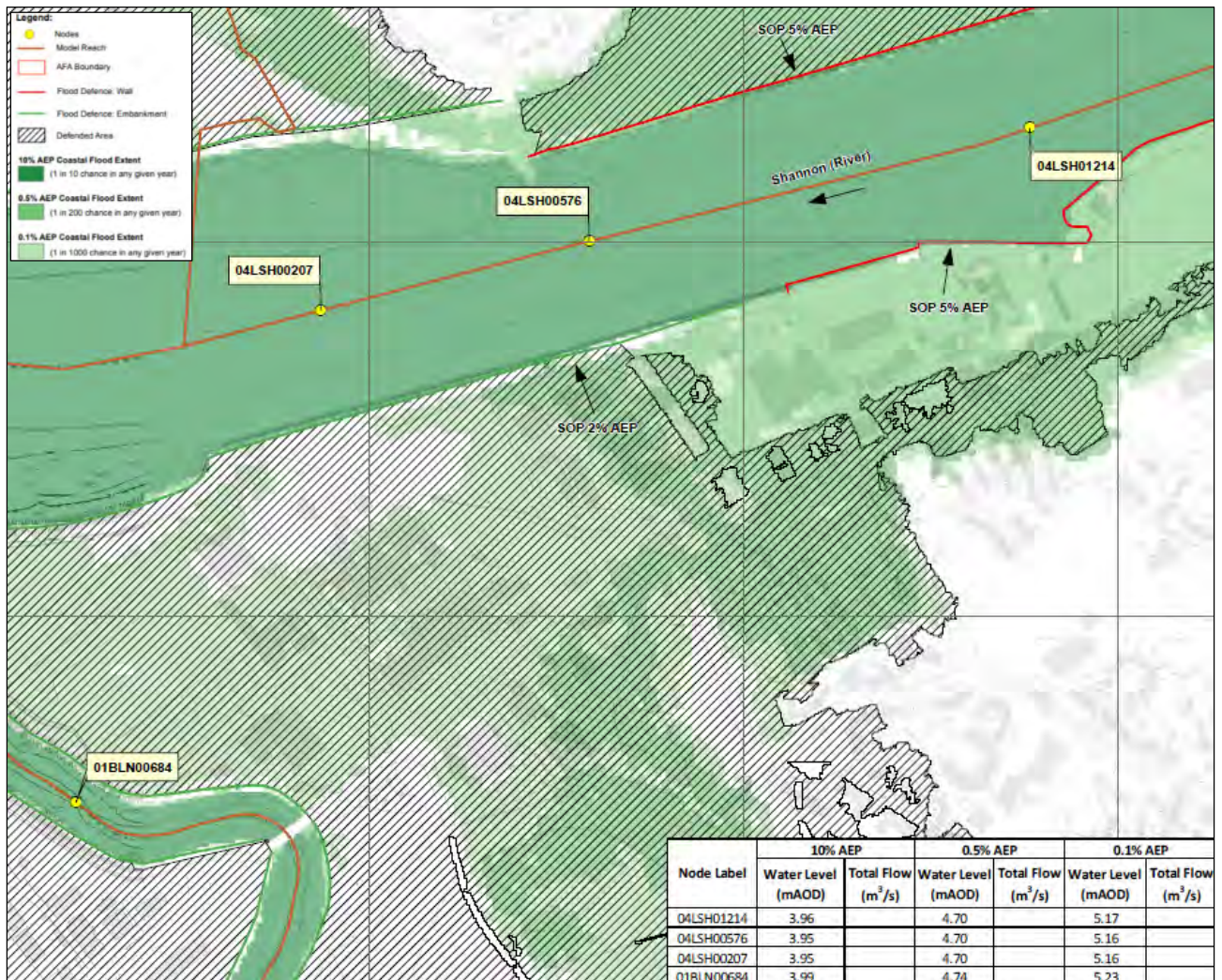


Figure 3.4 Extract from CFRAMS tidal flood extents map (River Shannon)

### 3.4 Flood Zones

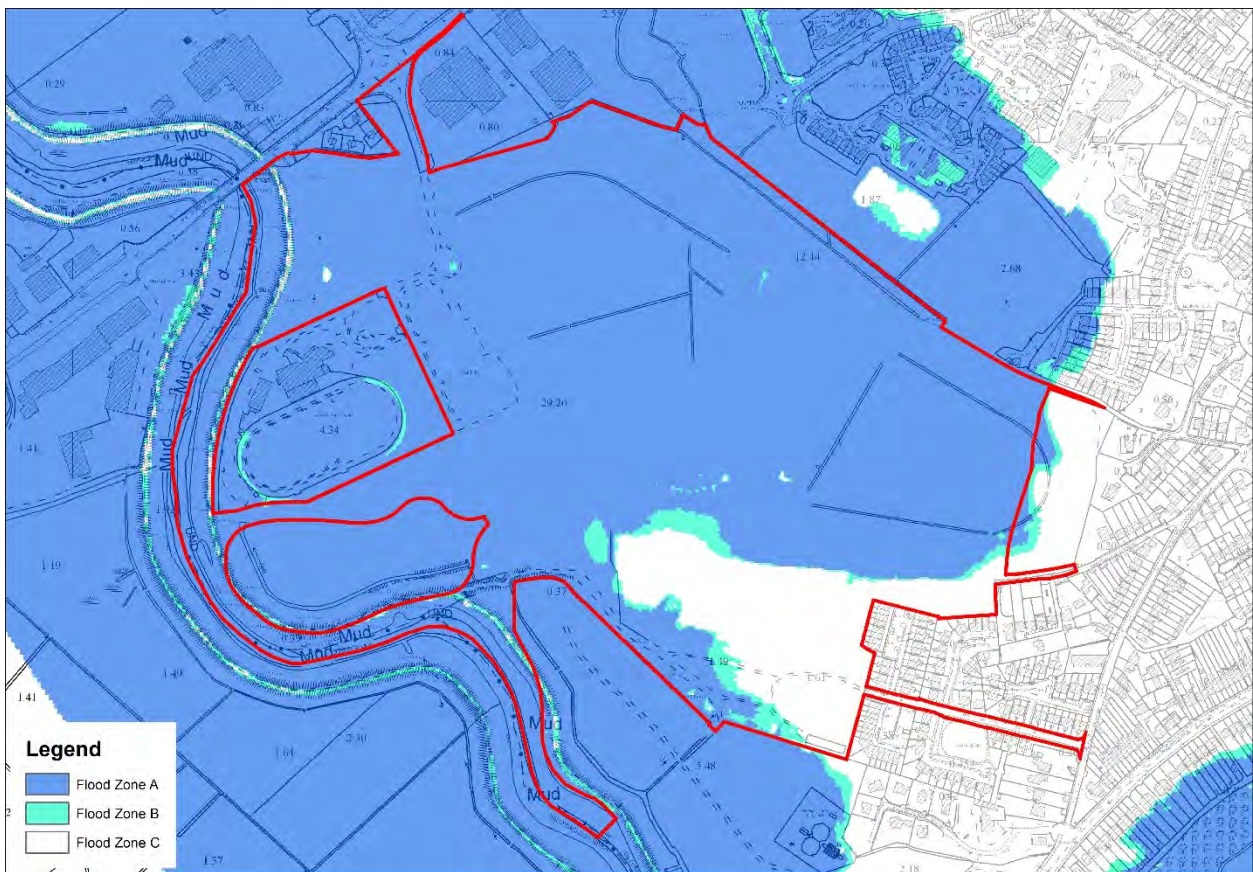
Under the requirement of ‘The Planning System and Flood Risk Management’ Guidelines (2009) when considering existing flood risk it is necessary to assign flood zoning to the proposed development site. Flood zoning is defined as:

- **Flood Zone A:** areas where the probability of flooding from rivers and the sea is highest (greater than 1% for river flooding or 0.5% for coastal flooding).
- **Flood Zone B:** areas where the probability of flooding from rivers and the sea is moderate (between 0.1% and 1% for river flooding, and between 0.1% and 0.5% for coastal flooding).

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- **Flood Zone C:** Areas where the probability of flooding from rivers and the sea is low (less than 0.1% for both river and coastal flooding).

An important consideration for this particular location is the presence of the existing defences, which although, offering a good standard of protection even during extreme flood events must be ignored for the purpose of flood zoning. This is stated in Clause 2.25 of the Guidelines and is required because areas protected by flood defences still carry a residual risk of flooding from overtopping or breach of defences and the fact that there may be no guarantee that the defences will be maintained in perpetuity. In this respect, Figure 3.2 shows that part of the site is in Flood Zone C (white areas), however a significant portion of the site can be considered to be in Flood Zone A (dark blue) with a very small section of the land being contained within Flood Zone B. Figure 3.5 shows the flood zoning.



**Figure 3.5 Flood Zone identification**

Given the flood zoning identified in Figure 3.4, the Planning System and FRM Guidelines provide direction on the type of development appropriate to each flood zone. This is shown in Table 3.2 in guidelines which is reproduced in this report as Figure 3.6.

	Flood Zone A	Flood Zone B	Flood Zone C
Highly vulnerable development (including essential infrastructure)	Justification Test	Justification Test	Appropriate
Less vulnerable development	Justification Test	Appropriate	Appropriate
Water-compatible development	Appropriate	Appropriate	Appropriate

Table 3.2: Matrix of vulnerability versus flood zone to illustrate appropriate development and that required to meet the Justification Test.

**Figure 3.6 Flood zones and appropriate development**

It follows from Table 3.2 that for residential (vulnerable) and commercial (less vulnerable) development in Flood Zone A the Justification Test will need to be applied and fully satisfied before development can be permitted. For land designated as being within Flood Zone C it is considered appropriate for all types of development. With respect to the masterplan area this includes an area adjacent to the existing Log Na gCapall development.

## 4 PROPOSED DEVELOPMENT

### 4.1 Description of the Proposed Development

The Greenpark Masterplan encompasses multi-phasing residential development and office campus, neighbourhood centre and public open spaces adjacent to Bord na gCon greyhound stadium along Ballynacloagh River. The office floor plates will be designed with greater flexibility and adaptability to local and multinational demands. Neighbourhood centre strategically located to serve the need of the local community and residents.

The residential component of the Masterplan, consists of 831 dwelling units, age appropriate housing, apartments, creche and residential amenity spaces. The development will be carried out in several phases. The first phase of the development includes strategic housing development application for 289 dwelling units with a residential density of 40.37 units/ha, creche and other associated ancillary uses in line with the masterplan.

The open space and riverwalk amenity are an essential and vital part of the masterplan to provide a greater biodiversity and sustainable amenity spaces for the new and existing community in Greenpark.

The overall Masterplan is shown in Figure 4.1.



**Figure 4.1 Overall Masterplan**

There are three significant parts of the masterplan- the Office Campus Development, the Neighbourhood Centre, and the Residential Development. For the purposes of this assessment the Neighbourhood Centre has been included with the Residential Development. The remainder of the masterplan area will remain at existing levels and as per the existing land use. These areas will be the primary focus of this flood risk assessment.

The purpose of the flood risk assessment is therefore to demonstrate how, given the flood risk identified in Section 3, the office campus and residential development (including the neighbourhood centre) areas can be developed in a manner that is fully compliant with the Planning System and Flood Risk Management Guidelines. In that respect there are a number of key principles which must be addressed in order to pass the Justification Test, these are:

- Firstly, demonstrating that during a 200 year (0.5% AEP) event and during a 200 year (0.5% AEP) Climate Change event there is no risk to the proposed development or increase in flood risk elsewhere.
- Secondly, Clause 5.16 on page 49 states that a precautionary approach should be applied for developments located behind existing defences. It suggests that an appropriate mitigation measure would be to set floor levels above the 0.5% AEP flood level (for a site affected by coastal flooding) and to include for the effects of climate change. When determining this 0.5% AEP level the effect of defences should be ignored.

Addressing these key issues is best practice in demonstrating compliance with the Justification Test as set out in Box 5.1 of the Planning system and Flood Risk Management Guidelines. Section 5 of this report describes the mitigation measures that address these criteria and the numerical modelling undertaken to demonstrate their effectiveness. Section 6 describes compliance with the Justification Test.

## 5 PROPOSED MITIGATION MEASURES

Given the scale of the masterplan area it is recognised that any mitigation measures proposed must be robust, sustainable with respect to climate change and not place any burden on the city of Limerick whereby there would be a requirement in the future to provide additional flood defences and capital expenditure to protect this development. It is also acknowledged that under the CFRAM process, where Limerick was an Area for Further Assessment (AFA), a significant capital scheme was proposed. This scheme is currently being tendered to engineering consultants under the OPW Capital Works Framework and should be developed over the next 10-15 years. While there is no doubt a scheme of this nature would further benefit the masterplan lands, RPS also recognise there is no guarantee a scheme will be developed as it will be subject to a cost-benefit analysis and availability of government funding. Conversely there is also a need to ensure mitigation measures proposed as part of this masterplan in no way compromise the development of a suitable flood alleviation scheme for Limerick.

### 5.1 Model Construction

In order to be able to assess the impact of any proposed mitigation measures RPS have developed a site specific model incorporating the masterplan area. As the masterplan lands are located behind existing defences it is obvious there is no impact either upstream or downstream in the Ballynaclough River or the Shannon Estuary. Instead the model has been developed specifically to understand the impact of the defences overtopping and also breaching, ensuring that the masterplan area is resilient to these flooding mechanisms and doesn't significantly adversely affect adjacent property and land.

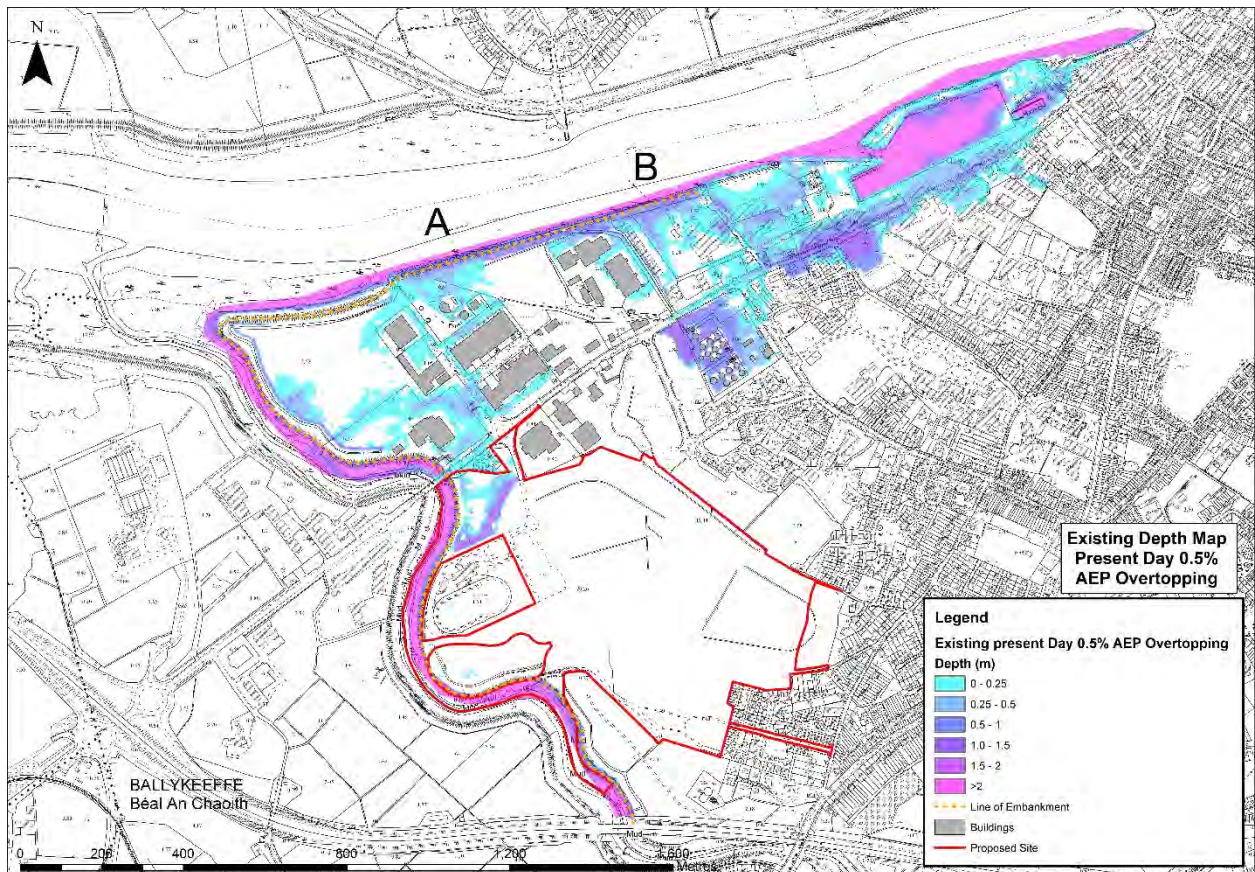
Therefore RPS have constructed a InfoWorks ICM 2D model of this area of Limerick based on a Digital Terrain Model (DTM) constructed from LIDAR data which covers this area of Limerick. This has been supplemented by more detailed topographical survey of the existing flood defences to capture any low points or defects. The LiDAR provides a high resolution survey that is sufficient for establishing the effects of overtopping and breaching of the existing flood defences. RPS have utilised the 0.5% Annual Exceedance Probability (AEP) flood levels for the Shannon estuary and that for the Ballynaclough River developed in the CFRAM study. These provide the best available estimation of the predicted water level during extreme coastal events for this return period.

In addition RPS have improved upon the CFRAM inundation modelling by incorporating all of the existing buildings within Dock Road area within the model and blocked these out to prevent flow through them. This is a significant addition to the modelling undertaken during the CFRAM process as it can identify new flow paths as the water passes between buildings.

## 5.2 Modelling of Existing Situation

### 5.2.1 0.5% AEP Simulation with Existing Ground Levels

As a baseline model run RPS took the peak tidal levels from the CFRAM study in the estuary and Ballynaclough River and ran a 0.5 % AEP flood inundation simulation. This model was run over 72 hours covering tidal cycles leading up to and after the 0.5% AEP event with an appropriate tidal curve reflecting the rising and falling level of the flood and ebb tide during an extreme storm surge event. As stated previously the majority of the defences surrounding the Dock Road area are sufficiently high enough to prevent inundation and overtopping however there is a lower section near to the Ted Russel Dock where a limited amount of flooding can occur. The flood mapping output from this model simulation is shown in Figure 5.1.



**Figure 5.1 Flood depth map showing impact of 0.5% AEP flood inundation simulation**

The model simulation indicates overtopping at two locations (Points A and B on Figure 5.1) where the defences are insufficiently high to prevent inundation. The extent of this inundation shows that the only



part of the masterplan area affected is open space to the north of the greyhound stadium. There is no proposed alterations to existing ground levels in this area as part of the masterplan so from this model run we can conclude:

- There is no risk to the area of the masterplan lands proposed for commercial or residential development during a 0.5% flood event providing defences are only overtopped and not breached.
- During inundation from an event of this magnitude where overtopping occurs, the water level behind the defences reaches a water level of approximately 2.3m OD. All existing levels within the masterplan area proposed for commercial or residential development are in excess of this level.
- As the 0.5% AEP water level does not inundate the proposed development area in the existing scenario there can be no increase in water level as a result of constructing the proposed development and therefore no further assessment is required in this regard.

## 5.3 Development and Modelling of Mitigation Measures

As stated previously in this FRA when quoting Clause 5.16 of the Planning System and Flood Risk Management Guidelines, there is a need to ensure a precautionary approach when developing behind existing defences. It suggests that the mitigation measures for dealing with that risk would be to set finished floor levels at the 0.5% flood level (for coastal flooding) ignoring the moderation effects of flood defences. Following this logic to address the impact of the inundation from the 0.5% AEP Climate Change MRFS event during a breach scenario, it is proposed to raise the level of the office campus and residential development to minimise the residual risk. By raising levels on the site it will provide sufficient protection to the proposed development, but it raises the question if it could also increase the risk of flooding to surrounding land and existing development. RPS have therefore carried out a comprehensive modelling exercise focussing on the breach scenario to ensure there is no increase risk to adjacent developments should this occur during a 0.5% AEP and 0.5% AEP Mid-range Future Scenario events.

## 5.4 Breach Analysis of the Flood Defences

### 5.4.1 Modelling of the Existing Defences

Given the scale of the proposed development and the high number of both residential and commercial properties a robust assessment of residual risk is required. The original purpose of the existing defences and the unknown make-up of their construction means it is necessary to undertake a breach analysis at certain locations along both the Ballynacloagh River and the Shannon estuary to assess the impact of such an event on the proposed and existing developments. Breach analysis was undertaken using the UK

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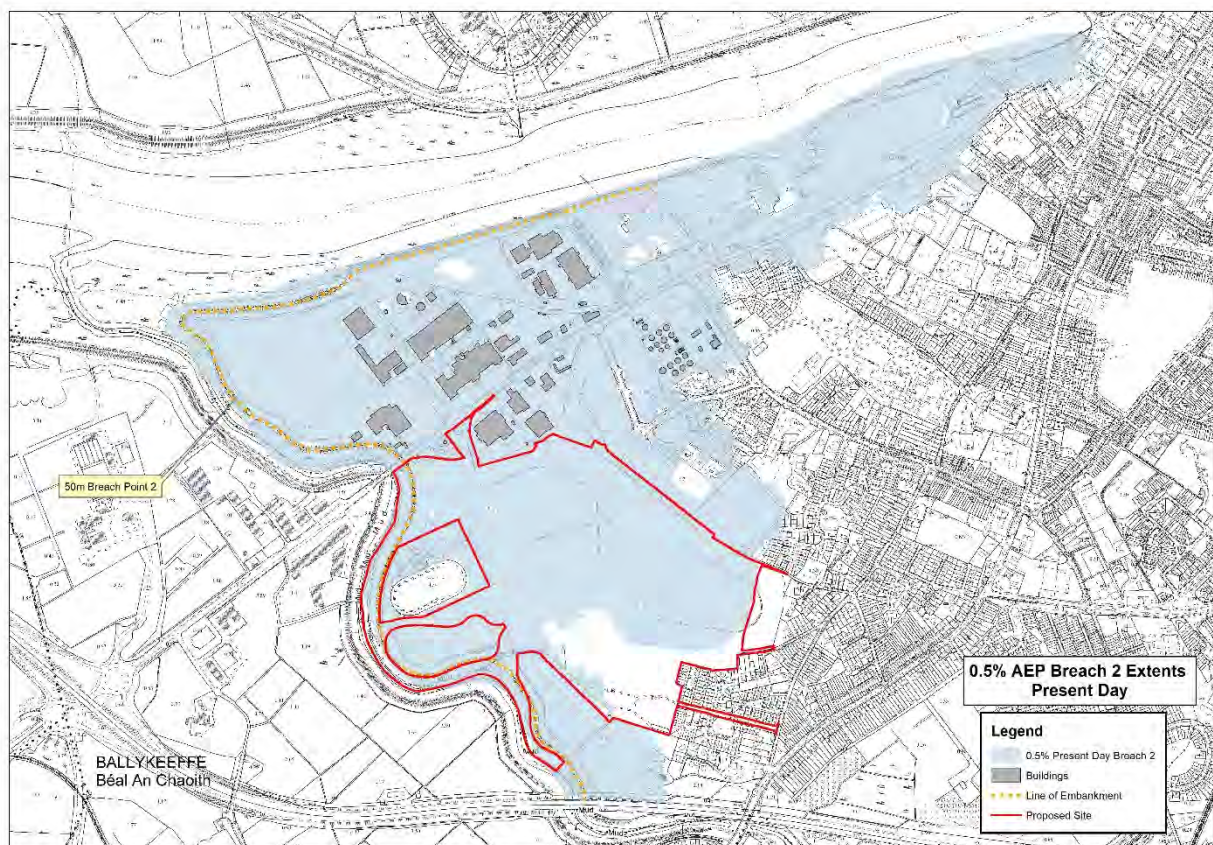
Environment Agencies guidance on breach modelling which was also adopted for use during the CFRAM process. It was undertaken at three locations:

Breach 1 – along the Estuary at the rear of McMahon Building Providers

Breach 2 – along the lower reaches of Ballynacloough River

Breach 3 – on the Ballynacloough River upstream of the Greyhound Stadium.

All breaches were run over 72 hour tidal cycle with the breach set to occur 1 hr before the peak of flood. At this time in the simulation a 50m section of the embankment is removed with the spill level being reduced to existing ground levels on either side of the defence. A separate map was produced for each location i.e. it is assumed only one breach occurred at a time. All 3 breach locations produced approximately the same flood extent and Figure 5.2 shows the 0.5% AEP Breach extent for the existing lands.



**Figure 5.2 Breach Location 2 with 0.5% AEP event with Existing Ground Levels.**

## 5.5 Mitigation Measures for Breach Scenario

RPS wanted to use the maximum breach water level to define suitable development levels for both the Office and Residential Campuses. From the three breach simulations described above the maximum derived water level reached within the masterplan area was 4.3m OD and was subsequently used as a design water level. Note this is less than the 4.87m OD level derived for the 0.5% AEP flood level in the Ballynacloagh River during the Shannon CFRAM Process, but the spreading out of the water across the Dock Road area during a breach means that the maximum water level reached along the boundary of the masterplan area is 4.3m OD.

In order to address the risk from the potential flood depths during a breach, the preferred mitigation measure, as advised in the Planning system and Flood Risk Management Guidelines, is to raise the levels of the proposed development. In Clause 5.16 this is suggested as being above the 0.5% AEP flood level even when behind existing defences. The guidelines also state, on page 73, that although filling to this level is effective and beneficial it also has to be balanced against the risk of displacing water elsewhere during an overtopping or breach scenario. RPS have therefore proposed the following mitigation measures to manage the identified risk.

**Table 5.1 Description of proposed mitigation measures during the breach scenario**

Objective of Mitigation Measures	Proposed Mitigation Measures
To raise the proposed development area as far as is reasonably possible with the focus on protecting people and buildings	Based on the maximum breach level of 4.3m OD all buildings in Office Campus and Residential Campus should be protected to minimum level of 4.6m OD, which provides 300mm freeboard above the predicted breach level.  Car parking and open space can be kept at a lower level. This lower level should be above the 0.5% AEP overtopping level, but there is an acceptance that it can flood during an unlikely breach scenario.
Recognise less vulnerable and vulnerable type of development	For Residential Development, which is classed as ‘vulnerable’ under the guidelines, additional freeboard should be added to allow for climate change and provide a full 500mm freeboard. This freeboard is incorporated into the majority of OPW flood schemes. This results in a proposed FFL of

	5.3m OD, which is made up of 4.3m OD maximum breach level + 500mm freeboard + 500mm climate change allowance.
Provide egress and access during extreme event to provide access for emergency services and also those wishing to evacuate the area	Designated internal roads should be raised to 4.6m OD. This provides access and egress to all vehicles and pedestrians even during a breach scenario.
Balance the beneficial effect of infilling verses the risk of increasing flood risk elsewhere for existing development	The raising of buildings and roads to the stated levels is a priority, but rather than infill the entire site an attempt has been made to balance the impact of infilling and not increase flood risk elsewhere. Hence areas of open space and car parking have been permitted to flood in a controlled manner.

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### 5.5.1 Residential Campus mitigation measures

The residential campus and neighbourhood centre will be filled to minimum platform level of 4.6m OD. From this level the roads will be built up to approximately 5.0m OD and then all FFLs constructed to a minimum of 5.3m OD. This provides over 1m freeboard to all properties and provides a very high standard of protection to what is considered “vulnerable” development under the guidelines.

### 5.5.2 Office Campus mitigation measures

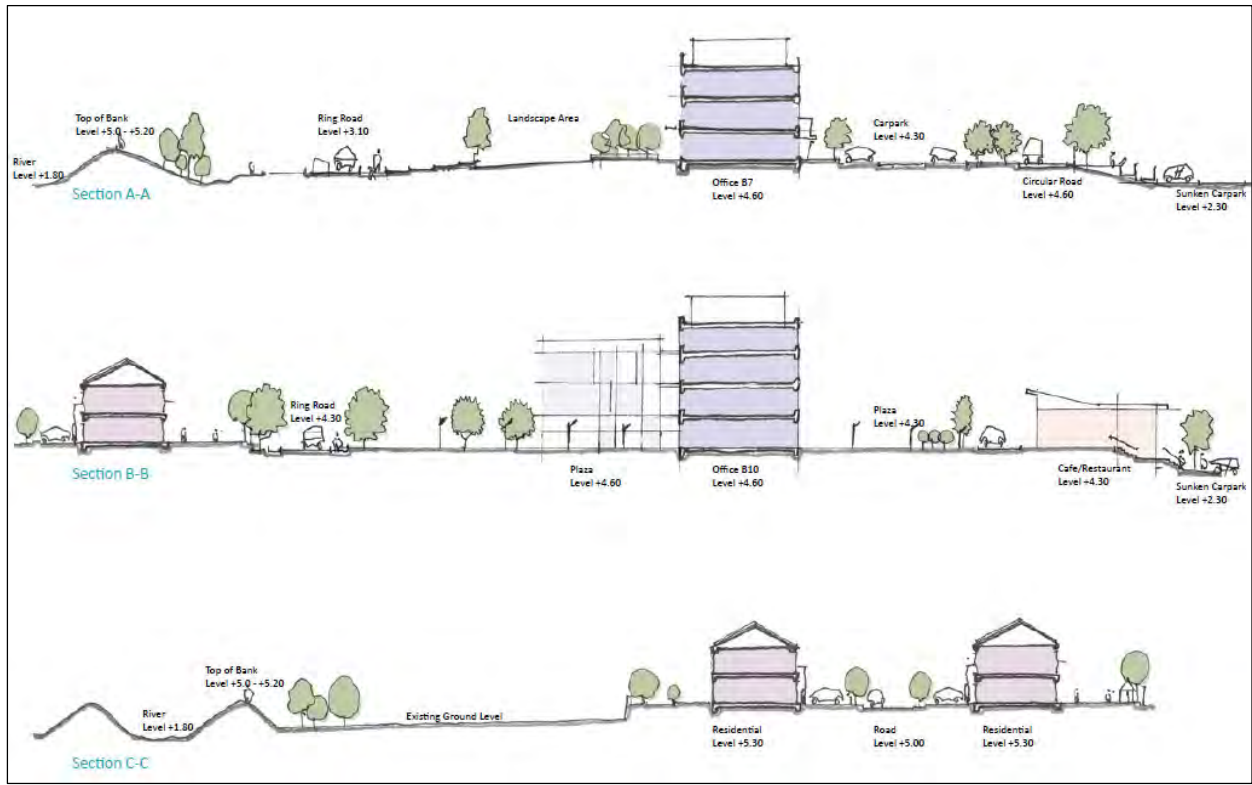
The office campus is considered “less vulnerable” development and therefore a balance can be struck on protecting buildings and people from the breach scenario as well as allowing open spaces to flood.

The proposed way of achieving this is shown in Figure 5.3 which indicates indicative development levels for the office campus. It depicts a ring of office development and plaza levels around the circumference which will prevent water inundation into buildings, internal roads and central car parking area during a breach scenario. Initially it was proposed to keep external car parking and open spaces at a lower level of approximately 2.6m OD which will not flood during a 0.5% AEP overtopping scenario but will be allowed to be inundated during a breach scenario. These proposed development levels achieve the balance of protecting new development to the required standard i.e. the 0.5% AEP plus climate change event but also minimising the risk of flooding to neighbouring properties. Figure 5.4 provides further illustration of the proposed development levels in cross section.



**Figure 5.3 Proposed Mitigation Measures**

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**Figure 5.4 Cross sections through the proposed Office Campus**

**5.5.3 Impact Modelling of Breach Mitigation Measures**

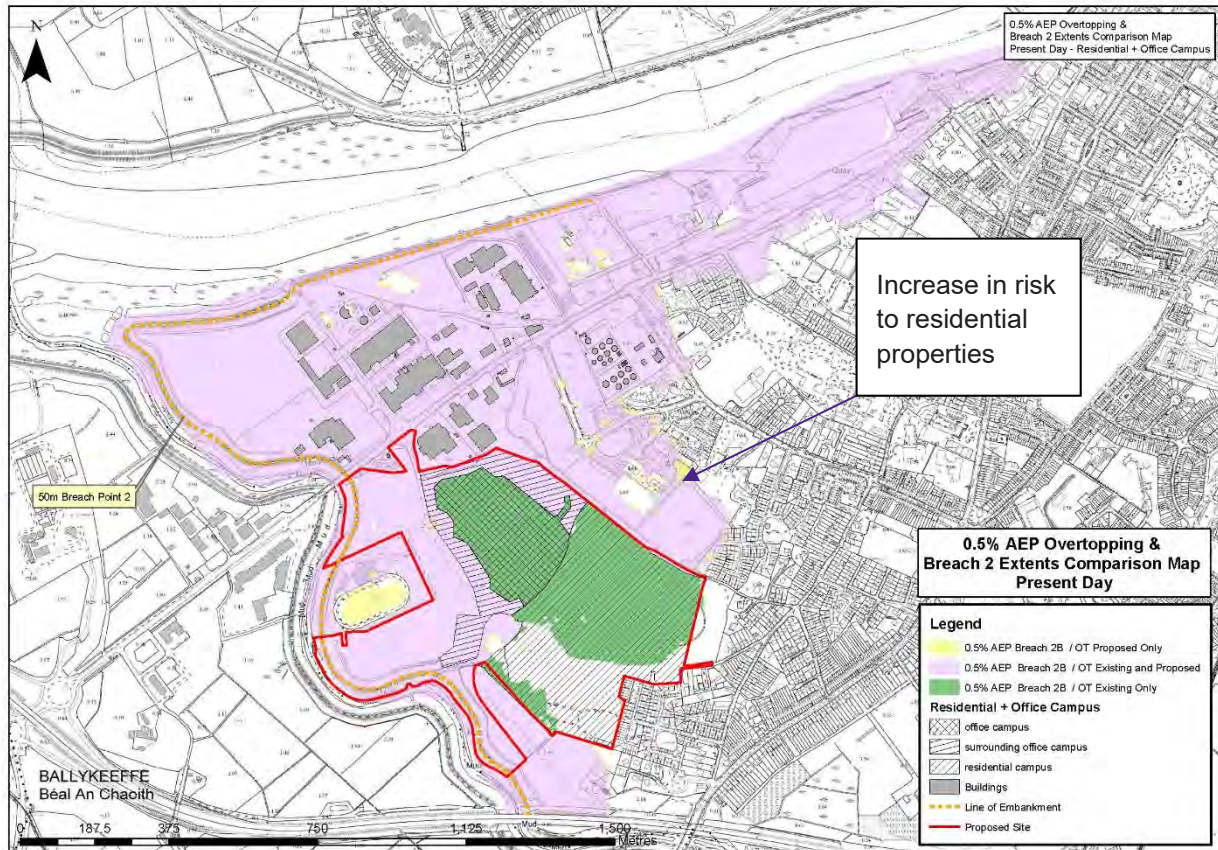
Based on the proposed development levels for the Office and Residential Campuses breach modelling has been undertaken for each of the three breach locations. Using the same boundary conditions as described for the existing scenario in Section 5.4 of this report.

To provide an easy comparison for the existing and proposed development scenarios a series of combined extent maps have been produced which clearly indicate the impact of infilling in the breach scenario.

These comparative maps show three different colours at each breach location:

1. Anywhere shown as green floods only in the existing scenario but not in the proposed scenario, which is reflective of the areas that have been infilled.
2. Anywhere shown as pink floods in both the existing scenario and in the proposed scenario. This means there is no flooding impact in this area as a result of the proposed development.
3. Anywhere shown as yellow floods only in the proposed scenario and not in the existing scenario.

Based on the proposed mitigation measures described in section 5.1 the impact of the raising all of the lands is shown in Figure 5.5.

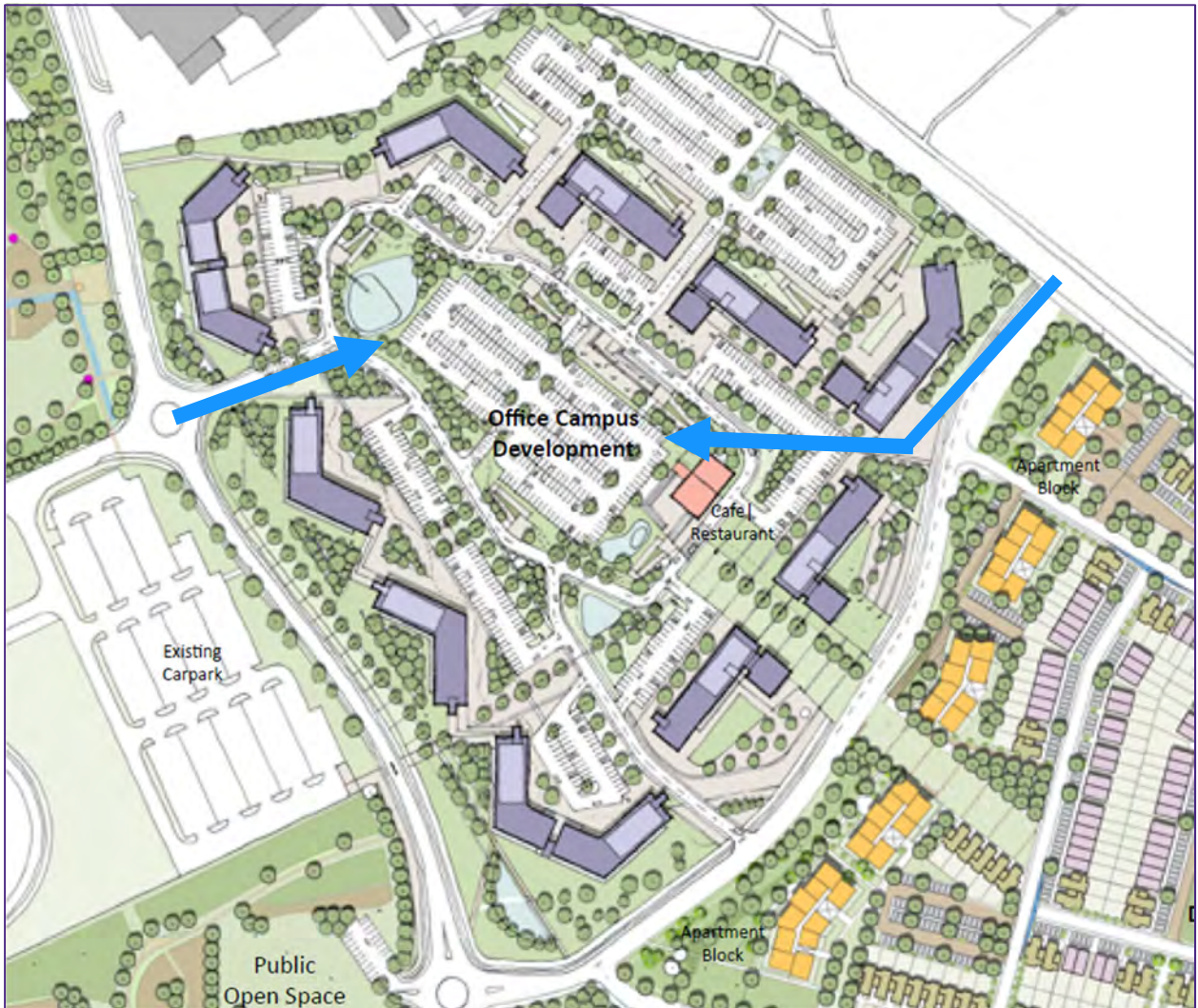


**Figure 5.5 Impact of Raising Proposed Development Lands.**

It can be seen from Figure 5.5 that raising of the lands highlighted in green is causing an impact to the Greyhound Stadium track and also residential properties to the north west of the masterplan area. While this increase in risk is very small, around 60mm in terms of an actual increase in water level, there are additional properties affected and therefore the proposal to raise all of the lands is unacceptable in the context of the guidelines and further mitigation measures will be required.

### 5.5.4 Additional Mitigation Measures for Office Campus

In order to offset the increase in risk identified in Figure 5.5, RPS considered allowing the inner car park of the Office Campus to store flood water during the breach scenario. This will be achieved by allowing roads into the proposed development to be lowered to convey water into this central area during the breach scenario thus providing additional storage. This will not affect the proposed development levels or finished floor levels in either the residential campus or office campus which will remain at the 4.6m and 5.3m OD respectively. Potential conveyance routes are shown in Figure 5.6.



**Figure 5.6 Potential Lowered Conveyance Routes into the Central Car Parking Area**

Based on this revised approach the breach models were re-run to show the benefit of the additional storage area now provided. Figure 5.7, 5.8, 5.9 show comparative maps for each of the 3 breach locations based on this proposed mitigation measure.



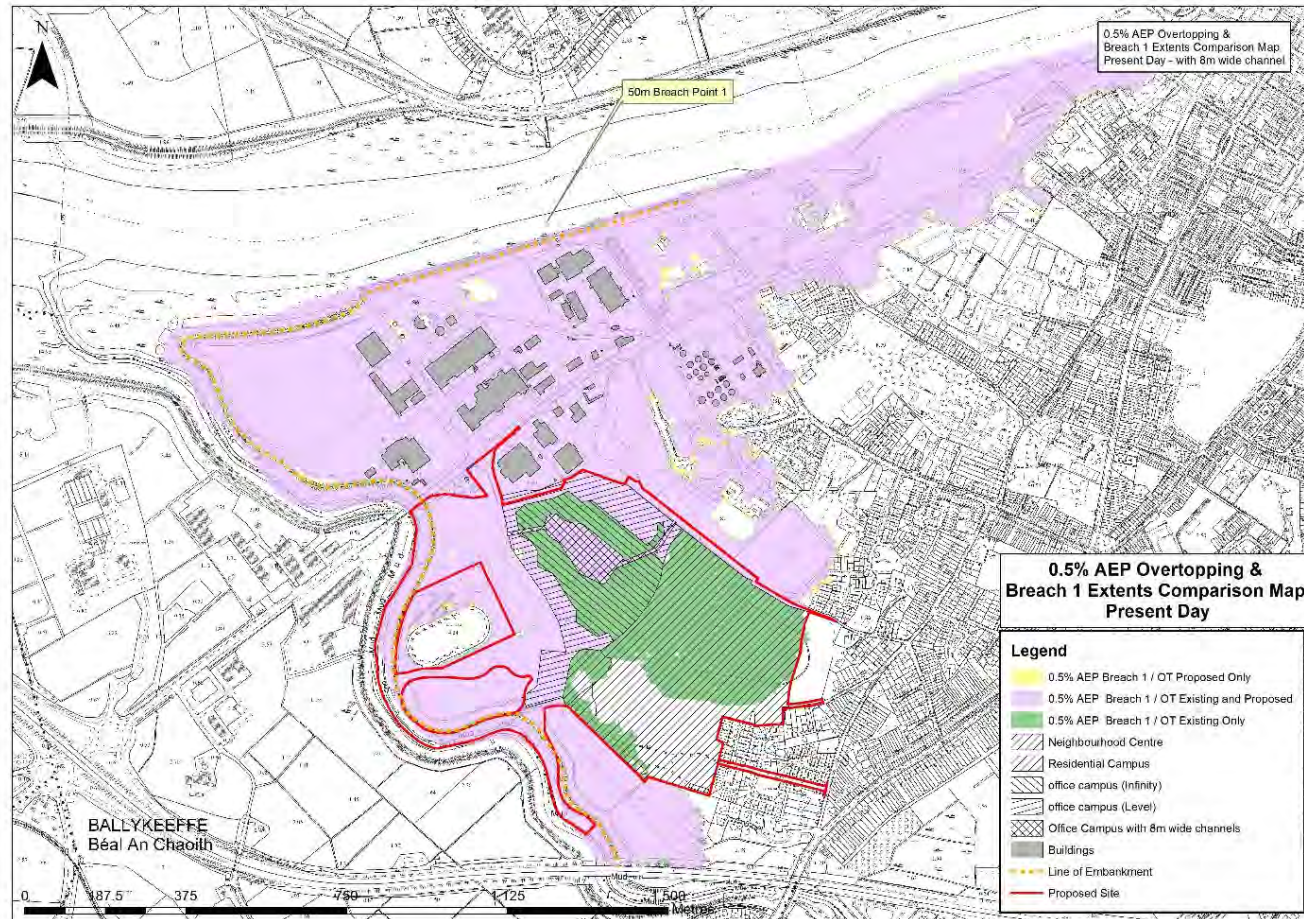


Figure 5.7 Extents comparison map- Breach 1 location

IBE1706 | Greenpark Masterplan FRA | D01 | December 2020

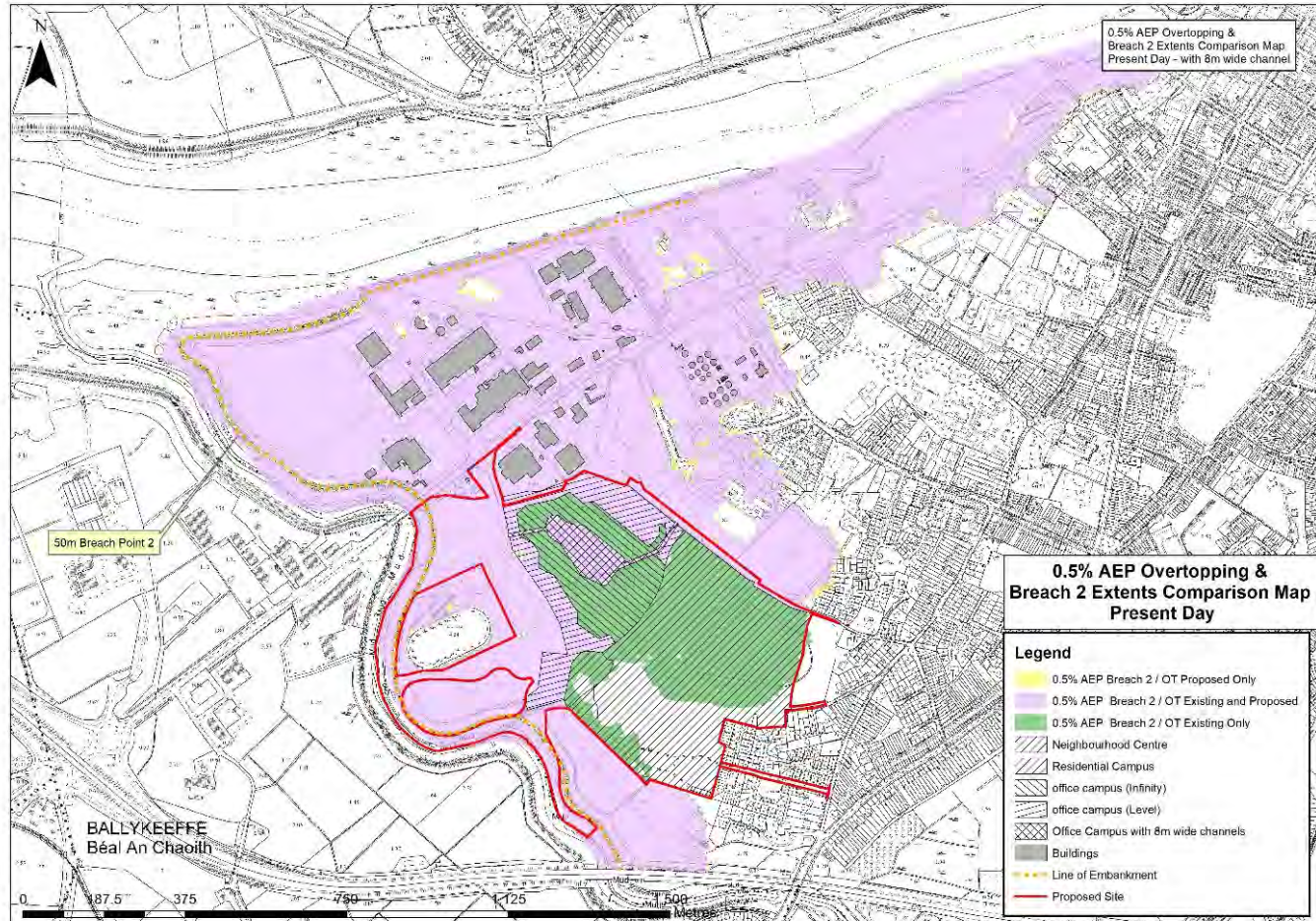
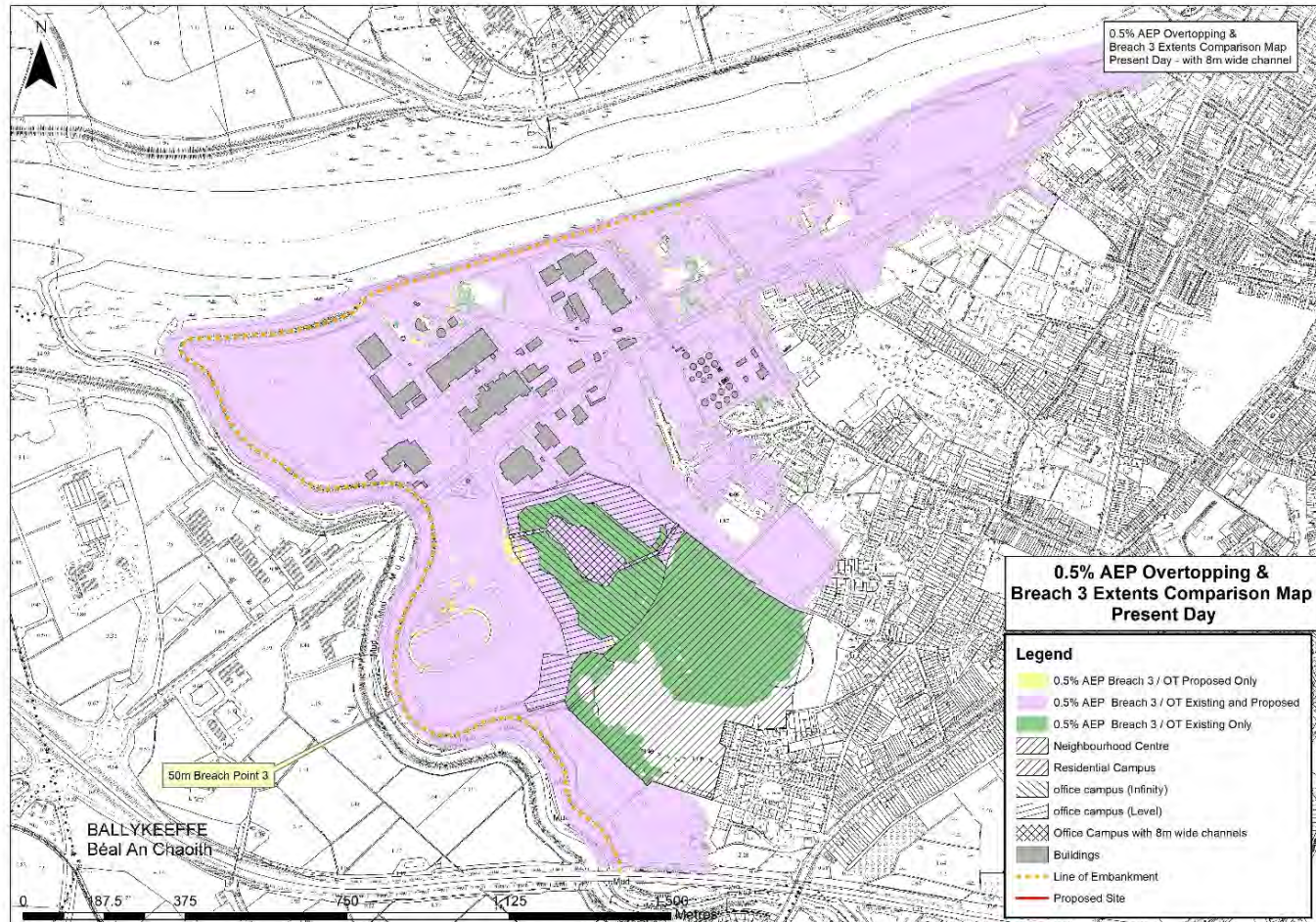


Figure 5.8 Extents comparison map – Breach 2 location



**Figure 5.9 Extents comparison map – Breach 3 location**

### 5.5.5 Conclusions on Breach Modelling

Based on the analysis the overwhelming conclusion is that the breach modelling indicates the proposed development does not create an increase in flood risk to existing development. These mitigation measures have also been tested for the 0.5% AEP MRFS event with no impact identified these maps are contained in Appendix B of this report.

As a point of note in relation to figures 5.7-5.9, it can be seen that along the edges of the flood extent small amounts of yellow and blue are visible. This is not an indication of the either an increase or a decrease in flood risk extent instead it occurs as a result of mesh in the 2D domain of the model changing as a result of the new mitigation measures introduced.

## 5.6 Surface Water Drainage Strategy

Given the scale of the proposed development and the change from a largely greenfield site to a residential and office campus there is the potential for a significant increase in the rate of run off and the need to attenuate flows to the receiving watercourse/s.

In order to mitigate this impact the proposed surface water design has been based on the requirement to ensure that the development does not result in increased runoff rates. The discharge rates from the identified contributing areas are to be limited for all events up to and including the 1 in 100 year extreme rainfall event. All flows will be attenuated within the development itself and by use of the existing Lagoon adjacent to the Ballynaclough River.

The existing storage lagoon top surface area is lined with puddle clay providing an impermeable layer. It has a current capacity of approximately 24,000m<sup>3</sup> based on recent topographical survey (November 2017) and an allowance for 500mm freeboard.

There is an open channel from the last manhole on the existing drainage network to the lagoon inlet structure which is also lined with puddle clay. This channel directs the flows by gravity to the open lagoon. There are three storm water control structures associated with the lagoon;

1. Inlet structure to the lagoon - this headwall structure is located at manhole S.1 and is constructed of reinforced concrete. A baffle wall allows the stormwater to discharge directly to the lagoon via the open channel.
2. Penstock structure - the penstock structure controls the flow of the water from the lagoon to the outfall structure in the Ballynaclough River.
3. Outfall structure - the outfall structure is constructed of reinforced concrete and contains a 1050mm diameter Tideflex valve with thimble plate that allows discharge of water to the river at low tide but prevents backflow into the lagoon in times of high tide.

Given the proposed development levels for the office and residential campuses this will ensure free discharge to the Lagoon under gravity. The elevated development levels will also ensure that there will be no backing up from the storm drainage network resulting from elevated tidal levels even during a 0.5% AEP event.

### **5.6.1 Access and Egress from the Proposed Masterplan Area**

Given the identified mitigation measures which propose to raise all development and finished floor levels above the 0.5% AEP breach level with suitable allowance for climate change and freeboard. There will be no requirement to evacuate either the office campus or residential campus even during a 0.5% AEP MRFS climate change event even when a breach occurs. This is an exceptionally high standard of protection given the severity and probability of the event being considered.

Access and egress therefore only needs to be considered in relation to emergency services, e.g. ambulance or fire services, requiring access when a breach of the defences occurs and thus cutting off the main access road leading onto the Dock Road. In this scenario there is still emergency access available in and out of the masterplan area from Greenpark Avenue. This is indicated on Figure 5.10.



**Figure 5.10 Emergency Access and Egress Routes**

### 5.6.2 Office Campus car parking areas

The central car parking area and those to North West of the office campus are being constructed to the lower level of 2.6m OD to maximise the amount of storage during a breach scenario. That also means that these areas are susceptible to flooding during a breach and given the nature of this event there no time for office users to move their cars once it has occurred. To mitigate this risk to property and also to anyone entering these areas during a breach, an emergency plan will be required to prevent cars being there in the first instance.

This can be achieved by the management company looking after the office campus reacting to coastal flood warnings which are readily given from Met Eireann and can facilitate closing of the car parks on those particular locations in advance. This will minimise the risk of damage to vehicles should a breach occur. A detailed flood warning and evacuation plan would need to be developed as part of a detailed planning application for the office campus.

# 6 PLANNING SYSTEM AND FLOOD RISK MANAGEMENT GUIDELINES

## 6.1 Classification

The ‘Planning System and Flood Risk Management’ Guidelines classify different types of development in terms of their vulnerability class (Table 3.1 of the Guidelines). This table has been reproduced as Table 6.1.

Vulnerability class	Land uses and types of development which include*:
<b>Highly vulnerable development (including essential infrastructure)</b>	<p>Garda, ambulance and fire stations and command centres required to be operational during flooding;</p> <p>Hospitals;</p> <p>Emergency access and egress points;</p> <p>Schools;</p> <p>Dwelling houses, student halls of residence and hostels;</p> <p>Residential institutions such as residential care homes, children’s homes and social services homes;</p> <p>Caravans and mobile home parks;</p> <p>Dwelling houses designed, constructed or adapted for the elderly or, other people with impaired mobility; and</p> <p>Essential infrastructure, such as primary transport and utilities distribution, including electricity generating power stations and sub-stations, water and sewage treatment, and potential significant sources of pollution (SEVESO sites, IPPC sites, etc.) in the event of flooding.</p>
<b>Less vulnerable development</b>	<p>Buildings used for: retail, leisure, warehousing, commercial, industrial and non-residential institutions;</p> <p>Land and buildings used for holiday or short-let caravans and camping, subject to specific warning and evacuation plans;</p> <p>Land and buildings used for agriculture and forestry;</p> <p>Waste treatment (except landfill and hazardous waste);</p> <p>Mineral working and processing; and</p> <p>Local transport infrastructure.</p>
<b>Water-compatible development</b>	<p>Flood control infrastructure;</p> <p>Docks, marinas and wharves;</p> <p>Navigation facilities;</p> <p>Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location;</p> <p>Water-based recreation and tourism (excluding sleeping accommodation);</p> <p>Lifeguard and coastguard stations;</p> <p>Amenity open space, outdoor sports and recreation and essential facilities such as changing rooms; and</p> <p>Essential ancillary sleeping or residential accommodation for staff required by uses in this category (subject to a specific warning and evacuation plan).</p>
*Uses not listed here should be considered on their own merits	

Table 3.1 Classification of vulnerability of different types of development

Figure 6.1 Extract from Planning Guidelines- Classification of vulnerability of development

Table 3.2 of the Guidelines identifies the type of development that would be appropriate to each flood zone and those that would need the Justification Test. This table has been reproduced as Figure 6.2.

	Flood Zone A	Flood Zone B	Flood Zone C
Highly vulnerable development (including essential infrastructure)	Justification Test	Justification Test	Appropriate
Less vulnerable development	Justification Test	Appropriate	Appropriate
Water-compatible development	Appropriate	Appropriate	Appropriate

Table 3.2: Matrix of vulnerability versus flood zone to illustrate appropriate development and that required to meet the Justification Test.

**Figure 6.2 Extract from Planning Guidelines- Vulnerability versus flood zones**

The proposed site will incorporate an office campus and residential housing. The office campus would be classified as ‘less vulnerable development’, while the residential area will be ‘highly vulnerable development’. Both of these types of development requires a Justification Test in Flood Zone A (see Figure 6.2).

## 6.2 Development Management Justification Test

Where a planning authority is considering proposals for new development in areas at a high or moderate risk of flooding that includes types of development that are vulnerable to flooding and that would generally be inappropriate as set out in Table 3.2 of the Guidelines, the planning authority must be satisfied that the development satisfies all of the criteria of the Development Management Justification Test outlined in Box 5.1 of the guidelines and reproduced as Figure 6.3.

It is deemed not necessary to complete the Development Plan Justification Test as it is evident the Limerick City Development Plan 2010-2016 has already taken account of The Guidelines when considering the zoning for the masterplan area. Therefore the Development Management Justification Test need only be applied.



**Box 5.1 Justification Test for development management (to be submitted by the applicant)**

When considering proposals for development, which may be vulnerable to flooding, and that would generally be inappropriate as set out in Table 3.2, the following criteria must be satisfied:

1. The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative development plan, which has been adopted or varied taking account of these Guidelines.
2. The proposal has been subject to an appropriate flood risk assessment that demonstrates:
  - (i) The development proposed will not increase flood risk elsewhere and, if practicable, will reduce overall flood risk;
  - (ii) The development proposal includes measures to minimise flood risk to people, property, the economy and the environment as far as reasonably possible;
  - (iii) The development proposed includes measures to ensure that residual risks to the area and/or development can be managed to an acceptable level as regards the adequacy of existing flood protection measures or the design, implementation and funding of any future flood risk management measures and provisions for emergency services access; and
  - (iv) The development proposed addresses the above in a manner that is also compatible with the achievement of wider planning objectives in relation to development of good urban design and vibrant and active streetscapes.

The acceptability or otherwise of levels of residual risk should be made with consideration of the type and foreseen use of the development and the local development context.

Note: See section 5.27 in relation to major development on zoned lands where sequential approach has not been applied in the operative development plan.

Refer to section 5.28 in relation to minor and infill developments.

**Figure 6.3 Extract from Planning Guidelines- Justification Test for Development Management**

Table 6.1 sets out the response to the criteria in Box 5.1 that must be satisfied. Each of the criteria have been shown to be satisfied and therefore it is concluded that the proposed development complies with the requirements of the Development Plan Justification Test.

**Table 6.1 Response to Justification Test for Development Management for proposed development**

Criteria	Response
1. The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative development plan, which takes account of these Guidelines	The lands are zoned for mixed use and residential in the Limerick City Development Plan 2010-2016 (as extended). The Development Plan clearly states that the plan was produced taking full account of the Guidelines and was still zoned on that basis. It can be considered that Point 1 of the Development Management Justification Test has therefore been met.
2. The proposal has been subject to an appropriate flood risk assessment that demonstrates:	
(i) The development proposed will not increase flood risk elsewhere and, if practicable, will reduce overall flood risk	<p>During a present day 0.5% AEP flood event and a 0.5% AEP climate change event there is no risk to the proposed development and no subsequent increase in flood risk elsewhere. This is described in detail in section 5.1 to 5.3 of this report.</p> <p>Additional modelling has been undertaken to consider the impact of the infilling of the site on the displacement of water in a breach of the existing defences. This was found to not have an increased risk on any existing properties. This is described in detail in Section 5.4 and Section 5.5 of this report. It is therefore considered that Point 2 (i) of the Justification Test has been met.</p>
(ii) The development proposal includes mitigation measures to minimise flood risk to people, property, the economy and the environment as far as reasonably possible	<p>The proposed development will not flood during a 0.5% AEP flood event or in the case of the 0.5% AEP flood event plus climate change event. This provides an exceptionally high standard of protection and therefore, the risk of flooding to people, property and the environment is very low. This level of protection will ensure that there will be no impact on the economy, i.e. there will not be an unacceptable level of flood risk which might subsequently require government capital expenditure to alleviate the problem to either the proposed development or existing development</p> <p>As a further robustness check full consideration of a flood defence breach during a 0.5% AEP and 0.5% AEP MRFS CC flood event has been assessed. As a result of this analysis the proposed development has been elevated to provide protection against a catastrophic event of this nature. Breach analysis has confirmed that this does not increase the flood risk to the existing developments. It is therefore considered that Point 2 (ii) of the Justification Test has been met</p>
(iii) The development proposed includes measures to ensure that residual risks to the area and/or	The residual risk to the proposed development is low, as the development is protected up to a future 0.5% AEP plus climate change tidal event with additional freeboard. This gives added assurance that

## FLOOD RISK ASSESSMENT

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development can be managed to an acceptable level as regards the adequacy of existing flood protection measures or the design, implementation and funding of any future flood risk management measures and provisions for emergency services access

the proposed mitigation measures are more than adequate to deal with any future flood risk. Designated internal roads will be elevated to ensure free access and egress even during an extreme event. No specific residual risks have been identified that would necessitate a flood evacuation plan for the site. It is therefore considered that Point 2 (ii) of the Justification Test has been met

- (iv) The development proposed addresses the above in a manner that is also compatible with the achievement of wider planning objectives in relation to development of good urban design and vibrant and active streetscapes
- The flood mitigation measures proposed do not materially impact upon the desired layout, orientation or approach to the proposed development. It is considered that the proposed development is compatible with the wider planning objectives in relation to development of good design and planning for the area, and is compliant with the Limerick City Development Plan 2010-2016 (as extended).

## 7 SUMMARY AND CONCLUSION

RPS were commissioned to carry out a Flood Risk Assessment (FRA) in support of a masterplan for Greenpark, Limerick which will be a mix of office developments, residential units and a neighbourhood centre. The purpose of this assessment is to ensure that the development takes cognisance of the existing flood risk and does not result in increased flood risk elsewhere. This report has been prepared in accordance with the requirements of 'The Planning System and Flood Risk Management' Guidelines (DEHLG 2009).

The River Shannon flows at a distance to the north of the site and a small tributary, the Ballynaclough River, flows to the west of the site. Both of these rivers can be considered to be tidal at this location. There are flood embankments along both the River Shannon and the Ballynaclough River.

As part of the Shannon Catchment Flood Risk Assessment and Management (CFRAM) Study, Limerick was identified as an Area for Further Assessment (AFA). The CFRAM mapping and the levels derived from this study provide the best available information to assess the flood risk to proposed development site. These maps indicate that the 0.5% AEP flood event does not reach the application site. This is because of the protection afforded by the existing flood defences constructed under the 1945 Arterial Drainage Act. Under the requirements of 'The Planning System and Flood Risk Management Guidelines' the effects of any existing defences must be ignored and therefore the vast majority of the masterplan area is considered to be Flood Zone A, a small section is Flood Zone B and parts are Flood Zone C.

Applying the sequential approach set out in 'The Planning System and Flood Risk Management Guidelines' requires a Justification Test to be carried for development of residential and office use within flood zone A and B.

In accordance with Clause 5.16 of the guidelines a precautionary approach to development behind existing defences is to raise the finished levels to at least the 1% or 0.5% coastal flood level. This approach has been adopted for both the office and residential areas of the masterplan area.

Modelling of the impact of raising existing development was then undertaken considering both the 0.5% AEP and 0.5% AEP Climate Change (mid-range future scenario) flood level. There was no identified increase in risk to existing development as a result of this analysis. This is described in detail in Section 5.3 of this report.

As a further robustness check full consideration of a flood defence breach during a 0.5% AEP flood event has been assessed. As a result of this analysis the proposed development has been elevated to provide protection against a catastrophic event of this nature. Breach analysis has confirmed that there no increase in flood risk to existing developments. This is described in detail in Section 5.4 and 5.5 of this report.

Proposed development levels have been applied to the Office and Residential Campuses based on this breach analysis. Designated internal roads and office levels will be elevated to approximately 4.6m OD. Residential floor levels will be raised to 5.3m OD. This provides between 0.3m and 1m freeboard to predicted water levels during a breach scenario, which is considered a very high standard of protection.

Storm water from the proposed development will be fully attenuated for a 1 in 100yr rainfall event and the proposed drainage network and existing Lagoon beside the Ballynaclough River will provide the necessary attenuation. The elevated development levels will ensure drainage under gravity even during extreme tidal events in the Ballynaclough River and the Shannon Estuary.

Based on the proposed mitigation measures, consideration of the designated zoning and the proposed urban design, each of criteria in the Development Management Justification Test was shown to be satisfied. Therefore it was concluded that the proposed development complies with the requirements of the Development Management Justification Test and hence is compliant with 'The Planning System and Flood Risk Management Guidelines'.

## **7.1 Key Aspects of the Flood Mitigation Measures**

The following are the key aspects of the mitigation measures proposed within this Flood Risk Assessment and demonstrate a robust and sustainable approach to developing the Greenpark lands.

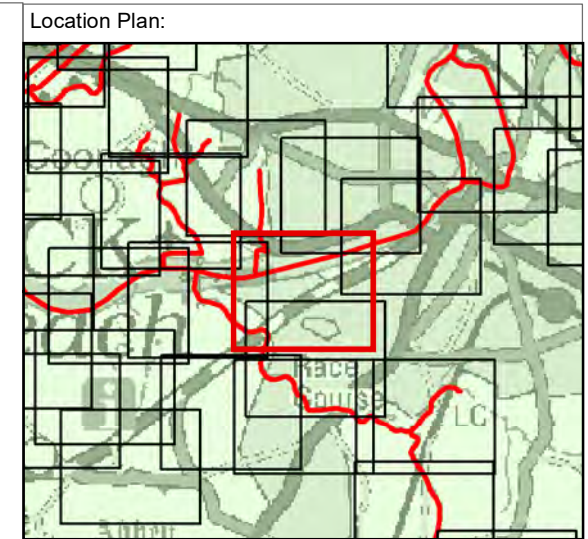
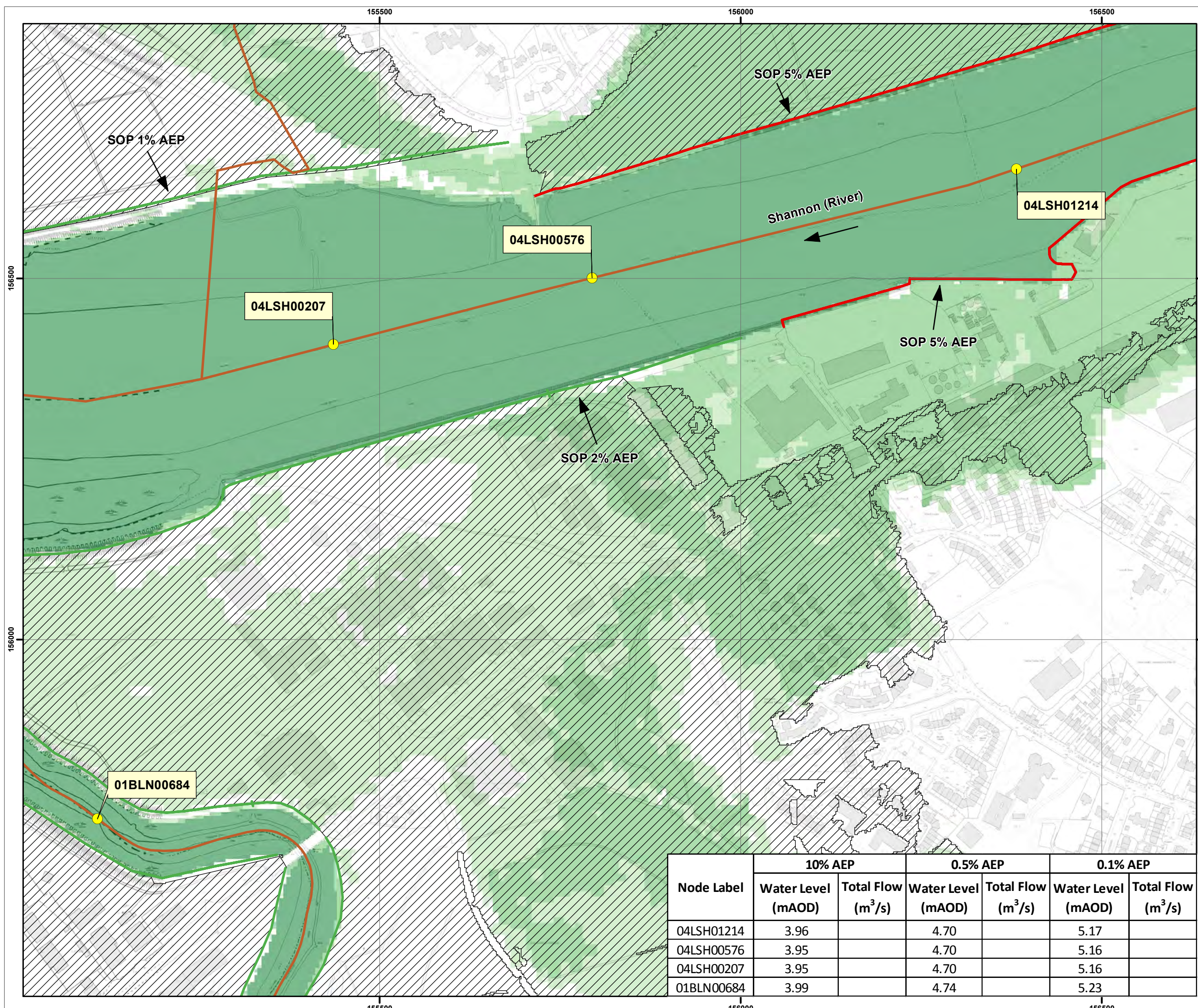
1. There is no reliance on the existing flood defences to provide any level of protection to the masterplan area.
2. The proposed masterplan is sustainable and will place no burden on Limerick City and County Council to provide additional flood defence infrastructure in the future.
3. The entire masterplan area will remain free from flooding during a 0.5% AEP Mid-Range Future Scenario event where overtopping of the existing defences occurs.
4. All buildings and key internal roads will be protected during a 0.5% AEP Mid-range Future Scenario event even when a breach of the existing defences has also occurred.
5. It has been robustly demonstrated that there is no increase in flood risk, even during a breach event, to surrounding developments.
6. A clear access and egress route for emergency vehicles can be provided to the office and residential campus and neighbourhood centre even during a breach event.
7. All storm drainage will be attenuated to existing run off rates and therefore will not cause capacity issues on the existing network or raise the increase of flooding elsewhere.

## 8 REFERENCES

- 1 The Planning System and Flood Risk Management Guidelines, DEHLG (2009)
- 2 OPW Flood Maps available at <http://www.floodinfo.ie/map/floodmaps/>
- 3 Limerick City Development Plan 2010-2016 (as extended).

## Appendix A

### Flood Maps from Shannon CFRAM Study



- Legend:**
- Nodes
  - Model Reach
  - AFA Boundary
  - Flood Defence: Wall
  - Flood Defence: Embankment
  - Defended Area
- 10% AEP Coastal Flood Extent**  
 (1 in 10 chance in any given year)
- 0.5% AEP Coastal Flood Extent**  
 (1 in 200 chance in any given year)
- 0.1% AEP Coastal Flood Extent**  
 (1 in 1000 chance in any given year)

**IMPORTANT USER NOTE:**  
 THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

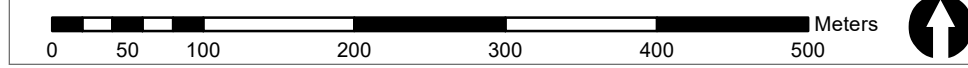


The Office of Public Works  
 Jonathan Swift Street  
 Trim  
 Co. Meath  
 C15 NX36

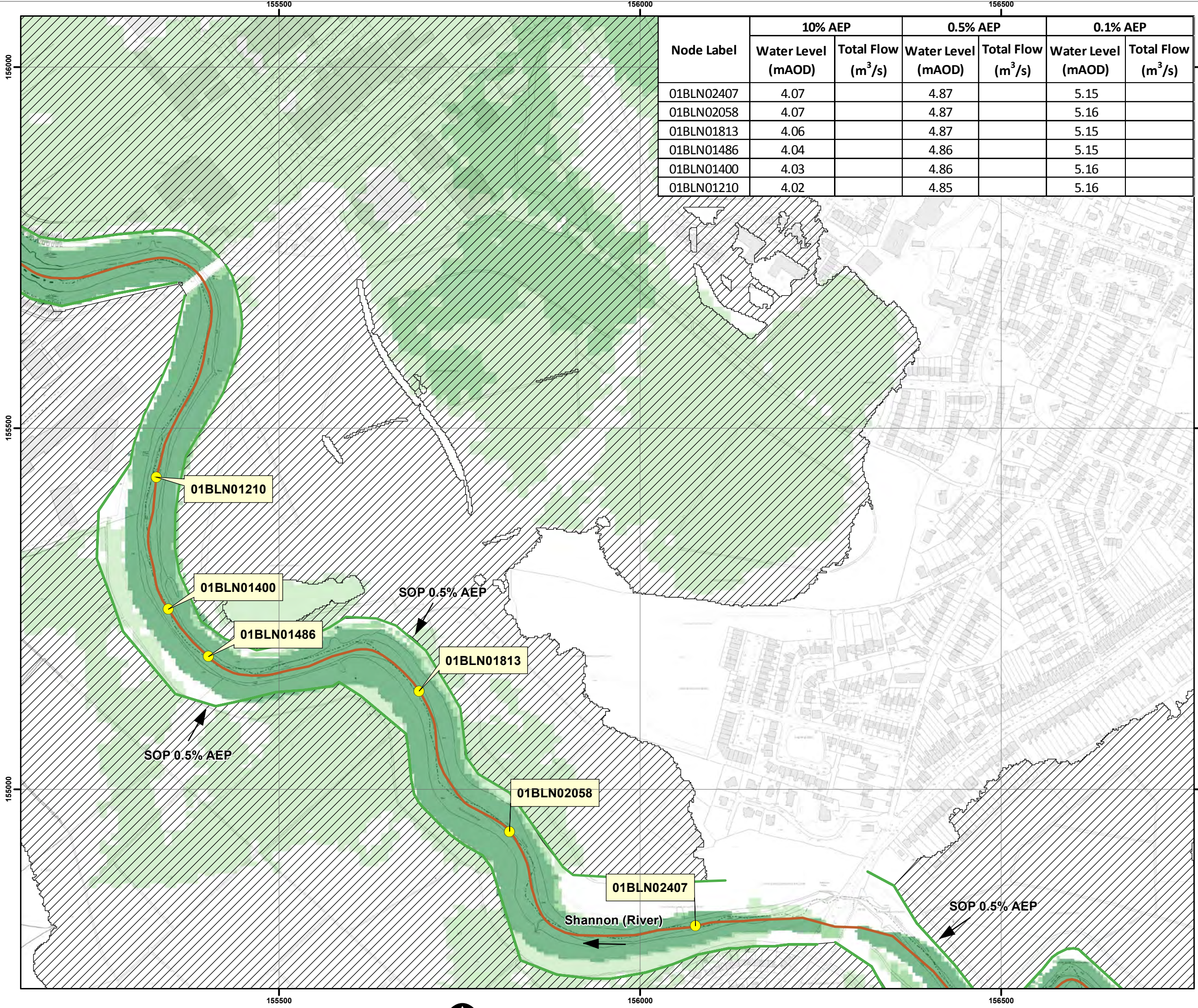
Merrion House  
 Merrion Road  
 Dublin 4  
 D04 R2C5

Node Label	10% AEP		0.5% AEP		0.1% AEP	
	Water Level (mAOD)	Total Flow (m <sup>3</sup> /s)	Water Level (mAOD)	Total Flow (m <sup>3</sup> /s)	Water Level (mAOD)	Total Flow (m <sup>3</sup> /s)
04LSH01214	3.96		4.70		5.17	
04LSH00576	3.95		4.70		5.16	
04LSH00207	3.95		4.70		5.16	
01BLN00684	3.99		4.74		5.23	

Project:	SHANNON CFRAM STUDY
Map Type:	EXTENT
Source:	COASTAL - TIDAL
Area:	LIMERICK
Scenario:	EXISTING
Drawn by:	EH
Date:	June 2016
Checked by:	KM
Date:	June 2016
Reviewed by:	MC
Date:	June 2016
Approved by:	PS
Date:	June 2016
Map No.:	S2526LIK_EXCCD_F1_26
Sheet:	26 of 65
Revision:	0
Map Scale:	1: 5000
Plot Scale:	1:1 @ A3







Node Label	10% AEP		0.5% AEP		0.1% AEP	
	Water Level (mAOD)	Total Flow (m <sup>3</sup> /s)	Water Level (mAOD)	Total Flow (m <sup>3</sup> /s)	Water Level (mAOD)	Total Flow (m <sup>3</sup> /s)
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01BLN02058	4.07		4.87		5.16	
01BLN01813	4.06		4.87		5.15	
01BLN01486	4.04		4.86		5.15	
01BLN01400	4.03		4.86		5.16	
01BLN01210	4.02		4.85		5.16	



**Legend:**

- Nodes
- Model Reach
- AFA Boundary
- Flood Defence: Wall
- Flood Defence: Embankment
- Defended Area

**10% AEP Coastal Flood Extent**  
 (1 in 10 chance in any given year)

**0.5% AEP Coastal Flood Extent**  
 (1 in 200 chance in any given year)

**0.1% AEP Coastal Flood Extent**  
 (1 in 1000 chance in any given year)

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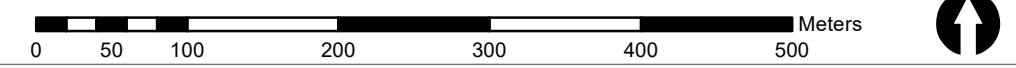
The Office of Public Works  
 Jonathan Swift Street  
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 C15 NX36



Merrion House  
 Merrion Road  
 Dublin 4  
 D04 R2C5

Project:	SHANNON CFRAM STUDY
Map Type:	EXTENT
Source:	COASTAL - TIDAL
Area:	LIMERICK
Scenario:	EXISTING
Drawn by:	EH
Checked by:	KM
Reviewed by:	MC
Approved by:	PS
Date:	June 2016

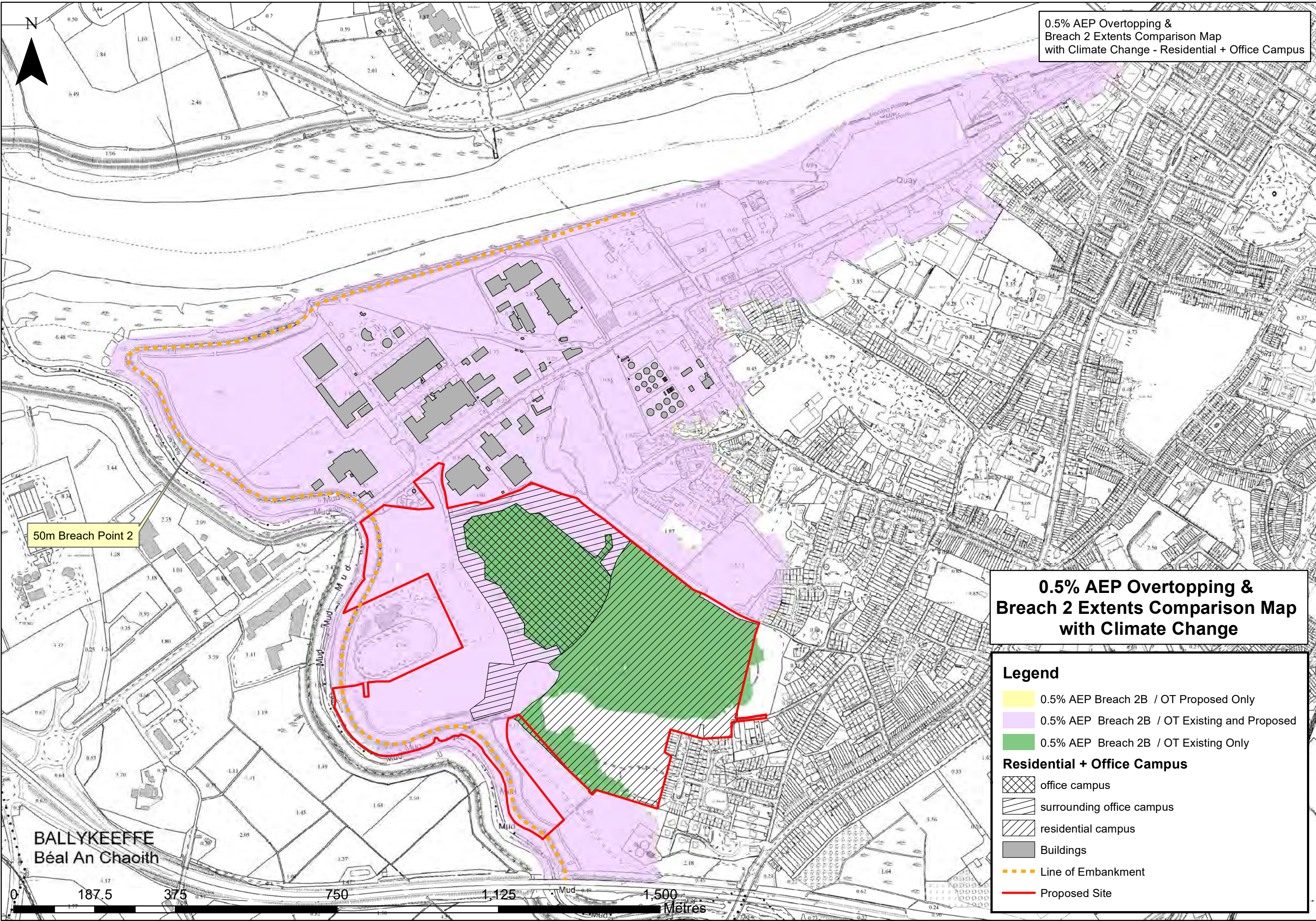
Map No.:	S2526LIK_EXCCD_F1_65
Sheet:	65 of 65
Map Scale:	1: 5000
Plot Scale:	1:1 @ A3
Revision:	0



**Appendix B**

**Climate Change Comparative Breach Maps**

0.5% AEP Overtopping & Breach 2 Extents Comparison Map with Climate Change - Residential + Office Campus



50m Breach Point 2

0.5% AEP Overtopping & Breach 2 Extents Comparison Map with Climate Change

**Legend**

- 0.5% AEP Breach 2B / OT Proposed Only
- 0.5% AEP Breach 2B / OT Existing and Proposed
- 0.5% AEP Breach 2B / OT Existing Only

**Residential + Office Campus**

- office campus
- surrounding office campus
- residential campus
- Buildings
- Line of Embankment
- Proposed Site

BALLYKEEFFE  
Béal An Chaoith





Lisney

# PROPOSED REZONING OF LANDS AT GREENPARK, LIMERICK

Voyage Property

30<sup>TH</sup> AUGUST 2021

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# 1 INTRODUCTION

## 1.1 BRIEF

Lisney has been instructed by Voyage Property to consider the proposed rezoning of lands at Greenpark, Dock Road & South Circular Road, Limerick, having regard to past, prevailing and potential future demand for industrial, office and residential accommodation. Set out in this report is an overview of each of these property sectors in Limerick, in addition to an analysis of the quantum of development proposed in the Draft Limerick Development Plan 2022 – 2028.

## 1.2 EXECUTIVE SUMMARY

- Office market take-up in Limerick city and surrounding area (including Shannon) has averaged 15,000 sqm in the past decade, while industrial market take-up has average 45,000 sqm.
- The Limerick residential market has been strong in recent years and remains active. Between 2014 and 2020, between 2.0% and 2.4% of the housing stock in Limerick has transacted (ranging from 1,730 to 2,050 units annually). Market dynamics are similar to that of other urban areas, characterised by strong demand, a lack of supply and rising prices. While movers are most active in the market, first-time-buyers pay higher prices.
- The residential rental market remains active with strong demand prevailing but very tight supply; there were just 29 properties available to rent across all of Limerick at the end of August. In Q1 2021 average rents in Limerick City increased annually by 8.1% (greater percentage uplifts than Dublin City, Cork City and Waterford City).
- Just 516 residential properties were completed in Limerick in the 12 months to the end of March 2021, which only added about 0.6% to the building stock.
- Limerick City & County Council has identified individual sites in the Limerick Metropolitan area it deems suitable for the provision of employment related uses. At a headline level, we estimate that combined, all of these sites have the potential to deliver 1.98m sqm of employment related accommodation; split 530,000 sqm of offices and 1.46m sqm of industrial / logistics / manufacturing accommodation. **This is equivalent to 35 years office requirements and 32 years industrial requirements.**
- Taking into consideration the likely potential for expansion of the office and industrial markets in Limerick in the medium-term due to the local authority's commitment to economic growth and dynamic revitalisation via Limerick 2030, it is likely that the proposed level of potential development is **still equivalent to in excess of 20 years'**

requirements. **Even at this level, it remains an excessive amount of employment related development, particularly given the fact that Limerick, like all other parts of Ireland, is in the midst of a housing crisis with significant supply shortages and resultant rising prices.**

## 2 LIMERICK COMMERCIAL PROPERTY MARKET

As Ireland's fourth largest city, Limerick city and the surrounding area (including the Shannon region) experiences a good level of commercial property market activity annually. From our review of data, we have noted the trends set out below as they relate to the office and industrial occupational sectors.

### 2.1 OFFICES

Approximately 15,000 sqm of office space has, on average, been taken up annually in the last decade (Limerick and Shannon) but with annual figures ranging from below 10,000 sqm to more than 30,000 sqm.

Given the financial viability of office construction in recent years, very little new space has been added to the building stock. Most new buildings have had the backing of State-related bodies such as the IDA, Limerick 2030 and Shannon Commercial Properties. Examples of completed new buildings, or extensions to existing buildings, include those at the National Technology Park, Castletroy; City East Plaza, Ballysimon; Gardens International, Henry Street; and outside of the metropolitan area in Shannon.

While there are several office schemes with planning permission, there are no new buildings currently under construction in Limerick. Site clearance works have been completed at Bishops Quay (7,600 sqm – development currently on-hold but due to start in Q4) and on the Opera Centre (12,000 sqm at One Opera Square, where construction tenders have been issued and enabling works are ongoing).

There is currently approximately 42,000 sqm of on-market office accommodation available to occupy in Limerick and a further 6,000 sqm in Shannon. This represents just over three years supply and translates into a vacancy rate of approximately 12.5%, which is slightly above a normal market equilibrium.

### 2.2 INDUSTRIAL

Approximately 45,000 sqm of industrial space has, on average, been taken up annually in the last decade (Limerick and Shannon) but with annual figures ranging from about 20,000 sqm to more than 85,000 sqm.

There is approximately 72,500sqm of industrial space under construction in Limerick and Shannon, some of which relates to building extensions and also some design-and-build

projects given the ongoing viability issues with speculative development. This development comprises a mix of warehousing, manufacturing, light industrial and advanced technology buildings, along with laboratory space (laboratory accommodation comprises 30,000 sqm / 42% of the total).

There is currently approximately 22,000 sqm of on-market industrial accommodation available to occupy in Limerick and a further 16,000 sqm in Shannon. This represents about one years' supply and translates into a vacancy rate of sub-5%. Such a vacancy rate is similar to other markets such as Dublin and Cork, which are both also sub-5%.

## 3 LIMERICK RESIDENTIAL PROPERTY MARKET

### 3.1 SALES MARKET

#### 3.1.1 Overview

The Limerick residential market has been strong in recent years and remains active. From 2014 to 2020, between 2.0% and 2.4% of the housing stock in Limerick was transacted (ranging from 1,730 to 2,050 units annually)<sup>1</sup>. Market dynamics are similar to that of other urban areas, characterised by strong demand, a lack of supply and rising prices.

The market is mainly comprised of movers with those trading up or down accounting for 55% of all purchases in the last 12 months across Limerick. These movers are most active in the second-hand market where they account for 57% of all sales. First-time-buyers (FTB) account for 26% of the overall market but given the help-to-buy scheme dominate the new homes part of the market (42% of all new home sales) – albeit the new homes market is small with just 14% of all residential transactions comprised of newly built properties.

#### 3.1.2 Availability

Supply remains a critical issue and fell to new lows in March 2021 with fewer than 500 second-hand properties advertised for sale across the entire county and just 16 new home schemes advertised. The figures relating to the second-hand market have remained relatively stable in the past five months with no noteworthy improvements evident but the number of new home schemes has fallen further.

While there are just 13 new home schemes advertised currently across all of Limerick (and just five in the city), in the short-term a small number of additional schemes are due in the city region. However, given their size it is likely that they will only bring a limited number of additional homes to the market (approximately 200). In the more medium-term, it is

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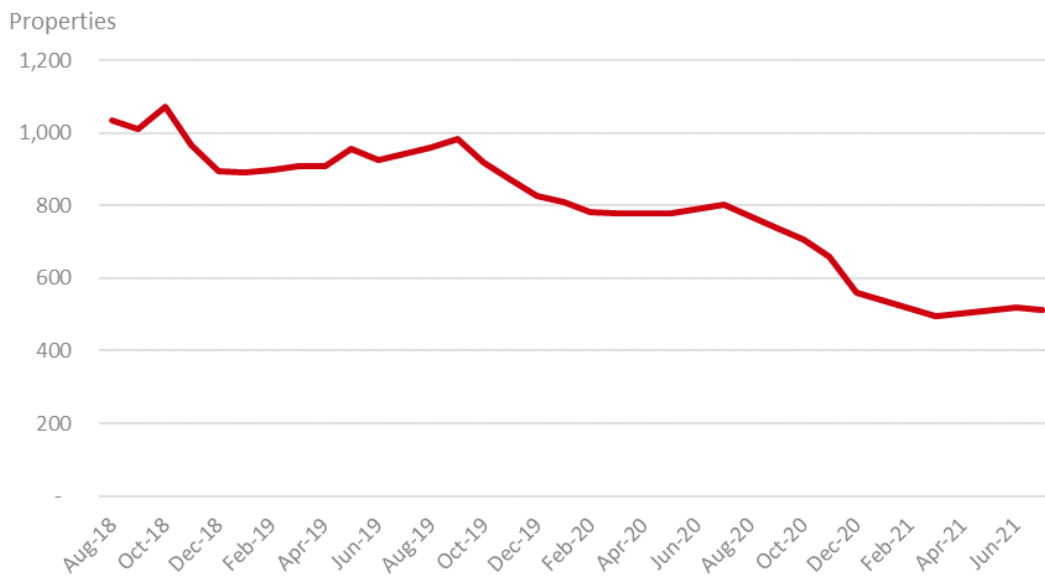
<sup>1</sup> This comprises all sales to household buyers in Limerick City and County, as defined by the CSO.



estimated that up to 2,000 additional homes are due. This is equivalent to just over one years' total market supply in the Limerick market.

In terms of second-hand supply, there remains a cohort of vendors that are unwilling to list their home for sale as they do not see the supply for their onward purchase and they do not want to enter the rental market in the short-term. While greater supply was expected to be seen in the Autumn months as the vaccination process progressed, it now seems more likely to be the new year before there are improvements. This will continue to have an upward impact on prices.

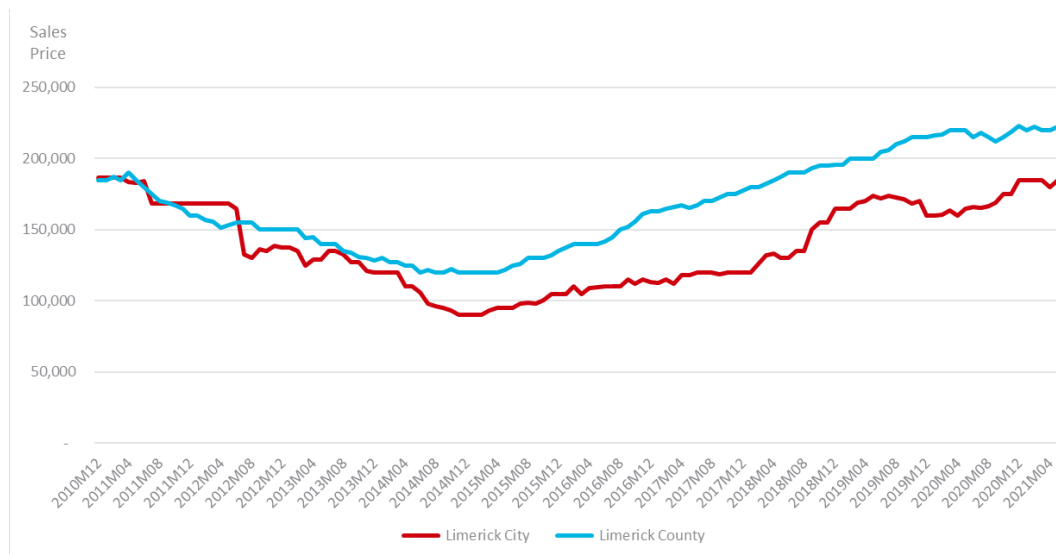
**Figure 3-1: Second-Hand Residential Supply August 2018 – August 2021**



Source: *Daft.ie, Lisney analysis*

### 3.1.3 Prices

Residential sales prices in both Limerick City and County have been trending upwards since the market low in 2014. Since that time, the median price in the City has grown by 106% and in the County by 86%. On an annual basis to the end of June 2021, the median price paid for a home in Limerick City has grown by 11.4% and by 3.8% in the County.

**Figure 3-2: Median Sale Price - Limerick City & County (December 2012 - June 2021)**

Source: CSO

In addition to this official data on property sales from the CSO, property portal Daft.ie states in its Q2 2021 House Price Report that list prices grew in Limerick City annually by 15.5% and by 19.5% in the County. While this reports focuses on asking prices (rather than actual transacted prices), it does provide a more forward looking indication on the market, particularly in relation to the next six months.

It is also worthwhile to note the variations in prices paid by purchaser type. In both Limerick City and County, FTB pay the most according to the CSO. This is contrary to many other markets around the country where movers (those trading up or down) generally pay the most. In Limerick City, the median price paid for a home by a FTB at the end of June 2021 was 14.1% higher than 12 months previous. The corresponding figure in Limerick County was 11.8% higher. Simultaneously, the median price paid by movers has remained flat in the 12 months. Consequently, price increases in the market have been driven by FTB. Meeting their demand for properties though additional supply will be critical to moderate price growth.

## 3.2 RENTAL MARKET

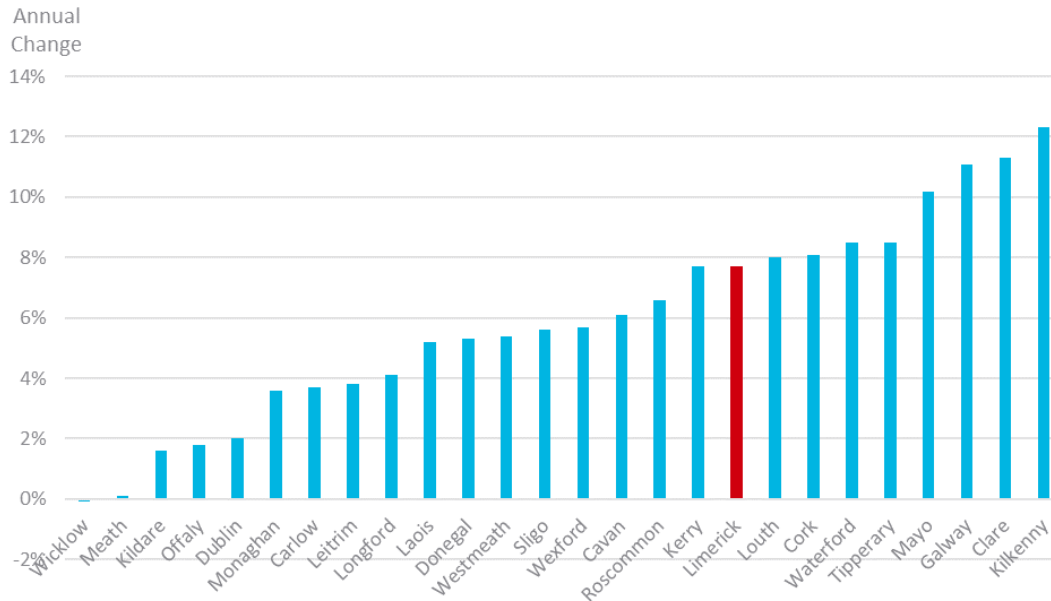
### 3.2.1 Overview

The rental market remains active with strong demand prevailing. In Limerick City and surrounding area, the market did not get a significant one-off increase in supply due to Airbnb properties becoming available for longer-term let at the onset of the pandemic (as happened in other areas) and as such, supply has remained extremely tight. At the end of August 2021 there were just 29 properties available to rent across all of Limerick.

### 3.2.2 Rental Prices

The latest available data from the Residential Tenancies Board (RTB) shows that in Q1 2021 average rents in Limerick City increased annually by 8.1% (greater percentage uplifts than Dublin City, Cork City and Waterford City) with the pace of growth fastest in the most recent quarter (Q1 2021) as rents in the city grew by 4.1% in the three months. In terms of Limerick County, it lies in the top third of all counties nationwide in terms of annual price growth, as seen on the chart below in Figure 3-3, growing by 7.7% in 12 months.

Figure 3-3: Annual Change in Average Rent Q1 2021

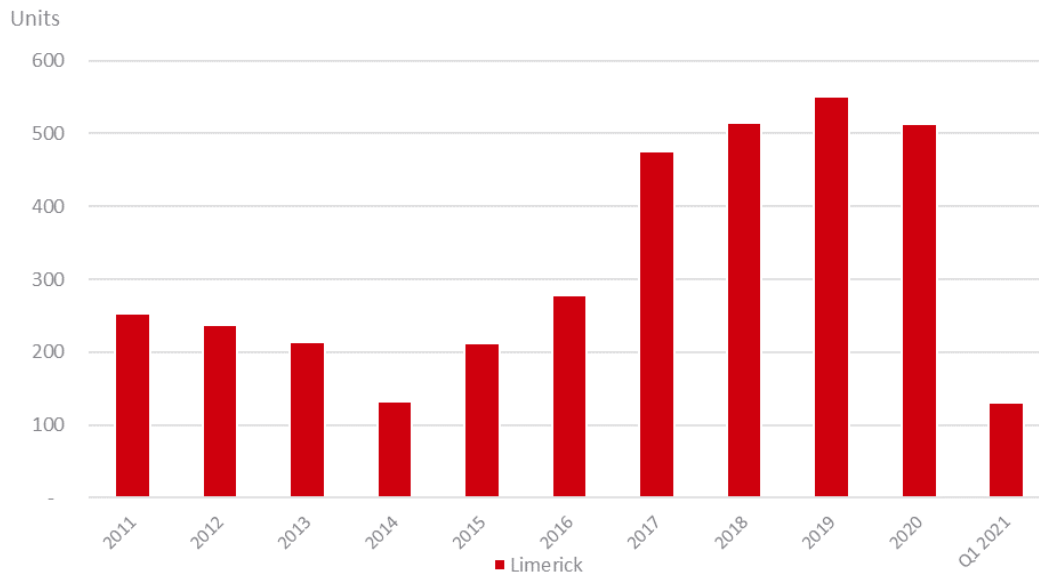


Source: RTB

## 3.3 RESIDENTIAL CONSTRUCTION PIPELINE

### 3.3.1 Completions

Based on CSO data, 516 units were completed in Limerick in the 12 months to the end of March 2021; 483 (94%) were houses and 33 (6%) were apartments. This remains well below what is required in the market and only added about 0.6% to the stock of residential properties across Limerick.

**Figure 3-4: Limerick Residential Construction (2011 - Q1 2021)**

Source: CSO, Lisney analysis

### 3.3.2 Under Construction

Based on CIS data<sup>2</sup>, the total number of units under construction in new homes schemes (with greater than 10 units) across Co Limerick at the end of June 2021 totalled 1,341. These are schemes which commenced construction after January 2019 and which have not yet completed.

### 3.3.3 Planning Granted

Based on CIS data, the total number of units within new homes schemes (with greater than 10 units) across Co Limerick with planning permission granted (since January 2019) but with construction not yet commenced as at end-June 2021, totalled 1,701.

### 3.3.4 Planning Submitted

Based on CIS data, the total number of units within new homes schemes (with greater than 10 units) across Co Limerick with planning applications submitted (since January 2019) and awaiting a planning decision of either grant or refuse at the end of June 2021, totalled 1,138.

<sup>2</sup> CIS (Construction Information Services) is an online portal, which independently tracks Irish construction statistics. It is not possible to confirm that this system accurately covers all data, but we believe it is the best source available in relation to construction data. For the purpose of this report, we have included any schemes that comprise 10 or more units and which have been active on-site since January 2019 but have not yet been completed. All CIS data is as at end-June 2020.

## 4 PROPOSED REZONING

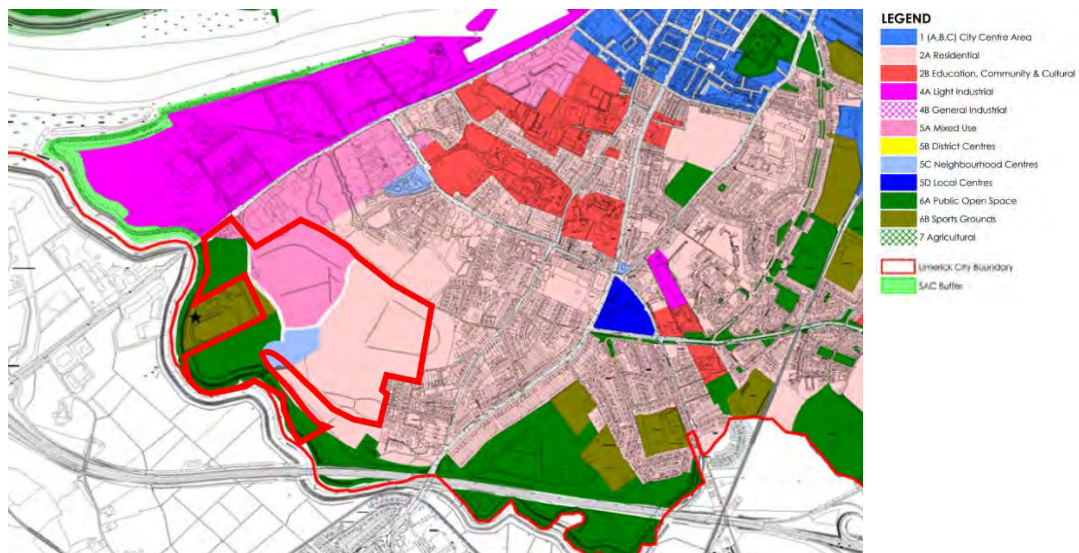
### 4.1 OVERVIEW OF PROPOSED CHANGE IN GREENPARK LAND USE

From the information Lisney has been provided with, our understand of the current and proposed land use zoning of the Greenpark lands is set out in Table 4-1 below.

Table 4-1: Current & Proposed Land Use Zoning

LAND USE ZONING	LIMERICK CITY DEVELOPMENT PLAN 2010 – 2016 (AS EXTENDED)	LIMERICK DEVELOPMENT PLAN 2022 – 2028
Residential	19.33 ha	4.42 ha
Mixed-Use	10.63 ha	0 ha
Neighbourhood Centre	2.28 ha	0 ha
Enterprise & Employment	0 ha	24.77 ha
Open Space & Sundry	14.92 ha	17.97 ha
<b>Total</b>	<b>47.16 ha</b>	<b>47.16 ha</b>

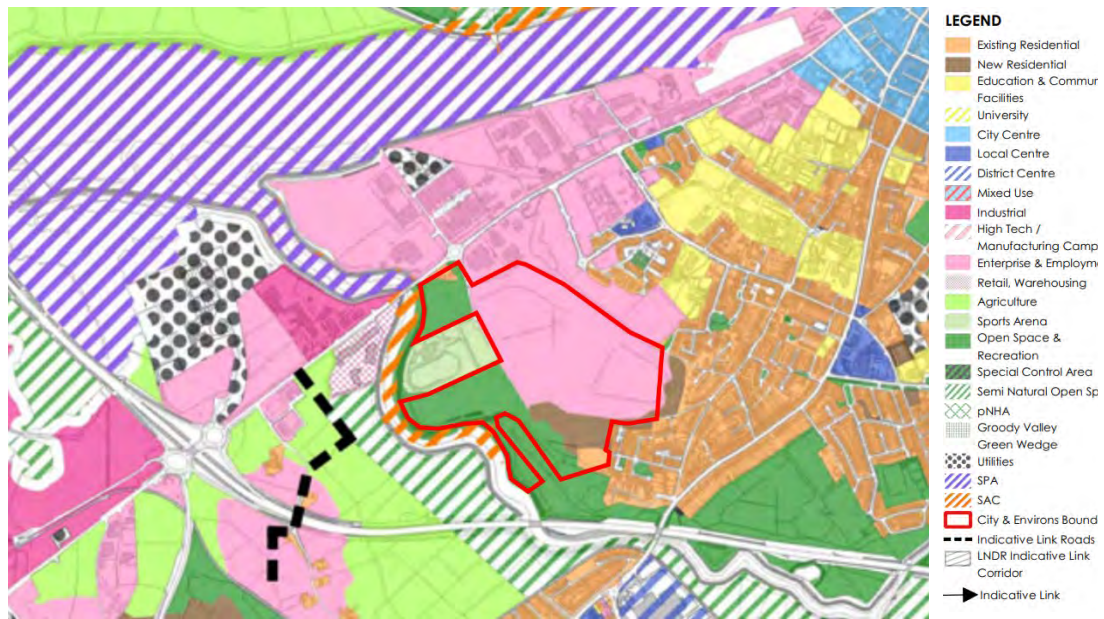
Figure 4-5: Land Use Zoning Map - Limerick City Development Plan 2010 - 2016 (As Extended)



Source: Limerick City & County Council

Indicative outline of subject lands by Lisney

Figure 4-6: Land Use Zoning Map - Draft Limerick Development Plan 2022 - 2028



Source: Limerick City & County Council

Indicative outline of subject lands by Lisney

## 4.2 EMPLOYMENT LAND USE ZONING

### 4.2.1 Overview

We note the following objectives within the Draft Limerick Development Plan 2022 – 2028:

- Enterprise & Employment - *'to provide for and improve general enterprise, employment, business and commercial activities'*
- Mixed Use – *'to provide a mixture of residential and compatible commercial uses'*
- High Tech / Manufacturing – *'to provide for office, research and development, high technology, manufacturing and processing type employment in a high quality built and landscaped campus style environment'*
- Industry – *'to provide for specialised and heavy industrial development and associated employment creation'*

The local authority has identified individual sites in the Limerick Metropolitan area it deems suitable for the provision of employment related uses<sup>3</sup>, as summarised in Table 4-2 below.

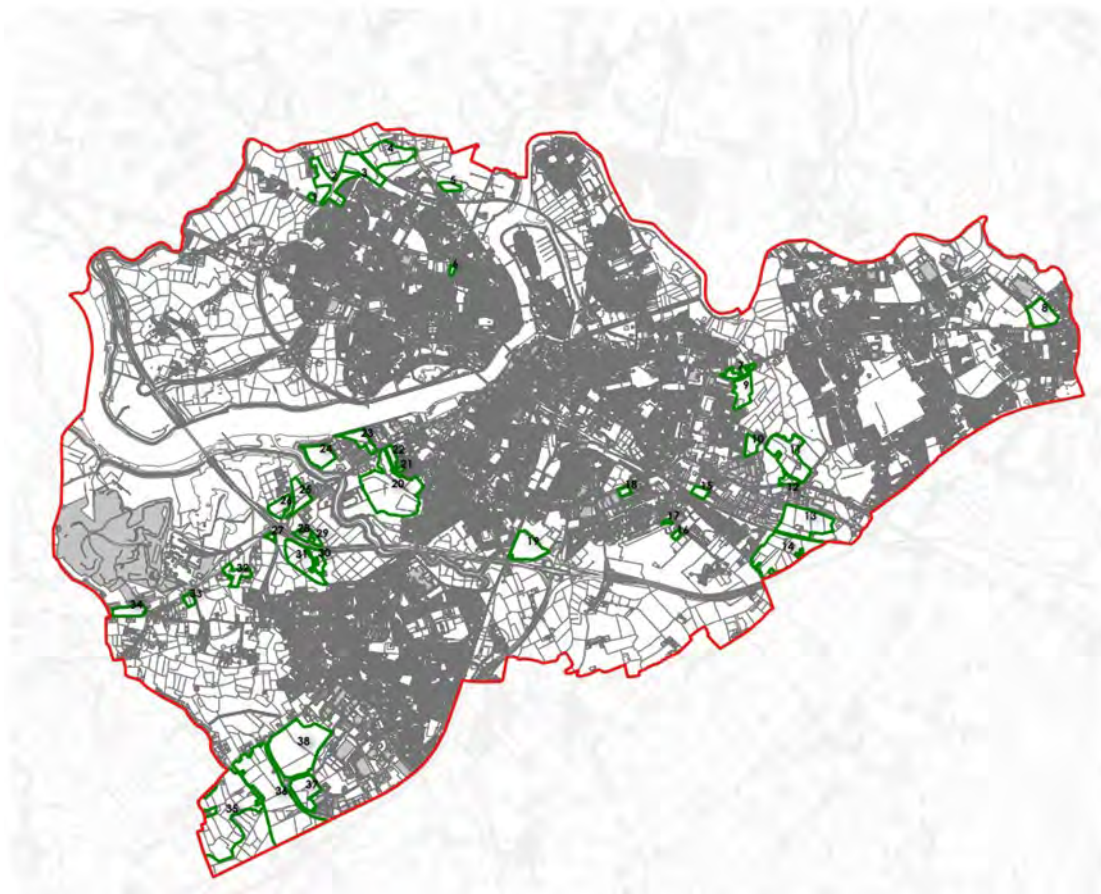
<sup>3</sup> Volume 2, Draft Limerick Development Plan 2022 – 2028; Area Zoning and Tiered Approach to Zoning; Table 2 – Limerick City & Environs lands identified for potential employment related development.

Table 4-2: Greenpark Lands – Current &amp; Proposed Land Use Zoning

LAND USE ZONING	NO. SITES	COMBINED TOTAL AREA (HA)
Enterprise & Employment	26	178.37 ha
Mixed-Use	4	18.82 ha
Industry	3	14.17 ha
High Tech / Manufacturing	5	145.89 ha
<b>TOTAL</b>	<b>38</b>	<b>357.25 ha</b>

The location of each of these parcels of land is shown in Figure 4-7 below.

Figure 4-7: Tiered Approach to Zoning Employment Lands Availability (June 2021)



Source: Draft Limerick Development Plan 2022 - 2028

## 4.2.2 Lisney Analysis

At a headline level, we estimate that combined, all of these sites have the potential to deliver **1.98m sqm of employment related accommodation; split 530,000 sqm of offices and 1.46m sqm of industrial / logistics / manufacturing accommodation.**

To put this in context, based on long-term average activity levels in the Limerick commercial property market (Limerick city and surrounding area, including Shannon), **it is equivalent to approximately 35 years of office requirements and 32 years of industrial requirements.** This is based on prevailing long-term annual average market activity levels (15,000 sqm offices and 45,000 sqm industrial).

However, this is at a high level and the long-term take-up may not correlate with future demand. Given the future focus of the city, particularly though Limerick 2030 and the commitments to economic growth by Limerick City and County Council through innovation and dynamic revitalisation, activity levels in both the office and industrial sectors is likely to grow in the medium-term. As such, we have considered the impact of activity increasing by 20%, 30%, 40%, 50% and 60%, and the resultant impact on the number of years' supply.

**Table 4-3: Annual Commercial Market Occupier Activity / Take-Up**

	CURRENT LTA	+20%	+30%	+40%	+50%	+60%
Office	15,000 sqm	18,000 sqm	19,500 sqm	21,000 sqm	22,500 sqm	24,000 sqm
Industrial	45,000 sqm	54,000 sqm	58,500 sqm	63,000 sqm	67,500 sqm	72,000 sqm

**Table 4-4: Years' Supply**

	CURRENT LTA	+20%	+30%	+40%	+50%	+60%
Office	35 yrs	29 yrs	27 yrs	25 yrs	23 yrs	22 yrs
Industrial	32 yrs	27 yrs	25 yrs	23 yrs	22 yrs	20 yrs

As stated, at a headline level we have estimated that there is enough land proposed to be zoned and available for employment related uses equivalent to occupier market requirements for 35 years offices and 32 years industrial. **Even assuming a 60% growth in demand in the medium-term, there remains over 20 years' supply of land.**

To provide some further context, it is useful to compare what is proposed for Limerick to other markets. Dublin is Ireland's biggest office and industrial market by a considerable length. In terms of industrial building stock, Dublin is approximately 6.8 times larger than Limerick with annual take-up in the past decade 6.3 times greater. Equally, the office building stock in Dublin is approximately 9.8 times greater than Limerick with annual take-up in the past decade 15.7 times more. Even in a Dublin context where industrial market activity is almost



16 times higher, the quantum of potential development proposed for Limerick in the draft plan is equivalent to over five years of Dublin supply.

**We believe that the amount of land proposed for employment related development is grossly excessive, particularly given the fact that Limerick, like all other parts of Ireland, is in the midst of a housing crisis with significant supply shortages and resultant rising prices.** Under the current development plan, 19.33 ha of Greenpark lands are zoned for residential purposes and have the potential to deliver up to 800 homes in the existing footprint of the city. Delivering these over a 10 year period would mean 80 additional homes available each year, which is equivalent to 15% of all housing completions across Limerick City and County in the past year; a significant percentage for an inner suburban area within walking distance of the city centre.

There are only five new homes schemes currently available in Limerick City. Two are in Mungret, which is significantly further out of the city centre and both schemes have asking prices in excess of €350,000. There is one scheme on the Ballyneety Road, slightly further out of the city centre and with asking prices starting at €315,000. There is a scheme just off the North Circular Road called Revington where asking prices start at €635,000 and another at Rhebogue Hill. Even taking into consideration likely residential development in the short-term (such as at Clonmacken, Croom and Patrick's Well), supply will not meet demand. The homes proposed for part of the Greenpark lands are significantly more affordable than many of the schemes currently for sale, they are within the southern ring road and will generally offer a greater selection of housing types.

## 5 CONCLUSION

Having considered the office, industrial and residential property sectors in Limerick, we are of the opinion that the quantum of lands proposed to be rezoned for enterprise and employment uses is **grossly excessive**; ranging between **20 and 35 years' market supply** depending on the level of market activity in the coming years. In the midst of a serious housing crisis, it would be more appropriate to **retain the existing residential and mixed-use land uses where the lands could significantly contribute to providing much needed affordable homes within the existing footprint of the city.**

**HEAD OFFICE**

St. Stephen's Green House,  
Earlsfort Terrace,  
Dublin 2, DO2 PH42

**T:** +353 1 638 2700  
**E:** dublin@lisney.com

**LEESON STREET**

103 Upper Leeson Street,  
Dublin 4,  
DO4 TN84

**T:** +353 1 662 4511  
**E:** 103@lisney.com

**DALKEY**

8 Railway Road,  
Dalkey, Co. Dublin,  
A96 D3K2

**T:** +353 1 285 1005  
**E:** dalkey@lisney.com

**BLACKROCK**

51 Mount Merrion Avenue,  
Blackrock, Co. Dublin,  
A94 W6K7

**T:** +353 1 280 6820  
**E:** blackrock@lisney.com

**HOWTH ROAD**

171 Howth Road,  
Dublin 3,  
DO3 EF66

**T:** +353 1 853 6016  
**E:** howthroad@lisney.com

**TERENURE**

Terenure Cross,  
Dublin 6W,  
D6W P589

**T:** +353 1 492 4670  
**E:** terenure@lisney.com

**DUNDRUM**

11 Main Street,  
Dundrum, Dublin 14,  
D14 Y2N6

**T:** +353 1 296 3662  
**E:** dundrum@lisney.com

**CORK**

1 South Mall,  
Cork, T12  
CCN3

**T:** +353 21 427 5079  
**E:** cork@lisney.com

**BELFAST**

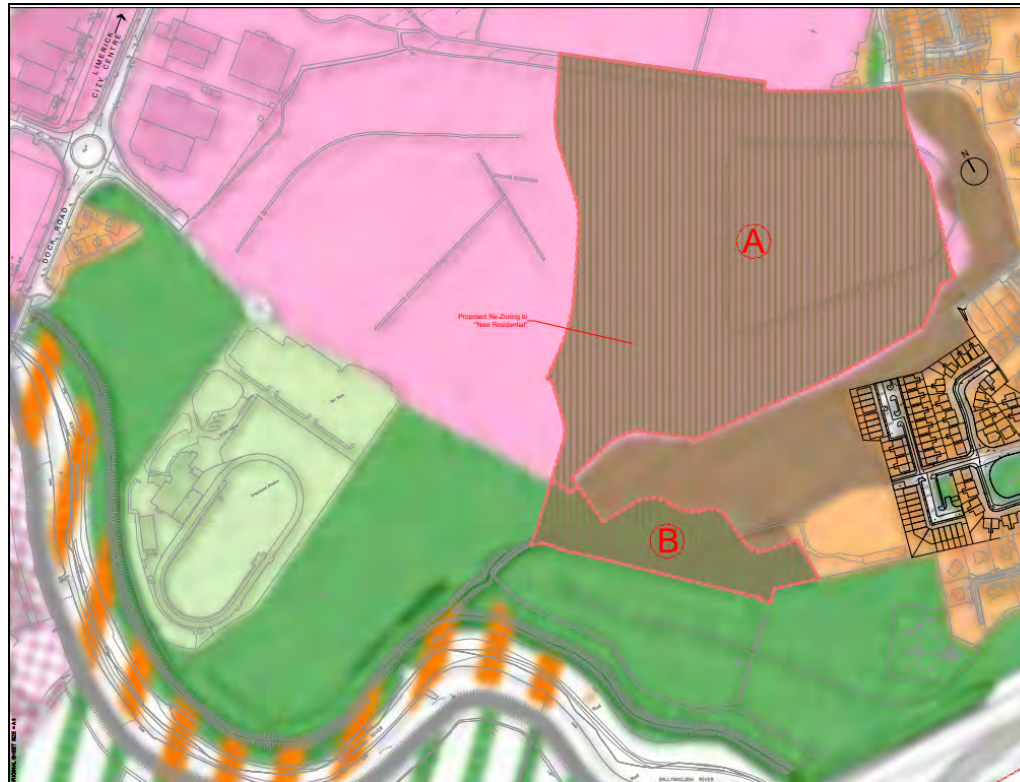
1st Floor, Montgomery House,  
29-33 Montgomery Street,  
Belfast, BT1 4NX

**T:** +44 2890 501 501  
**E:** belfast@lisney.com

**Change City and Environs Zoning Map and Tiered Approach to Zoning – Proposed by Councillor xxxxxxxx**

I propose a change to zoning of the portion of the lands known as Greenpark (Former Racecourse), Dock Road as illustrated in the map (Figure 1) below from A) *Enterprise & Employment (c.12.98ha)* and B) *Open Space (1.73ha)* to *New Residential (14.71ha)*.

This proposal reflects a retention of the quantum of land as zoned *Residential* under the current development plan (Limerick City Development Plan 2010 – 2016 As Extended).



**Figure 1 – Proposed Alteration of Draft Zoning Map**

## Reasons:

1. Greenpark, a site of c.47 ha (116 acres) presents a unique opportunity to create a new mixed use sustainable neighbourhood of in excess of 950no new homes, a significant commercial park and a large public amenity park with walking / cycling pathways in a well landscaped setting, all in close proximity to Limerick city centre. This opportunity will be lost by re-zoning these lands for *Enterprise & Employment*, as the lands will become economically unviable for development. A full masterplan was completed for the site in 2020 which includes a large public amenity area and envisages full permeability of the lands, thus opening the entirety of the new development to the public from South Circular Road, Alandale and Dock Road for the benefit of pedestrian / cycle users.
2. The Draft Plan doesn't zone enough lands for *New Residential* development. It identifies a minimum need in Limerick City CSO area, Annacotty & Mungret for 11,454 homes<sup>1</sup> during the life of the plan. LCCC then makes provision for lands to schedule delivery of 12,452 homes<sup>2</sup>, an 8.7% uplift on minimum need<sup>3</sup>. In respect of these 12,452 homes identified in the Draft Plan, the plan itself acknowledges<sup>4</sup> that 1,617 of these will not be delivered within the first five years of the plan as they are assigned a designation of "M (Medium term - 10 year delivery)" leaving a maximum deliverable number of homes of 10,835 in the plan lifetime, assuming 100% of the remaining lands deliver fully within lifetime of the plan which is highly unlikely. There would also have to be significant uncertainty surrounding the ability of Colbert Quarter to deliver the stated 625 units over the lifetime of the plan given the progress on that project to date as well as commercial viability questions over a number of smaller sites within the city centre.
3. The Draft Plan contemplates a maximum of circa 4,000 homes within the existing built-up footprint. This includes circa 630 homes which the plan itself acknowledges are unlikely to be built during its lifetime<sup>5</sup>. According to the National Planning Framework<sup>6</sup> 50% of homes should be within the existing built up footprint of a city. Therefore, in order to comply with NPF policies and meet its own identified housing need, lands within the existing built up footprint of the city that can deliver a minimum of a further 2,500 homes during the lifetime of the plan are required to be zoned for *New Residential*. Greenpark presents the best opportunity to partially bridge this shortfall.
4. Under the Limerick City Development Plan 2010-2016 as extended, the subject lands are zoned *Residential*. Furthermore, in July 2017 the subject land was one of only two sites promoted by the council for LIHAF project funding and this was approved by the minister. Under this scheme, Greenpark was described as a "Major Urban Housing Development Site" close to the "heart of the city". In June 2021 in its Interim Review, Limerick 2030 identified the subject lands as "a major residential opportunity site".

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<sup>1</sup> Reference Draft Plan - Table 2.7: Settlement hierarchy, population and household growth up to end of Draft Plan period Q2 2028 plus zoned land provision (page 27 of 292 CEO Material Alterations Document)

<sup>2</sup> Reference Draft Plan – Settlement Capacity Audit (Page 277 – 288 of 292 CEO Material Alterations Document)

<sup>3</sup> Housing For All directs local authorities and elected members to zone up to 20% more land to provide homes in excess of the identified housing need

<sup>4</sup> Reference Draft Plan – Settlement Capacity Audit (Page 277 – 288 of 292 CEO Material Alterations Document)

<sup>5</sup> Reference Draft Plan – Settlement Capacity Audit (Page 277 -288 of 292 CEO Material Alterations Document)

<sup>6</sup> Reference NPF – NPO 3b page 29

5. The re-development of the Greenpark Lands for a mix of commercial and residential uses of scale complies in full with the recommendations included in ‘The Future Development of Limerick City’ as produced by Indecon Research Economists and published by Limerick Chamber in June 2021. This report notes that ‘Increasing the population density in Limerick city is a critically important challenge for the future development of the city’ and recommends that ‘Strategic development areas should be identified in the city to facilitate new quality affordable residential developments’. It further recommends ‘The focus of all policies and investments should be on facilitating compact growth’.

6. The subject lands comply with the following:

- Project Ireland 2040 – National Planning Framework (NPF) 2018 policies [NPO 2a, 3b, 5, 7, 8, 33, 35 and 72c];
- Development Plan Guidelines for Planning Authorities 2007 [Sections 4.9, 4.12 and 4.19];
- Development Plan – Guidelines for Planning Authorities Draft for Consultation August 2021 [Sections 6.2.3 and 6.2.4];
- Sustainable Residential Development in Urban Areas – Guidelines for Planning Authorities 2009 [Sections 5.7, 5.8 and 5.9];
- Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities March 2018 [Section 2.4]
- The Planning System and Flood Risk Management Guidelines for Planning Authorities 2009 (PSFRMG).

7. The PSFRMG were adopted in 2009 and the current development plan was prepared having full regard to these guidelines<sup>7</sup>, when the subject lands were zoned *Residential*.

8. Despite what is stated in the Draft Plan SFRA, there is no distinction drawn in the PSFRMG between “Highly Vulnerable” and “Less Vulnerable” uses in terms of their requirement to pass a Justification Test once the lands are located in Flood Zone A (see figure 2 below), which they are in the case of the subject lands. Once a planning authority has identified lands that are of strategic value to the continued growth of an urban centre, which in the case of Greenpark LCCC undeniably has, the authority can proceed to subject the lands to a sequential approach process which is clearly set out in the PSFRMG (see figure 3 below). Under this sequential approach, once the lands are in Flood Zone A, both “Highly Vulnerable” and / or “Less Vulnerable” uses require a Justification Test and once this test is passed the authority are not restricted regarding land use that can be applied. Planning need should determine the use thereafter and this must be *Residential* in a time of national housing crises. The quantum of *Enterprise & Employment* lands zoned in the Draft Plan are sufficient supply for 20 plus years in the Limerick market.

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<sup>7</sup> Reference Limerick City Development Plan 2010 – 2016 (As Extended) – Page 12.19

	Flood Zone A	Flood Zone B	Flood Zone C
Highly vulnerable development (including essential infrastructure)	Justification Test	Justification Test	Appropriate
Less vulnerable development	Justification Test	Appropriate	Appropriate
Water-compatible development	Appropriate	Appropriate	Appropriate

Table 3.2: Matrix of vulnerability versus flood zone to illustrate appropriate development and that required to meet the Justification Test.

Figure 2 – Table 3.2 – Page 26 of *The Planning System and Flood Risk Management Guidelines for Planning Authorities 2009*

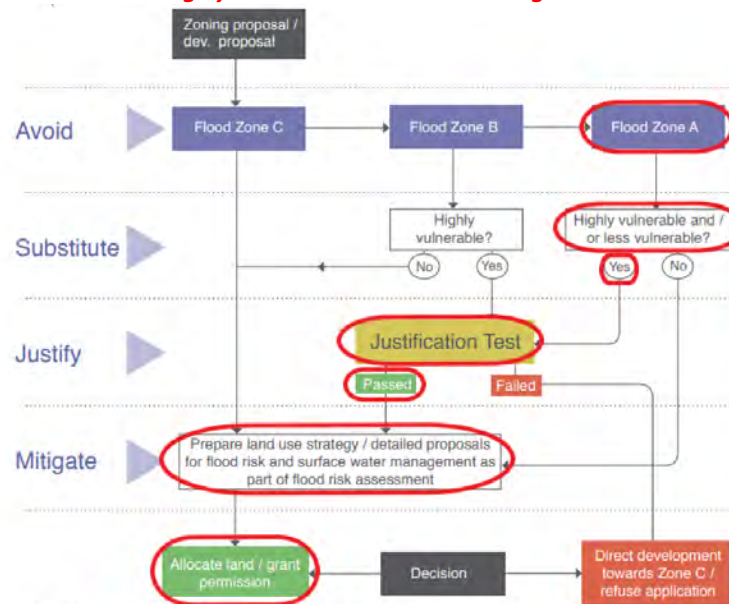


Fig. 3.2: Sequential approach mechanism in the planning process

Figure 3 – Figure 3.2 – Page 23 of *The Planning System and Flood Risk Management Guidelines for Planning Authorities 2009*

9. In the Draft Plan, LCCC has passed the Greenpark lands under the Justification Test. This is the correct result given the strategic location and characteristics of the lands, but having passed the Justification Test LCCC has then chosen to zone the lands *Enterprise & Employment*, for which there is no planning need, rather than *Residential*, for which there is a severe and urgent planning need. Under the PSFRMG, once the land has passed the Justification Test there is no restriction on the type of use that the land can be zoned for. The safety valve in all cases is the planning application process, including the necessity for any

applicant to further justify the safe development of the lands through the preparation of a detailed Site Specific Flood Risk Assessment (SSFRA) including the necessary Development Management Justification Test. During this follow up process, the applicant must satisfy the local authority that the lands can be safely developed without negatively impacting third party property before planning permission can be granted and if not then planning permission can be refused. In the case of the Greenpark lands, the landowner has already undertaken and submitted to LCCC a comprehensive and robust SSFRA including very detailed breach analysis modelling which is far more accurate than the information available to LCCC in the SFRA prepared by JBA Consulting for the Draft Plan. This SSFRA for Greenpark comprehensively illustrates how the entire masterplan can be delivered safely without negatively impacting third party property.

10. Greenpark passes the **Justification Test** for *Residential* on the following basis:

<p><b>The urban settlement is targeted for growth under the National Spatial Strategy, regional planning guidelines, statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended</b></p>	<p>The Limerick Shannon Metropolitan Area is targeted for growth under the National Planning Framework (NPF) and Regional Spatial and Economic Strategy (RSES) for the Southern Region. Limerick City and suburbs is targeted for significant and ambitious population growth of 50-60% (47,000 – 56,000 people) to 2040 with 50% of this growth is mandated to occur within the existing built-up area of the city, which would naturally include the subject lands, given their inner suburban location. Significant strategic sites such as Greenpark adjoining the city centre, as opposed to lands located in peripheral locations of the city, should be prioritised as required by all current planning guidance.</p> <p>This criterion is met by the subject lands.</p>
<p><b>The zoning or designation of the lands for the particular use or development type is required to achieve the proper planning and sustainable development of the urban settlement and, in particular:</b></p>	
<p><b>(i) Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</b></p>	<p>The Greenpark site is a strategically important zoned and serviced landholding of notable scale (47ha) located in the inner suburbs of Limerick City within 2km of the city centre and is in or adjacent the urban core. Within the Metropolitan Area, the area zoned as “City Centre” would correspond with the centre of the settlement. The undeveloped Greenpark lands consolidate the existing built up area between the City Centre and the natural boundary presented by the Ballinacurra Creek and N18. These greenfield and brownfield infill lands are therefore essential to facilitate the expansion and compact growth of Limerick City in accordance with national and regional planning policy.</p> <p>Moreover, the lands are explicitly identified in the <i>Limerick 2030 Interim Update June 2021</i> (see Volume 6 of the original Draft Plan) as part of the ‘<i>expanded plan</i>’ area described as follows:</p> <p><i>‘The expansion of the spatial plan allows it to consolidate this city identity and to ensure that the growth is managed in a way that not only avoids sprawl but actively reinforces the sense of a coherent urban area’. (see pg 78).</i> In this regard, the ‘<i>old Greenpark Racecourse</i>’ is identified as a ‘<i>City Gateway</i>’ clearly located within the inner part of the city and suburbs as delineated on page 79 of the interim update document. The graphic on page 85 also illustrates the subject lands as being comfortably within the 2.5km radius of the city centre and notes part of the site as being ‘<i>enterprise and employment</i>’ lands (site no. 21). The vision for the site in the expanded growth strategy is explained under the heading of “<i>Limerick Docklands</i>” (see pg 120) and is noted as “<i>Greenpark Racecourse</i>”</p>

	<p><i>site should be progressed as a major residential opportunity site” and it also allows for “provision of a c.12Ha enterprise and employment opportunity site accessed from Dock Road to supplement the IDA lands at capacity in the Castletroy/ UL neighbourhood”.</i></p> <p>Given this planning context, it is clear, therefore, that the lands are ‘essential to facilitate regeneration and/or expansion of the centre of the urban settlement’.</p> <p>This criterion is met by the subject lands.</p>
<b>(ii) Comprises significant previously developed and/or under-utilised lands;</b>	<p>The Greenpark site comprises a strategically important land bank of significance (47 ha) and constitutes the former Limerick racecourse, so is ‘previously developed’, having accommodated another land use with associated ancillary development. At present, the lands are grossly underutilised, having regard to their strategic locational context adjacent the core city area in the city’s inner suburbs proximate to several employment areas and public transportation corridors.</p> <p>This criterion is met by the subject lands.</p>
<b>(iii) Is within or adjoining the core of an established or designated urban settlement;</b>	<p><i>The Planning System and Flood Risk Management Guidelines for Planning Authorities 2009 PSFRMG defines the “Core of an Urban Settlement” as being “The core area of a city, town or village which acts as a centre for a broad range of employment, retail, community, residential and transport functions”.</i> It could be reasonably argued that the Dock Road area of Limerick City is actually part of the urban core of Limerick City as it satisfies the above definition but at the very least this location must be deemed “adjoining the core”.</p> <p>This criterion is met by the subject lands.</p>
<b>(iv) Will be essential in achieving compact and sustainable urban growth;</b>	<p>Limerick City is a designated growth centre in the NPF and RSES, whilst ambitious population and economic growth are explicitly supported in the current Draft Development Plan and the Limerick 2030 Plan Interim Update June 2021. All relevant planning policy (National, Regional and Draft Plan) require this growth to be delivered in accordance with the compact city model utilising underutilised brownfield and centrally located lands where possible.</p> <p>The projected growth of Limerick is earmarked to be accommodated in the city centre and the adjoining inner suburbs, where possible, in line with National planning policies and guidance in respect of the sequential approach to the zoning of land. The Greenpark lands are of scale (47 ha), so can deliver a significant contribution towards meeting both economic and residential growth targets in a sustainable location proximate to the city centre, employment centres, established social infrastructure and existing and emerging public transport corridors. The <i>Limerick 2030 Interim Update</i> (see Volume 6 of the initial Draft Plan) further supports these objectives and explicitly reference the subject lands as forming an important part of the ‘expanded plan’ strategy as both an employment (c.12 ha) and major residential opportunity site.</p> <p>The lands are essential in achieving this compact city model of sustainable urban growth being contiguous to the existing built-up area and promoting the use of cycling, walking and public transport. If the lands are not developed in this manner, it will promote the zoning and development of lands, particularly for residential purposes, in greenfield remote locations on the periphery of the existing built-up area at a significant remove (4km – 5km) from the city centre often requiring costly and significant new infrastructure and likely highly car dependent. This latter form of development is the antithesis of the ‘compact city’ and results in an unsustainable form of growth that will serve to undermine the overriding planning strategy guiding the growth of Limerick.</p> <p>This criterion is met by the subject lands.</p>
<b>(v) There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement</b>	<p>There are no suitable alternative lands to accommodate the appropriate combination of commercial and residential use within, or adjoining the city’s urban core area that are at a lower risk of flooding. All such lands have already been zoned appropriately by LCCC in the Draft Plan.</p> <p>This criterion is met by the subject lands.</p>



<p><b><i>A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere.</i></b></p> <p><b><i>N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment’.</i></b></p>	<p>In Appendix A.1.2 <i>Draft Strategic Flood Risk Assessment</i>, produced by JBA Consulting in support of the Draft Plan, the latter point of the Development Plan Justification Test for the Greenpark Lands states: “Any development proposals will have to address and manage flood risk with the site plans, typically through appropriate setting of finished floor levels, ground raising and use of the sequential approach within the development to ensure more vulnerable elements of the design are at a higher level. As breach is likely to happen rapidly, with little time for issue of a warning, consideration should be given to emergency access during a breach event and the means of ensuring the safety of all site users.”</p> <p>RPS have undertaken a detailed Site Specific Flood Risk Assessment (SSFRA) for the Greenpark Lands in accordance with the sequential approach required under the PSFRMG. The SSFRA was submitted to LCCC planning department in 2020. The SSFRA identified that the risk of flooding to the Greenpark Lands is low, as the OPW maintained Arterial Drainage scheme provides protection during both the 0.5% and 0.1% AEP tidal events. This was established previously by modelling during the OPW CFRAM process and, more recently, by comprehensive modelling undertaken by RPS to inform the SSFRA. The lands are still predominantly classed as Flood Zone A, in accordance with the PSFRMG, due to the residual risk of breach of the OPW embankments, which were constructed of a material of unknown origin. The focus of the RPS SSFRA was therefore to demonstrate, that during a breach scenario, the risk to property and life could be acceptably managed in the knowledge that this event could be sudden and without warning. The general approach to this was to raise the Greenpark lands above the predicted breach level with a suitable allowance for climate change and freeboard while ensuring there was no unacceptable adverse impacts to neighbouring lands or property. This was achieved and the mitigation measures provided the following benefits to ensure long term sustainability and a neutral impact on surrounding lands:</p> <ol style="list-style-type: none"> <li>1. There is no reliance on the existing OPW embankments to provide protection to the Greenpark Lands.</li> <li>2. The proposed mitigation is entirely self-sufficient, sustainable and will place no burden on Limerick City and County Council to provide additional flood defence infrastructure in the future.</li> <li>3. The Greenpark Lands will remain free from flooding during a 0.5% AEP Mid-Range Future Scenario event where overtopping of the existing defences occurs.</li> <li>4. The Greenpark Lands will be protected during a 0.5% AEP Mid-range Future Scenario event, even when a breach of the existing defences has also occurred.</li> <li>5. It has been robustly demonstrated that there is no increase in flood risk, even during a breach event, to surrounding developments.</li> <li>6. A clear access and egress route for emergency vehicles can be provided through Log na gCapall, even during a breach event. This is essential, given that Dock Road itself will be impassable due to the depth of water.</li> <li>7. All storm drainage will be attenuated to existing run-off rates and, therefore, will not cause capacity Issues on the existing network or raise the increase of flooding elsewhere.</li> </ol> <p>The RPS SSFRA, the analysis undertaken and the report produced meets the requirement of the final point of the Development Plan Justification Test. This is in agreement with the JBA SFRA, which corresponds with the approach undertaken by RPS and similarly states that the Greenpark lands met the stringent requirements of the Development Plan Justification Test.</p>
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# STRATEGIC HOUSING DEVELOPMENT AT LANDS AT THE FORMER GREENPARK RACECOURSE, LIMERICK CITY

## FLOOD RISK ASSESSMENT

IBE1706  
Greenpark SHD FRA  
F04  
September 2021

## FLOOD RISK ASSESSMENT

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### Approval for issue

Andrew Jackson



22 September 2021

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Prepared by:

**RPS**

Diane McGinnis  
Associate  
Elmwood House  
74 Boucher Road, Belfast  
Co. Antrim BT12 6RZ

**T** +44 2890 667 914  
**E** diane.mcginis@rpsgroup.com

Prepared for:

**Voyage Property Ltd**

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## NON-TECHNICAL SUMMARY

RPS were commissioned to carry out a Flood Risk Assessment (FRA) in support of a strategic housing development (SHD) for Greenpark, Limerick. The purpose of this assessment is to ensure that the proposed development takes cognisance of the existing flood risk and does not result in increased flood risk elsewhere. This report has been prepared in accordance with the requirements of 'The Planning System and Flood Risk Management' Guidelines (DEHLG 2009).

The River Shannon flows at a distance to the north of the site and a small tributary, the Ballynaclogh River, flows to the west of the site. Both of these rivers can be considered to be tidal at this location. There are flood embankments along both the River Shannon and the Ballynaclogh River.

The Shannon Catchment Flood Risk Assessment and Management (CFRAM) Study maps indicate that the 0.5% AEP coastal flood event does not reach the application site. This is because of the protection afforded by the existing flood defences. Following the sequential approach as set out in 'The Planning System and Flood Risk Management Guidelines' the effects of any existing defences must be ignored when establishing flood zoning. Using this approach, the majority of the SHD site is considered at low risk and in Flood Zone C. However, areas of the site are in Flood Zone A, with a very small section of the land being contained within Flood Zone B. In accordance with 'The Planning System and Flood Risk Management Guidelines' a Development Management Justification Test to be carried for a residential development within Flood Zones A and B.

In accordance with Paragraph 5.16 of the Guidelines, a precautionary approach to development behind existing defences is to raise the finished levels to at least the 1% fluvial or 0.5% AEP coastal flood level with an appropriate allowance for freeboard and climate change. This approach has been adopted for the SHD area where a freeboard of 500mm and allowance for climate change (sea level rise) of 500mm has been provided to all Finished Floor Levels. This provides a minimum of a 1m elevation to all new properties above the 0.5% AEP breach flood level, thus providing a very high standard of protection.

Modelling of the impact of raising the proposed development was then undertaken considering both the 0.5% AEP and 0.5% AEP climate change (MRFS) flood events when a breach of the defences occurs. The results of the modelling showed that there was no identified increase in risk to existing development as a result of the site raising, either in the present day or climate change scenarios.

A nursing home is proposed adjacent to the SHD site. This is a separate planning application, however this FRA has included an assessment of the cumulative impact of both developments. The nursing home site will be filled to a FFL of 6.3m OD. This development is already in flood zone C and already has levels in the vicinity of this. Breach analysis has confirmed that there is no increase in flood risk to existing



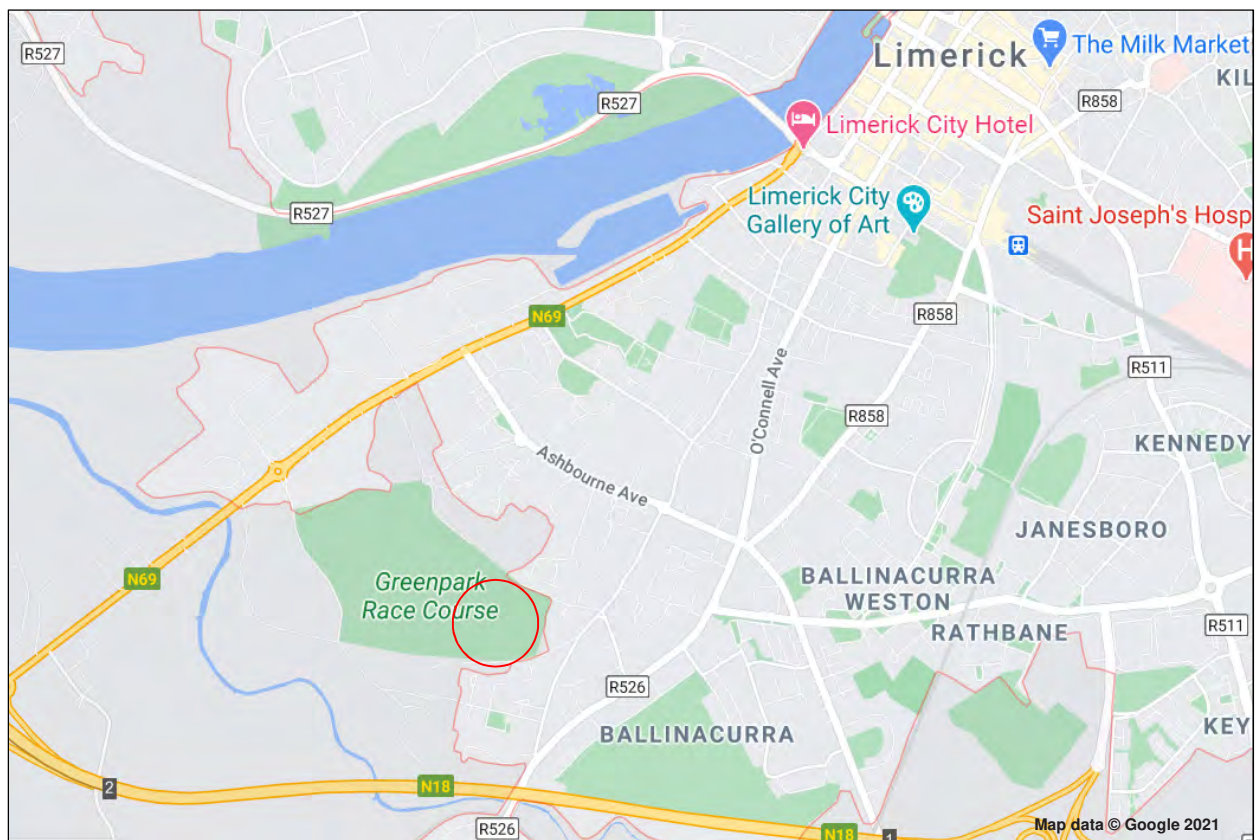
developments with both the nursing home and SHD sites raised, either in the present day or climate change scenarios.

A new surface water sewer network shall be provided for the proposed development which will be entirely separate from the foul water sewer network. Surface water run-off from roof areas and hardstanding areas are designed to be collected by a gravity pipe network. Surface water will be collected and discharged via a mixture of traditional and Sustainable urban Drainage System (SuDS) to the existing 1350mm/ 1500mm diameter surface water sewer. This sewer discharges the existing lagoon adjacent to the Ballynaclogh River. Both the pipe and the lagoon were designed to take into account future developments. The lagoon attenuates flows to Greenfield discharge rate and discharges to the Ballynaclogh River through the use of a penstock structure. SuDS measures include green roofs, tree pit systems, permeable surfacing, infiltration trenches, swales, rain gardens and attenuation tanks.

Based on the proposed mitigation measures, consideration of the designated zoning and the proposed urban design, each of criteria in the Development Management Justification Test was shown to be satisfied. Therefore it was concluded that the proposed development complies with the requirements of the Development Management Justification Test and hence is compliant with 'The Planning System and Flood Risk Management Guidelines'.

# 1 INTRODUCTION

Voyage Property Limited intend to apply to An Bord Pleanála (the Board) for permission for a strategic housing development (SHD) with a total application site area of c.10.5 ha (with a substantive residential site development area of c.7.9 ha), on lands at the former Greenpark Racecourse, located off Dock Road (N69), Limerick. The strategic housing development will consist of the provision of 371 no. residential units and a childcare facility, along with a new access road. The general location of the site is shown in Figure 1.1.



**Figure 1.1** Location map

RPS were commissioned by Voyage Property Limited to carry out a Flood Risk Assessment (FRA) in support of the strategic housing development application. The purpose of this FRA is to define the flood risk to the proposed development and demonstrate that, with appropriate mitigation, the subject lands can

## FLOOD RISK ASSESSMENT

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be safely developed as housing in accordance with the requirements of 'The Planning System and Flood Risk Management' Guidelines<sup>1</sup>.

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<sup>1</sup> The Planning System and Flood Risk Management Guidelines, DEHLG (2009)

## 2 SITE DESCRIPTION

The strategic housing development site has a total application site area of c.10.5 ha (with a substantive residential site development area of c.7.9 ha), on lands at the former Greenpark Racecourse, located off Dock Road (N69), Limerick. The site is principally bounded by existing undeveloped lands to the north, south and west and the adjoining Log na gCapall Housing Estate to the east. The application site includes the proposed access road which joins into the Dock Road at the north-western corner of the former Greenpark Racecourse lands and runs adjacent to the Limerick Greyhound Track. A location map showing the site boundary is shown in Appendix A. Figure 2.1 shows an aerial photo of the development site with the SHD site extent highlighted in red.



**Figure 2.1** Aerial photograph indicating the extent of the SHD site

The River Shannon flows at a distance of approximately 500m to the north, and one of its tributaries, the Ballynaclogh River, flows to the west of the site. There is a line of existing flood defences along both the Ballynaclogh River and the River Shannon which offer a good standard of protection to this area of Limerick. More details on the defences is provided in Section 3.

### 3 EXISTING FLOOD RISK

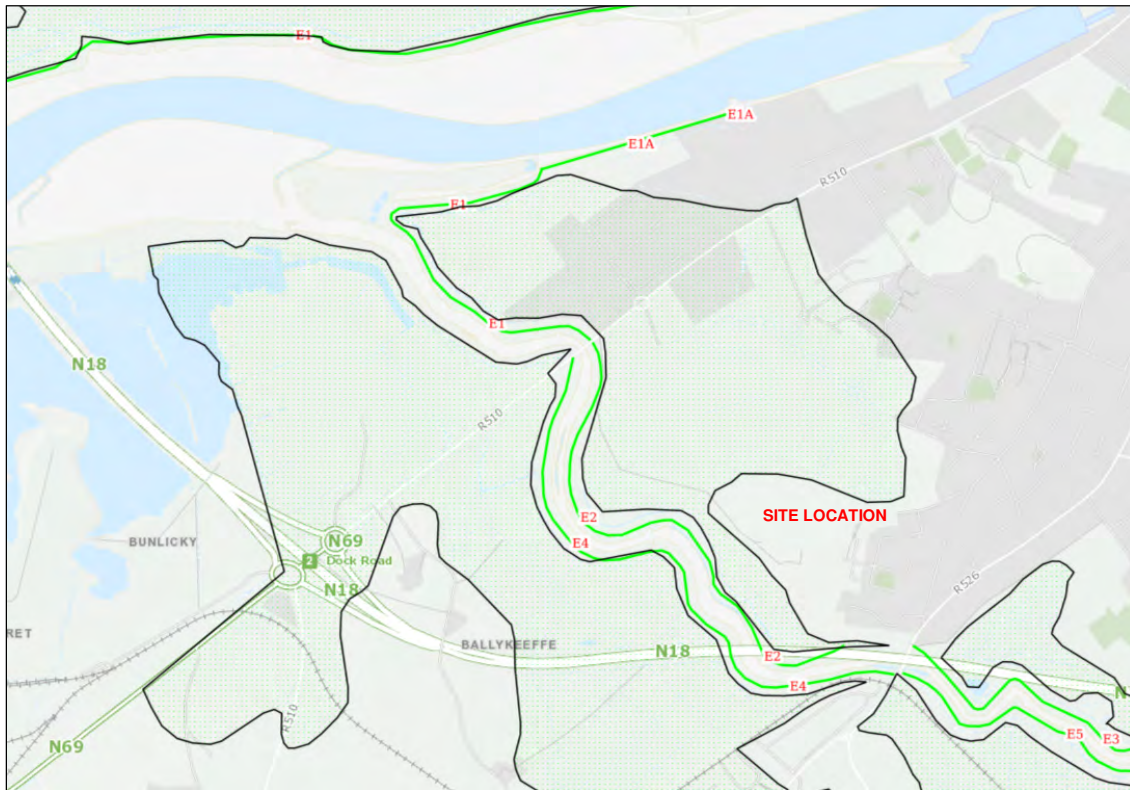
The National Catchment-based Flood Risk Assessment and Management (CFRAM) Programme was developed by the Office of Public Works (OPW) to meet national policy needs and the requirements of the EU Floods Directive. As part of the Shannon Catchment-based Flood Risk Assessment and Management (CFRAM) Study, Limerick was identified as an Area for Further Assessment (AFA). This meant that the watercourses in the area were modelled and flood maps produced which can be used to establish the existing flood risk at a site. The maps are available to download from the OPW Flood Info website<sup>2</sup>.

#### 3.1 Existing Flood Defences

The defences along the Ballynaclogh River and the Shannon Estuary were built by the OPW under the Arterial Drainage Act, 1945. Arterial Drainage Schemes were carried out to improve land for agriculture and to mitigate flooding. The intention of building the embankments was initially to provide protection against the 3 year flood but in many locations the embankments have been raised further over time and a much higher standard of protection is provided. That can be said of the embankments at this location which have been constructed along the estuary to a height of approximately 5.2m OD and along the Ballynaclogh River to a height in excess of 6m OD. Figure 3.1 has been extracted from the floodinfo.ie website which provides records of the various drainage districts and the embankments located within them. At this location there are three embankments which offer protection to the SHD area denoted on Figure 3.1 as E1A, E1 and E2. The defences also continue further into Limerick towards Ted Russell Dock but these are in private ownership and are therefore not shown on this mapping.

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<sup>2</sup> OPW Flood Maps available at <http://www.floodinfo.ie/map/floodmaps/>



**Figure 3.1 Extract of Arterial Drainage Districts mapping showing defences and benefitting areas**

The embankments are constructed of unknown material, and indeed it can be assumed that they are constructed of varying grades and types of strata including estuarine mud, which is known to have been used at various points along the estuary. These defences extend for miles down the estuary on both banks. At this particular location the embankments provide a good standard of protection to all properties along the Dock Road which would otherwise be frequently inundated to a significant depth. Despite there being no historical risk of breach at this location, it remains a possibility and therefore will be addressed in the mitigation measures required to ensure the safety of the SHD site. RPS have not carried out any visual or intrusive testing of the embankments, instead the strategy is to propose a series of mitigation measures which in no way rely on the protection afforded by these existing defences.

### 3.2 Fluvial Flood Risk

The CFRAMS maps show that the site is not at risk of fluvial flooding. An extract from the CFRAM Study Fluvial Flood Extents Map is shown in Figure 3.2, and the full map is shown in Appendix B. Fluvial flooding is not therefore considered further in this report.

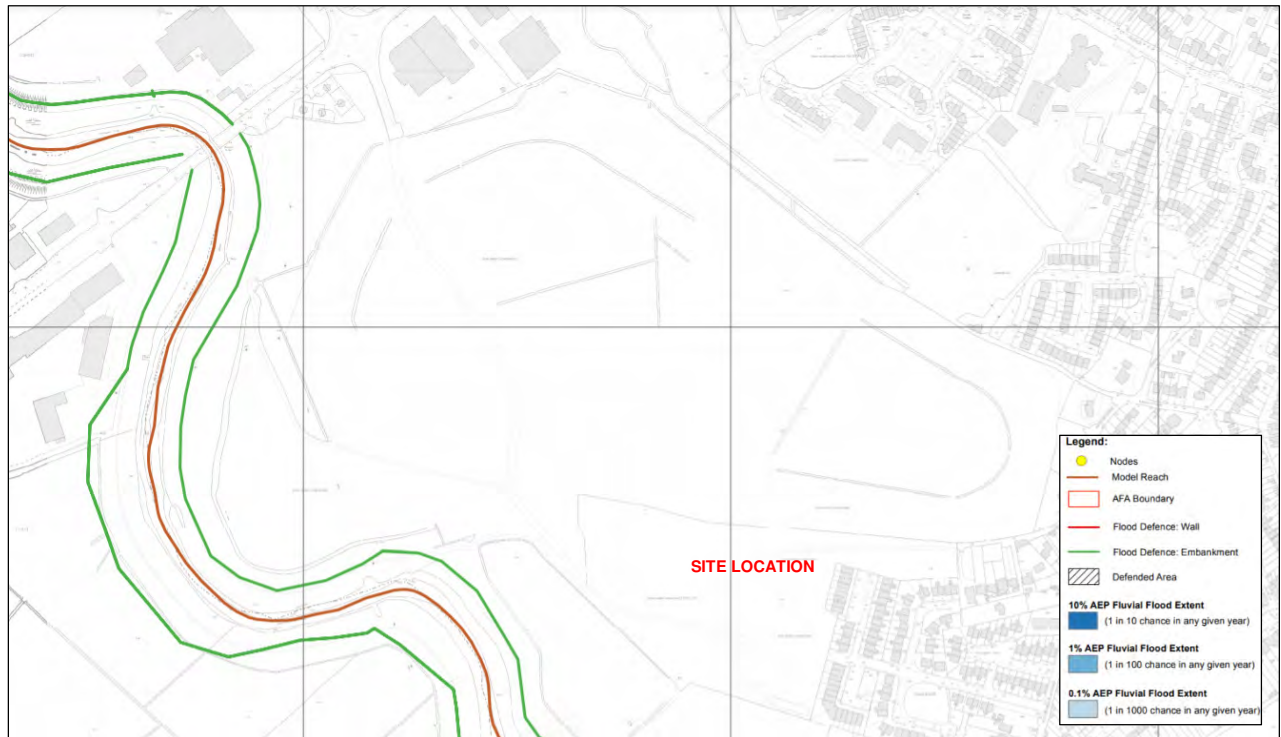
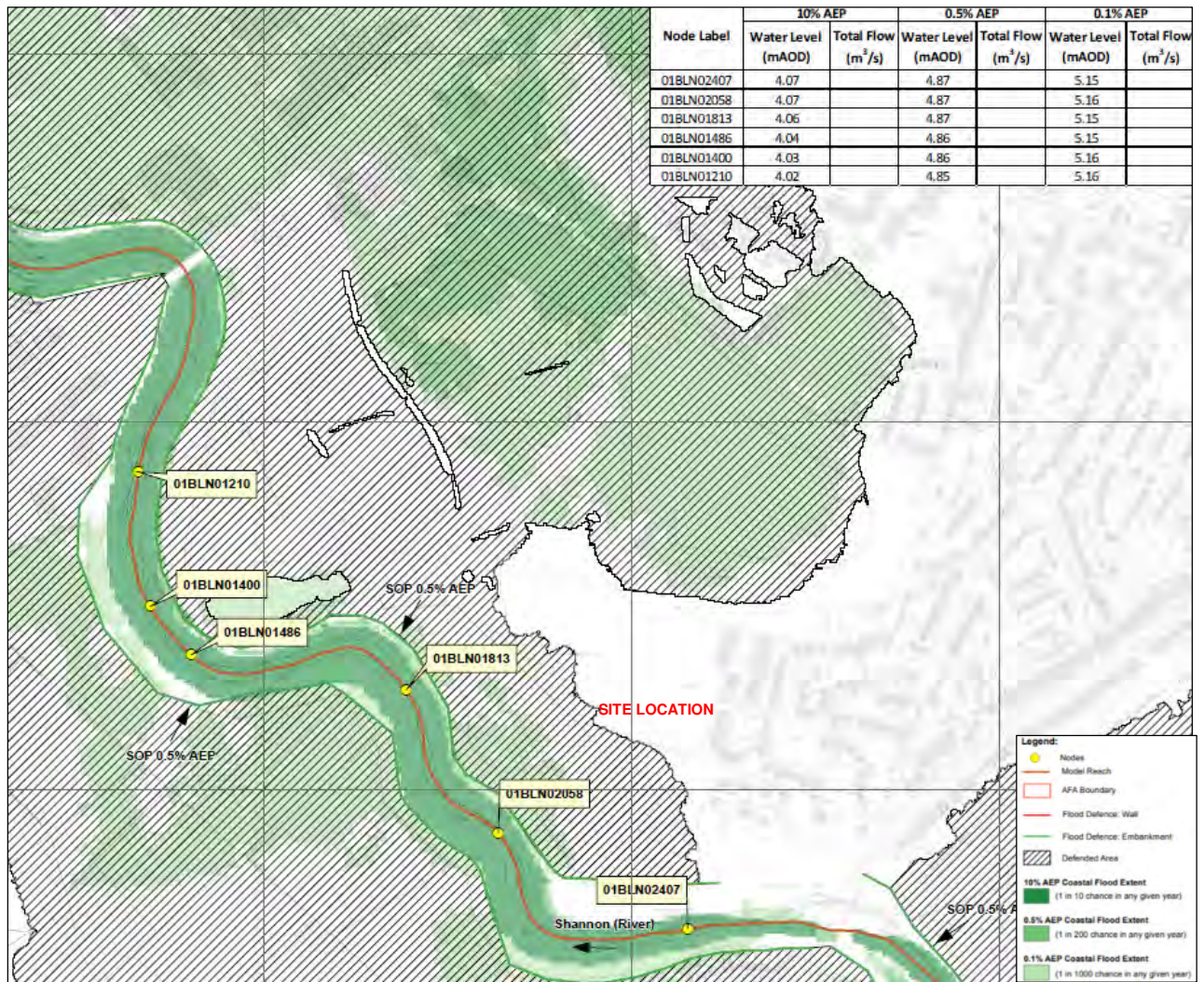


Figure 3.2 Extract from CFRAMS fluvial flood extents map

### 3.3 Coastal Flood Risk

The CFRAMS maps show that the site has some areas which are defended from coastal flooding by flood embankments along the Ballynaclogh River which have a standard of protection of 0.5% AEP. There are some areas of the site which are at risk of coastal flooding in a 0.5% AEP event from the River Shannon to the north, as the defences in this area only have a standard of protection of 2% AEP. There are also some areas within the site that are not at risk of coastal flooding. Extracts from the CFRAM Study Tidal Flood Extents Maps are shown in Figures 3.3 and 3.4, and the full maps are shown in Appendix B.

FLOOD RISK ASSESSMENT





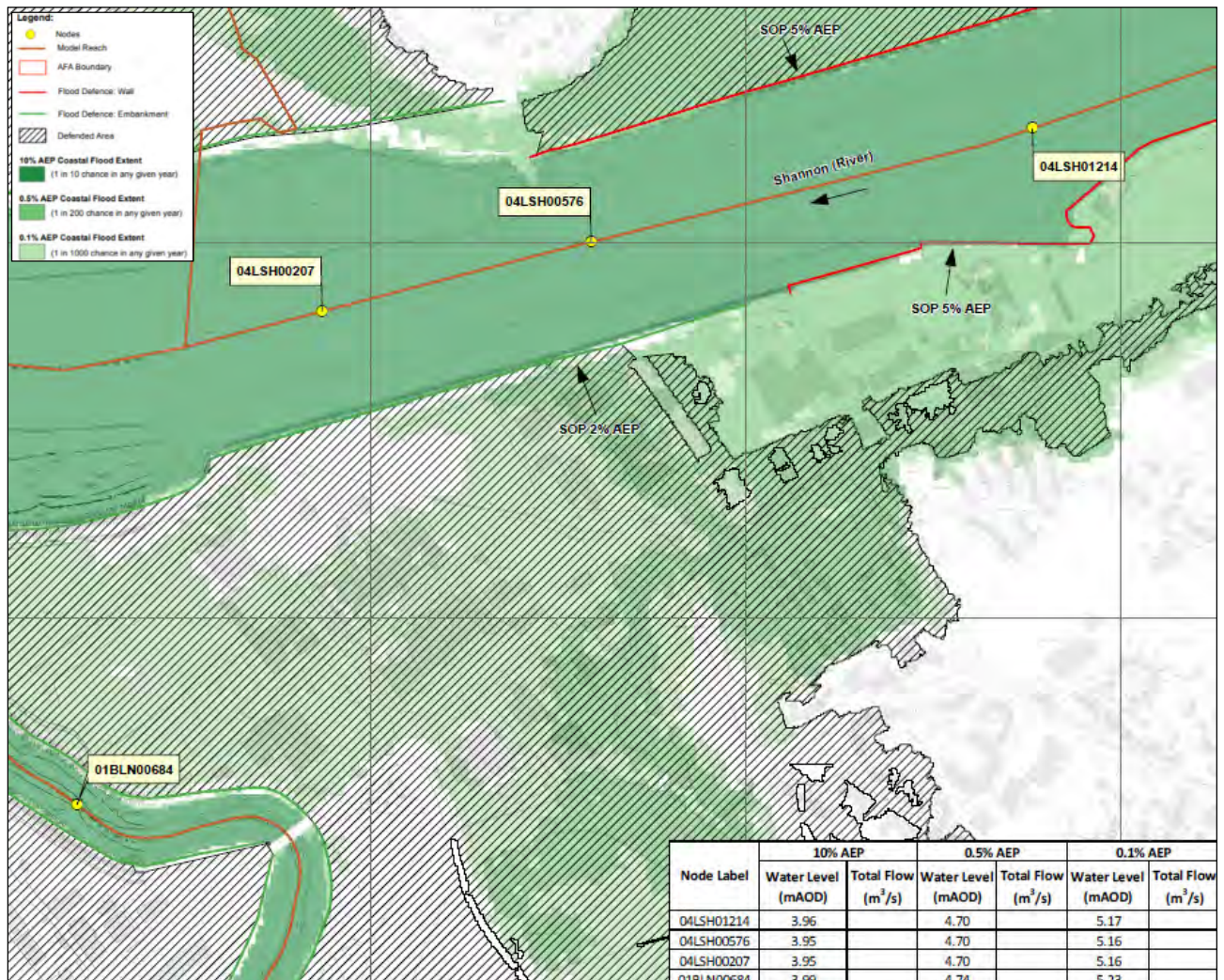


Figure 3.4 Extract from CFRAMS tidal flood extents map (River Shannon)

### 3.4 Flood Zones

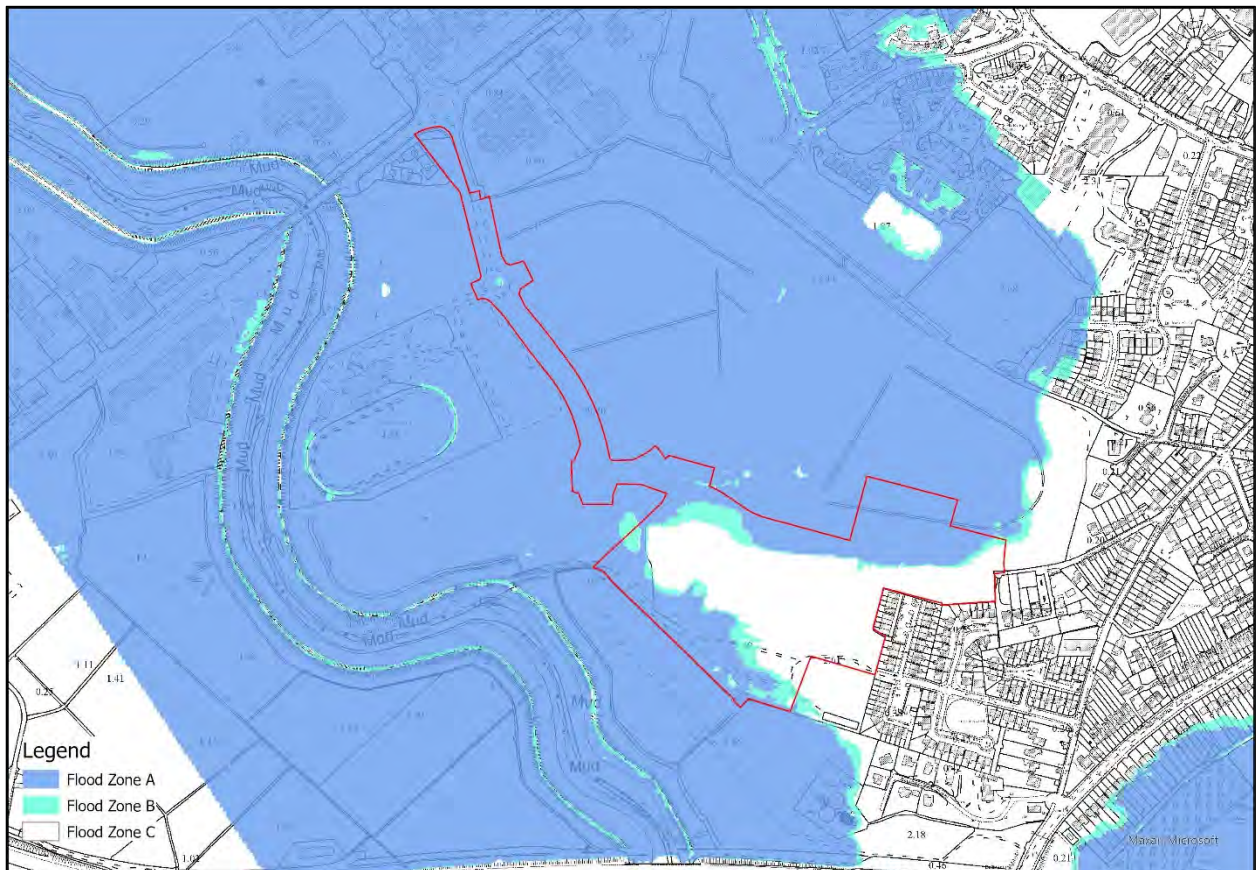
Under the requirements of 'The Planning System and Flood Risk Management' Guidelines (2009), when considering existing flood risk it is necessary to assign flood zoning to the proposed development site. Flood zoning is defined as:

- **Flood Zone A:** areas where the probability of flooding from rivers and the sea is highest (greater than 1% for river flooding or 0.5% for coastal flooding);
- **Flood Zone B:** areas where the probability of flooding from rivers and the sea is moderate (between 0.1% and 1% for river flooding, and between 0.1% and 0.5% for coastal flooding);

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- **Flood Zone C:** Areas where the probability of flooding from rivers and the sea is low (less than 0.1% for both river and coastal flooding).

An important consideration for this particular location is the presence of the existing defences which, although offering a good standard of protection even during extreme flood events, must be ignored for the purpose of flood zoning. This is stated in Paragraph 2.25 of the Guidelines and is required because areas protected by flood defences still carry a residual risk of flooding from overtopping or breach of defences, and there is no guarantee that the defences will be maintained in perpetuity. Figure 3.5 shows the flood zones for the site, as determined by RPS based on the CFRAMS information. Figure 3.5 shows that the majority of the site where housing is being proposed is in Flood Zone C (white areas), however areas of the site can be considered to be in Flood Zone A (dark blue), with a very small section of the land being contained within Flood Zone B (light blue).



**Figure 3.5 Flood zone identification**

Given the flood zoning identified in Figure 3.5, the Planning System and FRM Guidelines provide direction on the type of development appropriate to each flood zone. This is shown in Table 3.2 in Guidelines, which is reproduced in this report as Figure 3.6.

	Flood Zone A	Flood Zone B	Flood Zone C
Highly vulnerable development (including essential infrastructure)	Justification Test	Justification Test	Appropriate
Less vulnerable development	Justification Test	Appropriate	Appropriate
Water-compatible development	Appropriate	Appropriate	Appropriate

Table 3.2: Matrix of vulnerability versus flood zone to illustrate appropriate development and that required to meet the Justification Test.

**Figure 3.6 Flood zones and appropriate development**

As described above, a large part of the SHD site is in Flood Zone C, however there are some areas that can be considered to be in Flood Zones A and B. Table 3.2 of the Guidelines (Figure 3.6) shows that for residential development (highly vulnerable) in Flood Zones A and B, the Justification Test will need to be applied and fully satisfied before development can be permitted.

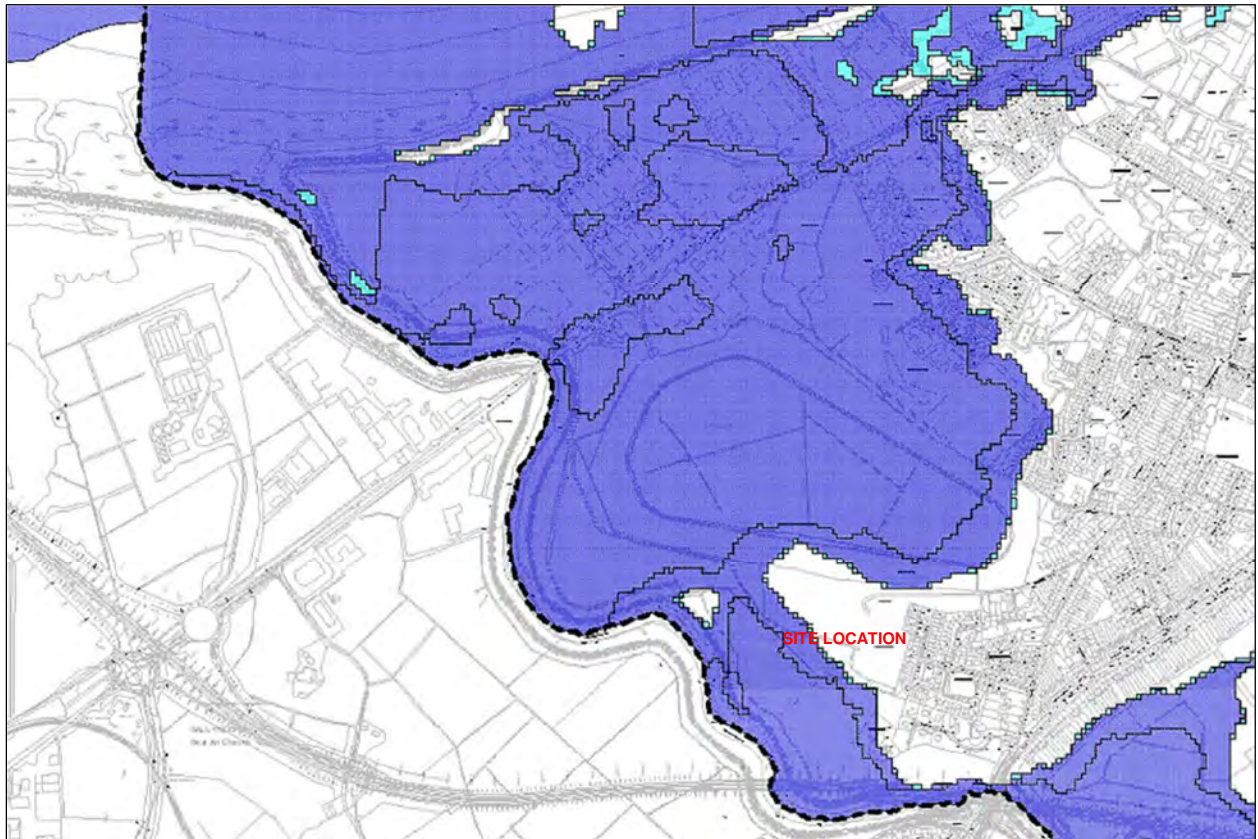
### 3.5 Justification Test Application

The Greenpark Lands have been zoned for both General Mixed Use, Neighbourhood Centre and Residential uses since 2010 as per the Limerick City Development Plan 2010-2016<sup>3</sup>, which was adopted with the benefit of the application of the provisions of the Planning System and Flood Risk Management Guidelines for Planning Authorities 2009. Page 12.19 of the Limerick City Development Plan 2010-2016 states:

*“Limerick City Council shall have full regard to these guidelines within the Limerick City Development Plan 2010-2016, with particular reference to lands zoned for development. In this regard Limerick City Council has provided Map 2 - Flood Risk Areas in Appendix I. This map indicates the zones of High Probability and Moderate Probability of flooding as set out in Chapter 3 of the guidelines. Proposed developments in these zones must have regard to the guidance provided”.*

<sup>3</sup> Limerick City Development Plan 2010-2016 (as extended)

The portion of Map 2 (referred to in the extracted text above) relating to the Greenpark lands is shown in Figure 3.7, and this shows an almost identical flood extent to the flood zoning produced by RPS as shown in Figure 3.5.



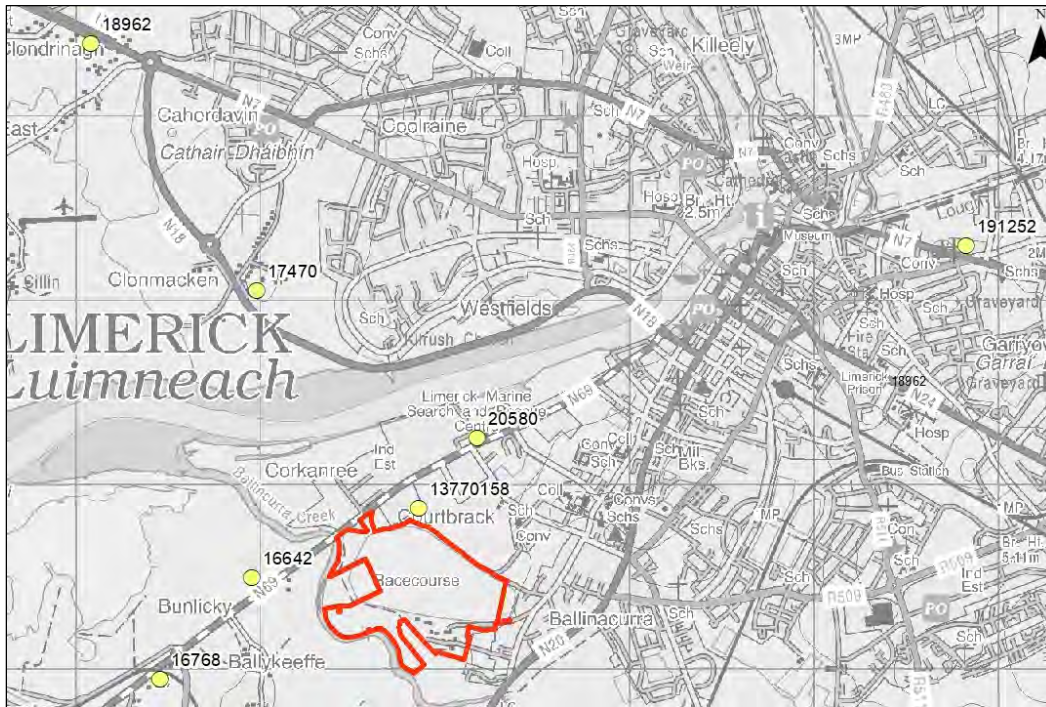
**Figure 3.7 Extract of Map 2 from the Limerick City Development Plan 2010-2016**

This demonstrates that the flood risk which informed the 2010-2016 Development Plan was accurate and well documented. Subsequently, the Development Plan Justification Test must have been applied and passed in order for the General Mixed Use, Neighbourhood Centre and Residential uses zonings to be established for the Greenpark Lands. Given that the Development Plan Justification Test has been applied there is only a need to comply with the Development Management Justification Test as part of this application.

RPS have reviewed a number of recent planning decisions (typically over the last 4- 5 years and as recently as 2020) in the LCCC administrative area, all located within Flood Zones A/ B. It would appear that all FRAs submitted with these applications applied the Development Management Test only (see Figure 3.8 showing the approximate locations and related planning reference numbers). This approach seems to have been accepted by LCCC based on the internal Council assessments in each case as being the

**FLOOD RISK ASSESSMENT**

appropriate methodology. This would support RPS' position that the use of the Development Management Justification Test is similarly correct in relation to the FRA for the SHD site at Greenpark.



**Figure 3.8** Locations and planning reference numbers of recent applications

## 4 PROPOSED DEVELOPMENT

### 4.1 Masterplan Development

The SHD site is part of the overall development of the Greenpark lands. A wider masterplan has been prepared of these lands in their entirety and it encompasses multi-phased residential development and office campus, neighbourhood centre and public open spaces adjacent to Bord na gCon greyhound stadium along Ballynaclogh River. The office floor plates will be designed with greater flexibility and adaptability to local and multinational demands. A neighbourhood centre will be strategically located to serve the need of the local community and residents.

The residential component of the Masterplan consists of 920 dwelling units, crèche and residential amenity spaces. The development will be carried out in several phases. The first phase of the development includes a strategic housing development application for 371 dwelling units with a residential density of 47 units/ha, crèche and other associated ancillary uses in line with the Masterplan. The overall Masterplan is shown in Figure 4.1. Note that the Masterplan has been updated since the original masterplan document (Nov 2019) was issued in order to reflect the changes to the SHD site.

An FRA in support of the Masterplan for the Greenpark area was previously prepared by RPS and has been reviewed by Limerick City and County Council Water Services Department, who in a meeting with RPS confirmed verbally that they accepted the technical work presented and mitigation measures proposed. The flood risk assessment accompanying the Masterplan sets out how the lands can be developed safely in accordance with the Planning System and Flood Risk Management Guidelines. It demonstrates the necessary mitigation measures to ensure the entire Masterplan area can be protected to the required standard (including considering the breach scenario and climate change) and importantly that there is no increase in risk to existing developments. The flood risk mitigation measures that are proposed for the SHD site will align with those from the FRA prepared in support of the overall Masterplan from November 2019.



**Figure 4.1 Overall Masterplan**

## **4.2 Strategic Housing Development (SHD)**

The strategic housing development with a total gross floor area of c. 36, 329 sq m will consist of the provision of 371 no. residential units comprising 157 no. two storey houses (consisting of 10 no. 4 bedroom units, 110 no. 3 bedroom units and 37 no. 2 bedroom units); 76 no. three storey duplex units (consisting of 14 no. 3 bedroom units, 38 no. 2 bedroom units and 24 no. 1 bedroom units) and 138 no. apartments (consisting of 92 no. 2 bedroom units and 46 no. 1 bedroom units arranged in 3 no. blocks ranging between 4 and 5 storeys together with communal amenity space) and a childcare facility (550 sq m), including all private, communal and public open space provision (including balconies and terraces to be provided on to front and rear elevations and related play areas); surface car parking (510 no. spaces in total, including car sharing and accessible spaces); electric vehicle charging points; bicycle parking (long and short stay spaces including secure stands); storage areas; internal roads and pathways; hard and soft landscaping and boundary treatments; piped infrastructural services and connections; plant; revised entrances and tie-

in arrangements to adjoining roads, including emergency access via Log na gCapall and Greenpark Avenue; waste management provision; solar panels; attenuation tank and related SUDS measures; signage; public lighting; bulk earthworks; and all site development and excavation works above and below ground. Vehicular access to the site will be from Dock Road, via the proposed access road. The proposed layout for the SHD site is shown in Figure 4.2 and in Appendix C.



**Figure 4.2 Proposed SHD layout**

This FRA report has been prepared in accordance with the Masterplan FRA, ensuring that all developments constructed in the short term do not compromise the flood protection afforded to buildings constructed in the future or vice versa.

The purpose of this FRA is to demonstrate how, given the flood risk identified in Section 3, the strategic housing development area can be safely developed in a manner that is fully compliant with the Planning System and Flood Risk Management Guidelines. In that respect there are a number of key principles which must be addressed in order to pass the Development Management Justification Test, these are:



- Firstly, demonstrating that during a 200 year (0.5% AEP) event and during a 200 year (0.5% AEP) Climate Change event there is no risk to the proposed development or increase in flood risk elsewhere.
- Secondly, Paragraph 5.16 of the Guidelines states that a precautionary approach should be applied for developments located behind existing defences. It suggests that an appropriate mitigation measure would be to set floor levels above the 0.5% AEP flood level (for a site affected by coastal flooding) and to include for the effects of climate change. When determining this 0.5% AEP level the effect of defences should be ignored.

Addressing these key issues is best practice in demonstrating compliance with the Development Management Justification Test as set out in Box 5.1 of the Planning system and Flood Risk Management Guidelines. Section 5 of this report describes the mitigation measures that address these criteria and the numerical modelling undertaken to demonstrate their effectiveness. Section 6 describes compliance with the Justification Test.

### 4.3 Nursing Home

A nursing home is proposed adjacent to the SHD site. This is a separate planning application that has been submitted to LCCC for their consideration (Ref. no. 21/1222). In order to complete a comprehensive assessment, this FRA for the SHD site has considered the cumulative impact of both developments.

The nursing home is 4 storeys in height with a total gross floor area of c.5,237 sq m, consisting of 123 no. rooms, comprising 126 no. bedspaces (120 no. single rooms and 3 no. double rooms) and ancillary facilities, including 777 sq m of day space. The nursing home development will also consist of soft and hard landscaping, car and bicycle parking spaces; 3 no. electric parking spaces; bicycle parking; internal roads and pathways. The location of the Nursing Home development in relation to the SHD site is shown in Figure 4.3, and its proposed layout is shown Figure 4.4.



Figure 4.3 Location of Nursing Home Development with respect to the SHD site



Figure 4.4 Proposed Nursing Home ground floor layout

## 5 PROPOSED MITIGATION MEASURES

Any mitigation measures proposed must be robust, sustainable with respect to climate change, and not place any burden on the city of Limerick, whereby there would be a requirement in the future to provide additional flood defences and capital expenditure to protect this development. It is also acknowledged that under the CFRAM process, where Limerick was an Area for Further Assessment (AFA), a significant capital scheme was proposed. This scheme is currently being progressed under the OPW Capital Works Framework and should be developed over the next 10-15 years. While there is no doubt a scheme of this nature would further benefit the Masterplan lands, RPS also recognise there is no guarantee a scheme will be developed as it will be subject to a cost-benefit analysis and availability of government funding. Conversely there is also a need to ensure mitigation measures proposed as part of this SHD application in no way compromise the development of a suitable flood alleviation scheme for Limerick.

### 5.1 Model Construction

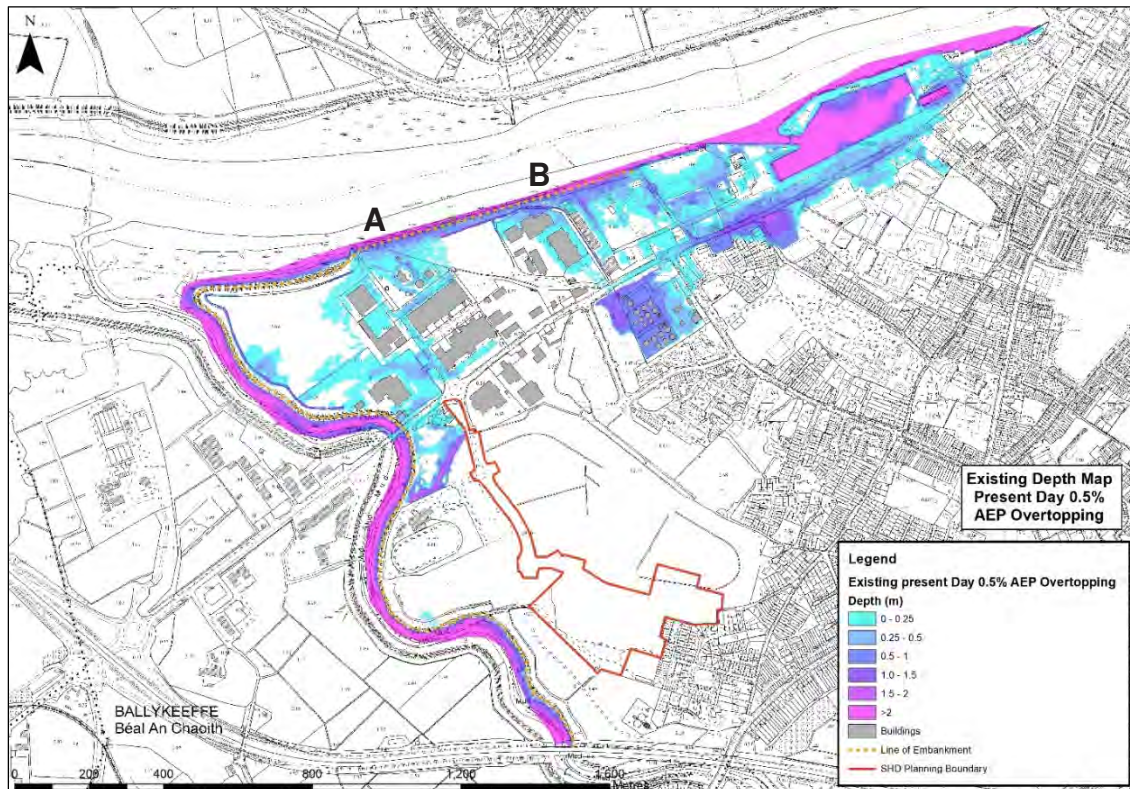
In order to be able to assess the impact of any proposed mitigation measures RPS have developed a site specific model incorporating the Masterplan area. As the SHD lands are located behind existing defences it is obvious there is no impact on the Ballynaclogh River either upstream or downstream, or the Shannon Estuary. Instead the model has been developed specifically to understand the impact of the defences overtopping and also breaching, ensuring that the SHD area is resilient to these flooding mechanisms and doesn't adversely affect adjacent property and land.

RPS have constructed an InfoWorks ICM 2D model of this area of Limerick based on a Digital Terrain Model (DTM) constructed from LiDAR data which covers this area of Limerick. This has been supplemented by more detailed topographical survey of the existing flood defences to capture any low points or defects. The LiDAR provides a high-resolution survey that is sufficient for establishing the effects of overtopping and breaching of the existing flood defences. RPS have utilised the 0.5% Annual Exceedance Probability (AEP) flood levels for the Shannon Estuary and for the Ballynaclogh River that were developed in the CFRAM study. These provide the best available estimation of the predicted water level during extreme coastal events for this return period.

In addition, RPS have improved upon the CFRAM inundation modelling by incorporating all of the existing buildings within Dock Road area within the model and blocked these out to prevent flow through them. This is a significant addition to the modelling undertaken during the CFRAM process as it can identify new flow paths as the water passes between buildings.

## 5.2 Modelling of Existing Situation

As a baseline model run, RPS used the peak tidal levels from the CFRAM study in the estuary and Ballynaclogh River to run a 0.5% AEP flood inundation simulation. This model was run over 72 hours, covering tidal cycles leading up to and after the 0.5% AEP event, with an appropriate tidal curve reflecting the rising and falling level of the flood and ebb tide during an extreme storm surge event. As stated previously, the majority of the defences surrounding the Dock Road area are sufficiently high enough to prevent inundation and overtopping, however there is a lower section near to the Ted Russel Dock where a limited amount of flooding can occur. The flood mapping output from this model simulation is shown in Figure 5.1.



**Figure 5.1 Flood depth map showing impact of 0.5% AEP flood inundation simulation**

The model simulation indicates overtopping at two locations (Points A and B on Figure 5.1) where the defences are insufficiently high to prevent inundation. From this model run it can be concluded that there is no risk to the SHD lands during a 0.5% AEP flood event, providing defences are only overtopped and not breached. As the 0.5% AEP water level does not inundate the proposed development area in the existing scenario there can be no increase in water level as a result of constructing the proposed development, and therefore no further assessment is required in this regard.

### 5.3 Development and Modelling of Mitigation Measures

As stated previously in this FRA, when quoting Paragraph 5.16 of the Planning System and Flood Risk Management Guidelines, there is a need to ensure a precautionary approach when developing behind existing defences. It suggests that the mitigation measures for dealing with that risk would be to set finished floor levels at the 0.5% AEP flood level (for coastal flooding) ignoring the moderation effects of flood defences. Following this logic, to address the impact of the inundation from the 0.5% AEP Climate Change event (Mid-range Future Scenario), it is proposed to raise the level of the SHD site to minimise the residual risk. By raising levels on the site it will provide sufficient protection to the proposed development, but it raises the question if it could also increase the risk of flooding to surrounding land and existing development. RPS have therefore carried out a comprehensive modelling exercise focussing on the breach scenario to ensure there is no increase risk to adjacent developments should this occur. This was tested for the 0.5% AEP and 0.5% AEP Mid-range Future Scenario (MRFS) events.

### 5.4 Breach Analysis of the Flood Defences

Given the number of residential properties in the application, a robust assessment of residual risk is required. The original purpose of the existing defences and the unknown make-up of their construction means it is necessary to undertake a breach analysis at certain locations along both the Ballynaclogh River and the Shannon Estuary to assess the impact of such an event on the proposed and existing developments. Breach analysis was undertaken using the UK Environment Agency's guidance on breach modelling which was also adopted for use during the CFRAM process. It was undertaken at three locations:

**Breach 1** – along the Estuary at the rear of McMahon Building Providers;

**Breach 2** – along the lower reaches of Ballynaclogh River;

**Breach 3** – on the Ballynaclogh River upstream of the Greyhound Stadium.

All breaches were run over a 72 hour tidal cycle, with the breach set to occur 1 hour before the peak of flood. At this time in the simulation a 50m section of the embankment is removed with the spill level being reduced to existing ground levels on either side of the defence. A separate map was produced for each location, i.e. it is assumed only one breach occurred at a time. All three breach locations produced approximately the same flood extent. As an example and for easy reference, the 0.5% AEP extent for the existing lands for Breach Location 2 has been included as Figure 5.2, and the breach maps for Locations 1 and 3 have been provided in Appendix D.

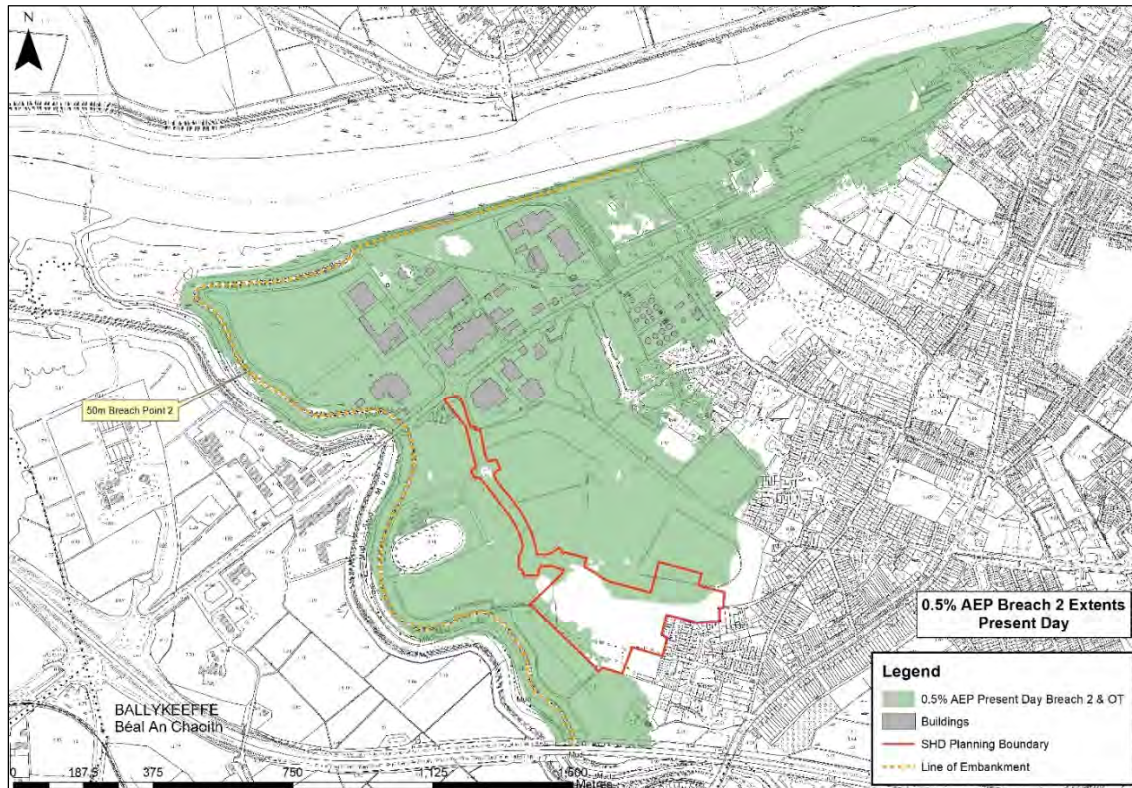


Figure 5.2 Breach location 2- 0.5% AEP event with existing ground levels

## 5.5 Mitigation Measures for Breach Scenario

### 5.5.1 Derivation of Design Flood Level

In the Tripartite meeting with Limerick City and County Council (LCCC) and An Bord Pleanála, LCCC stated that their preference was to use the 4.87m OD level as the design flood level for the site. This flood level was derived for the 0.5% AEP flood event in the Ballynaclogh River during the Shannon CFRAM Study. RPS agree that this level can be reached during a 0.5% AEP event in the river when the water is contained by the defences, but it can never be realised at the SHD site during an event of this magnitude. This is because, once the defences are breached, the water spreads out across the entire Dock Road/ Greenpark area resulting in a significant reduction in the 0.5% AEP flood level by the time the water from the breach reaches the proposed development site.

From the three breach simulations (as described in Section 5.4 of this FRA), the maximum derived water level within the immediate vicinity of the SHD was 4.3m OD. This approach in deriving an actual breach flood level at the application site is considered acceptable by Limerick City and County Council as noted in

the draft SFRA completed in support of the current Draft Development Plan 2022-2028<sup>4</sup>, which states in Section 5.8.1:

*“Breach modelling – for more complex and higher value developments, bespoke breach modelling can be undertaken in which the overtopping or breach of a flood defence can be investigated with specific reference to a development site.....Breach modelling will also allow a site specific assessment of finished floor levels to be developed, which may be lower than the default standard set out in Section 5.10.”*

Having due regard to Section 5.8.1 of the Draft Development Plan, the bespoke breach modelling undertaken by RPS, which included the use of up to date LiDAR, a higher-resolution model and included all of the buildings within the breach area to more accurately capture and derive flood flow paths, endorses the approach set out in the current SFRA for Limerick.

The highest possible flood level for the 0.5% AEP flood event at the application site is 4.3mOD. RPS believes this an accurate, fair and reasonable assessment of the design water level which should be used to establish the mitigation measures.

## **5.5.2 Establishment of Freeboard**

In order to address the risk from the potential flood depths during a breach, the preferred mitigation measure, as advised in the Planning System and Flood Risk Management Guidelines, is to raise the levels of the proposed development. In Paragraph 5.16 this is suggested as being above the 0.5% AEP flood level, even when behind existing defences, and to ensure a precautionary approach it should also include the effects of climate change.

While the Flood Risk Management Guidelines 2009 do not recommend the amount of freeboard to be applied, RPS are proposing a 500mm freeboard as this is currently the freeboard applied by the Office of Public Works (OPW) to all capital flood schemes where earth embankments are being constructed. Given the previously described earth embankments that exist along the Ballnaclogh River and Shannon estuary this would seem to be a reasonable assessment of the freeboard to be applied to the SHD development.

In addition, RPS are proposing a further allowance of 500mm be applied for sea level rise associated with climate change for the Mid Range Future Scenario (MRFS), to ensure a precautionary approach is adhered to.

At the Tripartite meeting LCCC proposed a freeboard of 300mm and a further 500mm for climate change, resulting in a 0.8m freeboard above the design water level. This is less than the 1m freeboard recommended by RPS for the SHD site. This is summarised in Table 5.1.

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<sup>4</sup> Strategic Flood Risk Assessment for Draft Limerick Development Plan 2021-2028, JBA, June 2021



	Freeboard allowance proposed (mm)	Climate change allowance proposed (mm)	Overall allowance (mm)
RPS	500	500	1000
Limerick CCC	300	500	800

**Table 5.1 Comparison of RPS and LCCC freeboard recommendations**

### 5.5.3 Proposed Mitigation Measures

The SHD site will be filled to a level to ensure that all roads within the development will be developed to a minimum of 5.0m OD, and then all FFLs will be constructed to a minimum of 5.3m OD. The 5.3m level provides an allowance of 500mm freeboard and 500mm for climate change as described in Section 5.5.2 of this FRA. This provides over 1m freeboard to all new properties which is a very high standard of protection to what is considered ‘highly vulnerable development’ under the Guidelines. Note that the materials being used for filling operations is available within the application site by means of a cut and fill operation.

It is not proposed to raise the access road between the Dock Road and the SHD development. There are numerous reasons for this as follows:

- Firstly, should a breach of the flood defences occur, the Dock Road itself will be flooded to a significant depth in excess of 2m in certain places and completely impassable. Therefore raising the access road between the Dock Road and the SHD development road does not improve access or egress to the proposed development in any way during an event of this magnitude;
- Secondly, should the access road be raised to the minimum recommended 5.0m OD it will effectively create a raised causeway above the surrounding land. During a breach event and the consequential high velocities and flows, a raised causeway of this nature will almost certainly be subject to significant structural damage;
- A final consideration is that the SHD site has been designed so that during a breach event people will remain in their homes, as that is the safest place to be. Providing an access road that is raised may only encourage people to use the access road to travel towards an area that is flooded to a significant depth, or to get a closer look at the flooded areas. This is not behaviour that should be facilitated in any way. RPS would therefore recommend that the access road is maintained at the so ground levels.

The mitigation measures that RPS have proposed to manage the identified risk are described in Table 5.2.

**Table 5.2 Summary of proposed mitigation measures to manage the breach scenario**

Objective of mitigation measures	Proposed mitigation measures
To raise the proposed development area as far as is reasonably possible, with the focus on protecting people and buildings	The entire development area will be filled, with roads constructed to a level of 5.0m OD and finished floor levels to a level of 5.3m OD. This provides 1m of freeboard above the 0.5% AEP breach flood level. This means that during a breach event, which will cause significant damage to the Dock Road/ Greenpark area and has a high risk to life, residents and their property will remain entirely safe.
Provide egress and access during extreme event to provide access for emergency services and also those wishing to evacuate the area	Designated internal roads should be raised to 5.0m OD. This provides access and egress to all emergency vehicles and pedestrians even during a breach scenario. This road level is over 700mm above the predicted breach level during a 0.5% AEP event.

**5.5.4 Modelling of Breach Mitigation Measures**

It is recognised in Paragraph 5.16 of the Flood Risk Management Guidelines 2009, that when lands are to be filled behind defences “...the flood risk assessment should be thorough and measures to manage these residual risks carefully detailed”. Furthermore, in the Frequently Asked Questions on page 73 of the Guidelines it states “...the beneficial effects of land-raising should therefore be balanced against potential increased flood risk elsewhere”. It is therefore clear, that although land raising is the preferred approach to mitigate against a potential breach of the defences, the potential to increase flood risk to neighbouring existing development needs to be assessed and mitigated where required.

Based on the proposed development levels for the SHD site, breach modelling has been undertaken for each of the three breach locations using the same boundary conditions as described for the existing scenario in Section 5.4 of this report. This was done for both the present day and climate change scenarios. To provide an easy comparison of the existing and proposed development scenarios a series of combined extent maps have been produced which clearly indicate the impact of infilling in the breach scenario. These comparative maps show three different colours at each breach location as follows:

1. Anywhere shown as green floods only in the existing scenario but not in the proposed scenario, which is reflective of the areas that have been infilled;

2. Anywhere shown as purple floods in both the existing scenario and in the proposed scenario. This means there is no impact of flooding in this area as a result of the proposed development;
3. Anywhere shown as yellow floods only in the proposed scenario and not in the existing scenario.

### 5.5.4.1 Present Day Scenario Results

All three breach locations produced approximately the same flood extent. As an example and for easy reference, a comparative map is shown in Figure 5.3 for a breach at Location 2. The breach maps for Locations 1 and 3 are provided in Appendix E. Based on the proposed mitigation measures described in Section 5.1, the impact of the raising all of the SHD lands is negligible for all of the breach locations. This is not unsurprising given the relatively small amount of infill required for the SHD site, given that a large portion of the site is already in Flood Zone C.

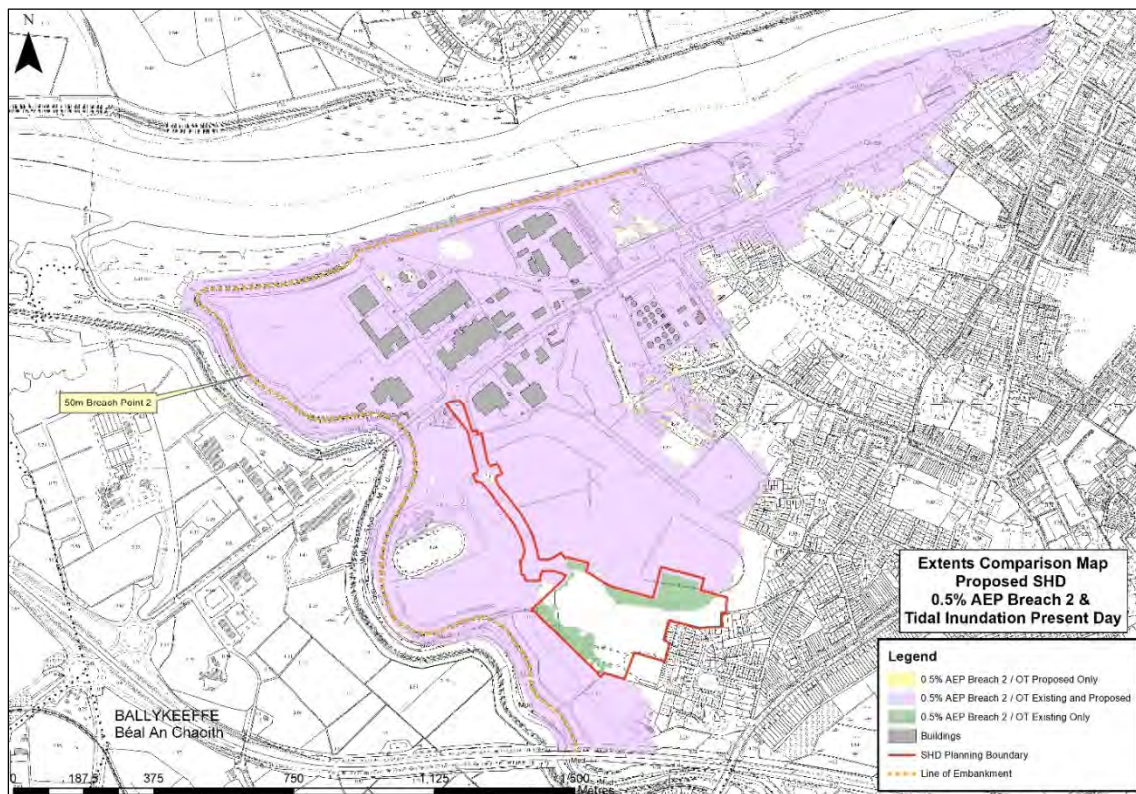
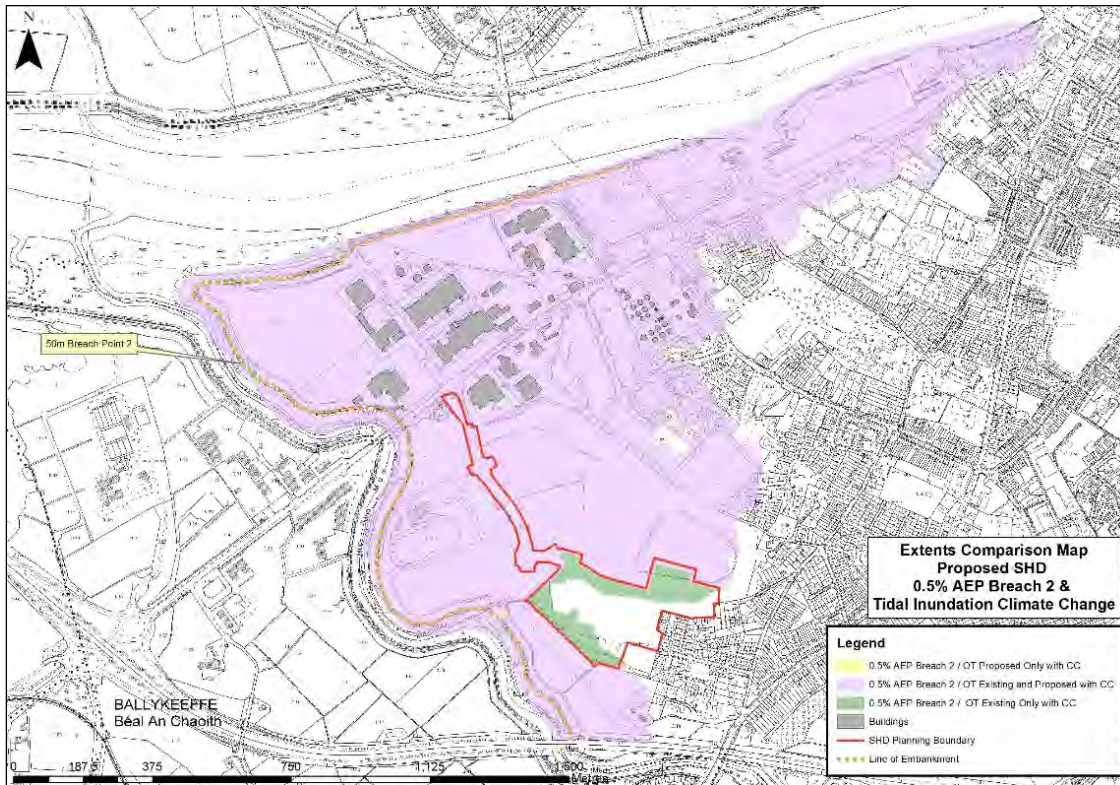


Figure 5.3 Impact of raising proposed development lands at Breach location 2 (Present day)

### 5.5.4.2 Climate Change Scenario Results

The mitigation measures have also been tested for the 0.5% AEP MRFS event with no impact identified. All three breach locations produced approximately the same flood extent. As an example a comparative

map is shown in Figure 5.4 for a breach at Location 2. The breach maps for Locations 1 and 3 are provided in Appendix F.



**Figure 5.4 Impact of raising proposed development lands at Breach location 2 (Climate change)**

### 5.5.5 Conclusions on Breach Modelling

Based on the analysis, the overwhelming conclusion of the breach modelling is that the proposed development does not create an increase in flood risk to the existing development, either in the present day or climate change scenarios.

As a point of note in relation to the breach maps, it can be seen that along the edges of the flood extent small amounts of yellow and green are visible. This is not an indication of either an increase or a decrease in flood risk extent, instead it occurs as a result of mesh in the 2D domain of the model changing as a result of the new mitigation measures introduced.

## 5.6 Assessment of Cumulative Impacts

A nursing home is proposed adjacent to the SHD site. This is a separate planning application that has been submitted to LCCC for their consideration (Ref. no. 21/1222). This FRA for the SHD site has included

an assessment of the cumulative impact of both developments. The nursing home site is much smaller in area than the SHD site, and it will be filled to a FFL of 6.3m OD.

Based on the proposed development levels for both the SHD and the nursing home site, breach modelling has been undertaken for each of the three breach locations using the same boundary conditions as described for the existing scenario in Section 5.4 of this report. To provide an easy comparison for the existing and proposed development scenarios a series of combined extent maps have been produced which clearly indicate the impact of infilling in the breach scenario. These comparative maps show three different colours at each breach location:

1. Anywhere shown as green floods only in the existing scenario but not in the proposed scenario, which is reflective of the areas that have been infilled;
2. Anywhere shown as purple floods in both the existing scenario and in the proposed scenario. This means there is no flooding impact in this area as a result of the proposed development.
3. Anywhere shown as yellow floods only in the proposed scenario and not in the existing scenario.

The impact of the raising both the SHD and the nursing home site is shown in Figure 5.5 for a breach at Location 2 for the present day scenario. The breach maps for Locations 1 and 3 are shown in Appendix G.

The impact of the raising both the SHD and the nursing home site is shown in Figure 5.6 for a breach at Location 2 for the climate change scenario. The breach maps for Locations 1 and 3 are shown in Appendix H.

Based on the analysis, the overwhelming conclusion is that the breach modelling indicates that raising of both the nursing home and SHD site does not create an increase in flood risk to existing development, either in the present day or climate change scenarios.

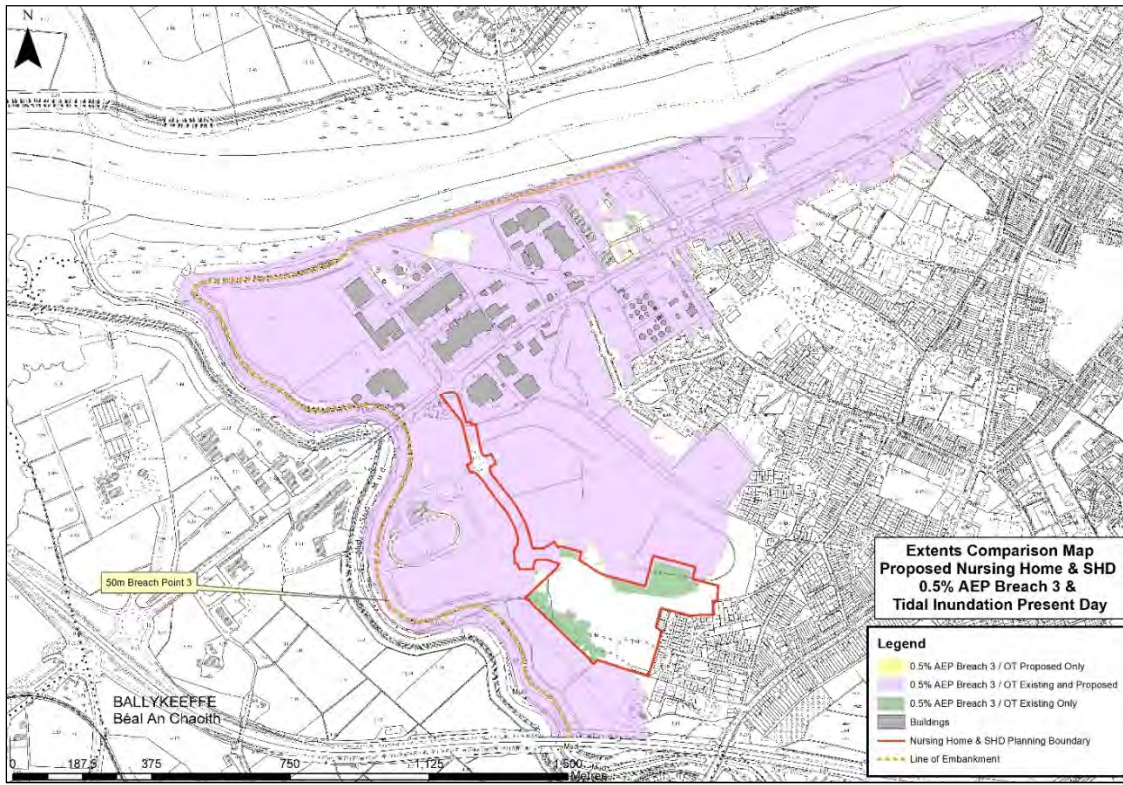
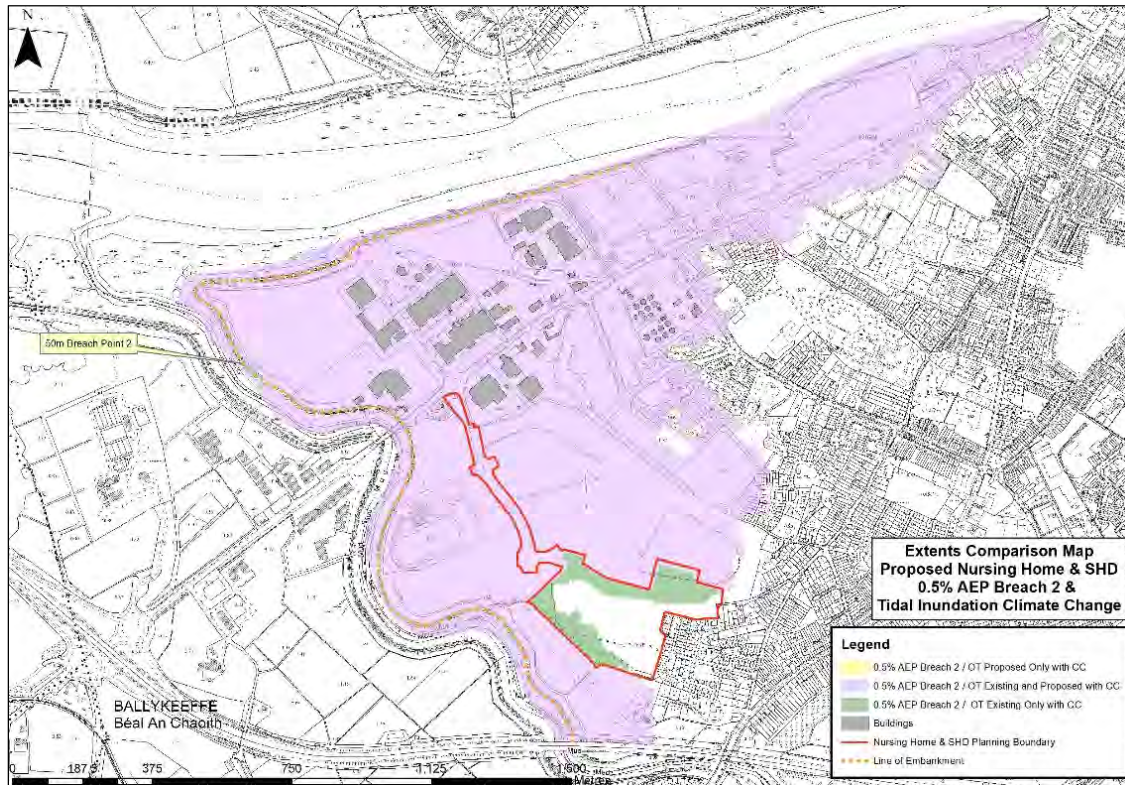


Figure 5.5 Impact of raising nursing home and SHD site levels at Breach location 2 (Present day)



**Figure 5.6** Impact of raising nursing home and SHD site levels at Breach location 2 (Climate change)

## 5.7 Surface Water Drainage Strategy

Given the change from a largely greenfield site to a residential development, there is the potential for an increase in the rate of run off and the need to attenuate flows to the receiving watercourse(s). In order to mitigate this impact the proposed surface water design has been based on the requirement to ensure that the development does not result in increased runoff rates. The surface water drainage design is fully described in the Engineering Planning Report<sup>5</sup>.

A new surface water sewer network shall be provided for the proposed development which will be entirely separate from the foul water sewer network. Each unit will have its own independent connection to the surface water sewer network. Surface water run-off from roof areas and hardstanding areas are designed to be collected by a gravity pipe network. Surface water will be collected and discharged via a mixture of traditional and Sustainable urban Drainage System (SuDS) to the existing 1350mm/ 1500mm diameter

<sup>5</sup> Proposed SHD at Lands at Former Greenpark Racecourse, Limerick City. PUNCH (September 2021).

surface water sewer. This sewer discharges the existing lagoon adjacent to the Ballynaclogh River. Both the pipe and the lagoon were designed to take into account future developments. The lagoon attenuates flows to Greenfield discharge rate and discharges to the Ballynaclogh River through the use of a penstock structure.

The surface water drainage network has been analysed for the risk of flooding for a 1 in 5-year flood event, 1 in 30-year rainfall event and a 1 in 100-year rainfall event by means of simulating such events in the drainage model with no flooding occurring. An increase of 20% in rainfall has been included to account for climate change and 10% for urban creep.

The proposed development has been assessed in relation to Sustainable Urban Drainage Systems (SuDS) and a variety of SuDS measures have been adopted including the following:

- Green roofs for the proposed crèche and apartments buildings;
- Tree pit systems in the development's landscaped paved areas;
- Permeable paving for house driveways and the visitor parking;
- Infiltration trenches;
- Swales;
- Rain gardens (dwelling roofs);
- Attenuation tanks (5 no.) located in open spaces throughout the development.

## **5.8 Access and Egress from the SHD Area**

Given the identified mitigation measures which propose to raise all development and finished floor levels above the 0.5% AEP breach level with suitable allowance for climate change and freeboard, there will be no requirement to evacuate the residential development during a 0.5% AEP MRFS (climate change) event, even when a breach occurs. This is an exceptionally high standard of protection given the severity and probability of the event being considered.

Access and egress therefore only needs to be considered in relation to emergency services, e.g. ambulance or fire services, requiring access for a medical emergency or when a fire has occurred concurrently with a breach of the defences. In the unlikely scenario that the main access road leading onto the Dock Road has been flooded, there is still emergency access available in and out of the SHD site along pavements that link to the adjacent Log na gCapall development and to Greenpark Avenue. The pavements are wide enough and have been designed to accommodate emergency vehicles. The routes are shown by red arrows in Figure 5.7.





Figure 5.7 Emergency access and egress routes

## 6 PLANNING SYSTEM AND FLOOD RISK MANAGEMENT GUIDELINES

### 6.1 Classification

The ‘Planning System and Flood Risk Management’ Guidelines classify different types of development in terms of their vulnerability class (Table 3.1 of the Guidelines). This table has been reproduced as Table 6.1.

Vulnerability class	Land uses and types of development which include*:
<b>Highly vulnerable development (including essential infrastructure)</b>	<p>Garda, ambulance and fire stations and command centres required to be operational during flooding;</p> <p>Hospitals;</p> <p>Emergency access and egress points;</p> <p>Schools;</p> <p>Dwelling houses, student halls of residence and hostels;</p> <p>Residential institutions such as residential care homes, children’s homes and social services homes;</p> <p>Caravans and mobile home parks;</p> <p>Dwelling houses designed, constructed or adapted for the elderly or, other people with impaired mobility; and</p> <p>Essential infrastructure, such as primary transport and utilities distribution, including electricity generating power stations and sub-stations, water and sewage treatment, and potential significant sources of pollution (SEVESO sites, IPPC sites, etc.) in the event of flooding.</p>
<b>Less vulnerable development</b>	<p>Buildings used for: retail, leisure, warehousing, commercial, industrial and non-residential institutions;</p> <p>Land and buildings used for holiday or short-let caravans and camping, subject to specific warning and evacuation plans;</p> <p>Land and buildings used for agriculture and forestry;</p> <p>Waste treatment (except landfill and hazardous waste);</p> <p>Mineral working and processing; and</p> <p>Local transport infrastructure.</p>
<b>Water-compatible development</b>	<p>Flood control infrastructure;</p> <p>Docks, marinas and wharves;</p> <p>Navigation facilities;</p> <p>Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location;</p> <p>Water-based recreation and tourism (excluding sleeping accommodation);</p> <p>Lifeguard and coastguard stations;</p> <p>Amenity open space, outdoor sports and recreation and essential facilities such as changing rooms; and</p> <p>Essential ancillary sleeping or residential accommodation for staff required by uses in this category (subject to a specific warning and evacuation plan).</p>
*Uses not listed here should be considered on their own merits	

Table 3.1 Classification of vulnerability of different types of development

Figure 6.1 Classification of vulnerability of development

Table 3.2 of the Guidelines identifies the type of development that would be appropriate to each flood zone and those that would need the Justification Test. This table has been reproduced as Figure 6.2.

	Flood Zone A	Flood Zone B	Flood Zone C
Highly vulnerable development (including essential infrastructure)	Justification Test	Justification Test	Appropriate
Less vulnerable development	Justification Test	Appropriate	Appropriate
Water-compatible development	Appropriate	Appropriate	Appropriate

Table 3.2: Matrix of vulnerability versus flood zone to illustrate appropriate development and that required to meet the Justification Test.

**Figure 6.2 Vulnerability versus flood zones**

A large part of the SHD site is in Flood Zone C, however there are some areas that can be considered to be in Flood Zones A and B. Table 3.2 of the Guidelines (Figure 6.2) shows that for residential development (highly vulnerable) in Flood Zones A and B, the Justification Test will need to be applied and fully satisfied before development can be permitted.

## 6.2 Development Management Justification Test

Where a planning authority is considering proposals for new development in areas at a high or moderate risk of flooding that includes types of development that are vulnerable to flooding and that would generally be inappropriate as set out in Table 3.2 of the Guidelines, the planning authority must be satisfied that the development satisfies all of the criteria of the Development Management Justification Test outlined in Box 5.1 of the Guidelines and reproduced as Figure 6.3.

**Box 5.1 Justification Test for development management (to be submitted by the applicant)**

When considering proposals for development, which may be vulnerable to flooding, and that would generally be inappropriate as set out in Table 3.2, the following criteria must be satisfied:

1. The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative development plan, which has been adopted or varied taking account of these Guidelines.
2. The proposal has been subject to an appropriate flood risk assessment that demonstrates:
  - (i) The development proposed will not increase flood risk elsewhere and, if practicable, will reduce overall flood risk;
  - (ii) The development proposal includes measures to minimise flood risk to people, property, the economy and the environment as far as reasonably possible;
  - (iii) The development proposed includes measures to ensure that residual risks to the area and/or development can be managed to an acceptable level as regards the adequacy of existing flood protection measures or the design, implementation and funding of any future flood risk management measures and provisions for emergency services access; and
  - (iv) The development proposed addresses the above in a manner that is also compatible with the achievement of wider planning objectives in relation to development of good urban design and vibrant and active streetscapes.

The acceptability or otherwise of levels of residual risk should be made with consideration of the type and foreseen use of the development and the local development context.

Note: See section 5.27 in relation to major development on zoned lands where sequential approach has not been applied in the operative development plan.

Refer to section 5.28 in relation to minor and infill developments.

**Figure 6.3 Justification Test for Development Management**

Table 6.1 sets out the response to the criteria in Box 5.1 that must be satisfied. Each of the criteria have been shown to be satisfied and therefore it is concluded that the proposed development complies with the requirements of the Development Management Justification Test.

**Table 6.1 Response to Justification Test for Development Management for proposed development**

Criteria	Response
<p>1. The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative development plan, which takes account of these Guidelines</p>	<p>The lands are zoned for residential use in the Limerick City Development Plan 2010-2016 (as extended). The Development Plan clearly states that the plan was produced taking full account of the Guidelines and was still zoned on that basis. It can be considered that Point 1 of the Development Management Justification Test has therefore been met.</p>
<p>2. The proposal has been subject to an appropriate flood risk assessment that demonstrates:</p>	
<p>(i) The development proposed will not increase flood risk elsewhere and, if practicable, will reduce overall flood risk</p>	<p>During a present day 0.5% AEP flood event and a 0.5% AEP climate change event there is no increase in flood risk elsewhere. This is described in detail in Section 5.2 of this report.</p> <p>Additional modelling has been undertaken to consider the impact of the infilling of the site on the displacement of water during a breach of the existing defences. This was found to not have an increased risk on any existing development. This is described in detail in Section 5.5 of this report.</p> <p>It is therefore considered that Point 2 (i) of the Justification Test has been met.</p>
<p>(ii) The development proposal includes mitigation measures to minimise flood risk to people, property, the economy and the environment as far as reasonably possible</p>	<p>The proposed development will not flood during a 0.5% AEP flood event or during a 0.5% AEP flood event plus climate change event. This provides an exceptionally high standard of protection and therefore the risk of flooding to people, property and the environment is very low. This level of protection will ensure that there will be no impact on the economy, i.e. there will not be an unacceptable level of flood risk which might subsequently require government capital expenditure to alleviate the problem to either the proposed development or existing development.</p> <p>It is therefore considered that Point 2 (ii) of the Justification Test has been met.</p>
<p>(iii) The development proposed includes measures to ensure that residual risks to the area and/or development can be managed to an acceptable level as regards the adequacy of existing flood protection measures or the design, implementation and funding of any future flood risk management measures and</p>	<p>The residual risk to the proposed development is low, as the development is protected up to a 0.5% AEP plus climate change tidal event, with additional freeboard. This gives added assurance that the proposed mitigation measures are more than adequate to deal with any future flood risk. Designated internal roads will be elevated to ensure free access and egress even during an extreme event. No specific residual risks have been identified that would necessitate a flood evacuation plan for the site.</p>

## FLOOD RISK ASSESSMENT

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<p>provisions for emergency services access</p>	<p>It is therefore considered that Point 2 (iii) of the Justification Test has been met.</p>
<p>(iv) The development proposed addresses the above in a manner that is also compatible with the achievement of wider planning objectives in relation to development of good urban design and vibrant and active streetscapes</p>	<p>The flood mitigation measures proposed do not materially impact upon the desired layout, orientation or approach to the proposed development. It is considered that the proposed development is compatible with the wider planning objectives in relation to development of good design and planning for the area, and is compliant with the Limerick City Development Plan 2010-2016 (as extended).</p> <p>It is therefore considered that Point 2 (iv) of the Justification Test has been met.</p>

## 7 CONCLUSION

### 7.1 Summary of FRA

RPS were commissioned to carry out a Flood Risk Assessment (FRA) in support of a strategic housing development (SHD) for Greenpark, Limerick. The purpose of this assessment is to ensure that the proposed development takes cognisance of the existing flood risk and does not result in increased flood risk elsewhere. This report has been prepared in accordance with the requirements of 'The Planning System and Flood Risk Management' Guidelines (DEHLG 2009).

The River Shannon flows at a distance to the north of the site and a small tributary, the Ballynaclogh River, flows to the west of the site. Both of these rivers can be considered to be tidal at this location. There are flood embankments along both the River Shannon and the Ballynaclogh River.

As part of the Shannon Catchment Flood Risk Assessment and Management (CFRAM) Study, Limerick was identified as an Area for Further Assessment (AFA). This meant that the watercourses in the area were modelled and flood maps produced which can be used to establish the existing flood risk at a site. The CFRAMS maps indicate that the 0.5% AEP flood event does not reach the application site. This is because of the protection afforded by the existing flood defences constructed under the 1945 Arterial Drainage Act.

Following the sequential approach as set out in 'The Planning System and Flood Risk Management Guidelines' the effects of any existing defences must be ignored when establishing flood zoning. Using this approach, a large area of the SHD site is considered at low risk and in Flood Zone C. However areas of the site are in Flood Zone A, with a very small section of the land being contained within Flood Zone B. Applying the sequential approach set out in 'The Planning System and Flood Risk Management Guidelines' requires a Development Management Justification Test to be carried for a residential development within Flood Zones A and B.

The Greenpark Lands have been zoned for General Mixed Use, Neighbourhood Centre and Residential uses since 2010 as per the Limerick City Development Plan 2010-2016, which was adopted with the benefit of the application of the provisions of 'The Planning System and Flood Risk Management Guidelines'. The Development Plan Justification Test must have been applied and passed in order for the General Mixed Use, Neighbourhood Centre and Residential uses zonings to be established for the Greenpark Lands. Given that the Development Plan Justification Test has been applied there is only a need to comply with the Development Management Justification Test as part of this application.

In accordance with Paragraph 5.16 of the Guidelines, a precautionary approach to development behind existing defences is to raise the finished levels to at least the 1% fluvial or 0.5% AEP coastal flood level. This approach has been adopted for the SHD area. The SHD site will be filled to ensure all roads will be

built up to approximately 5.0m OD, and then all FFLs will be constructed to a minimum of 5.3m OD. This provides over 1m freeboard to all new properties above the 0.5% AEP breach flood level, thus providing a very high standard of protection.

Modelling of the impact of raising the proposed development was then undertaken considering both the 0.5% AEP and 0.5% AEP climate change (MRFS) flood events when a breach of the defences occurs. The modelling shows that there was no identified increase in risk to existing development as a result of the proposed SHD site raising, either in the present day or climate change scenarios.

A nursing home is proposed adjacent to the SHD site. This is a separate planning application, however this FRA has included an assessment of the cumulative impact of both developments. The nursing home site will be filled to FFL of 6.3m OD. Breach analysis has confirmed that there is no increase in flood risk to existing developments with both the nursing home and SHD sites raised, either in the present day or climate change scenarios.

A new surface water sewer network shall be provided for the proposed development which will be entirely separate from the foul water sewer network. Each unit will have its own independent connection to the surface water sewer network. Surface water run-off from roof areas and hardstanding areas are designed to be collected by a gravity pipe network. Surface water will be collected and discharged via a mixture of traditional and Sustainable urban Drainage System (SuDS) to the existing 1350mm/ 1500mm diameter surface water sewer. This sewer discharges the existing lagoon adjacent to the Ballynaclogh River. Both the pipe and the lagoon were designed to take into account future developments. The lagoon attenuates flows to Greenfield discharge rate and discharges to the Ballynaclogh River through the use of a penstock structure. SuDS measures include green roofs, tree pit systems, permeable surfacing, infiltration trenches, swales, rain gardens and attenuation tanks.

Based on the proposed mitigation measures, consideration of the designated zoning and the proposed urban design, each of criteria in the Development Management Justification Test was shown to be satisfied. Therefore it was concluded that the proposed development complies with the requirements of the Development Management Justification Test and hence is compliant with 'The Planning System and Flood Risk Management Guidelines'.

## 7.2 Key Aspects of the Flood Mitigation Measures

The following are the key aspects of the mitigation measures proposed within this Flood Risk Assessment and demonstrate a robust and sustainable approach to developing the SHD site:

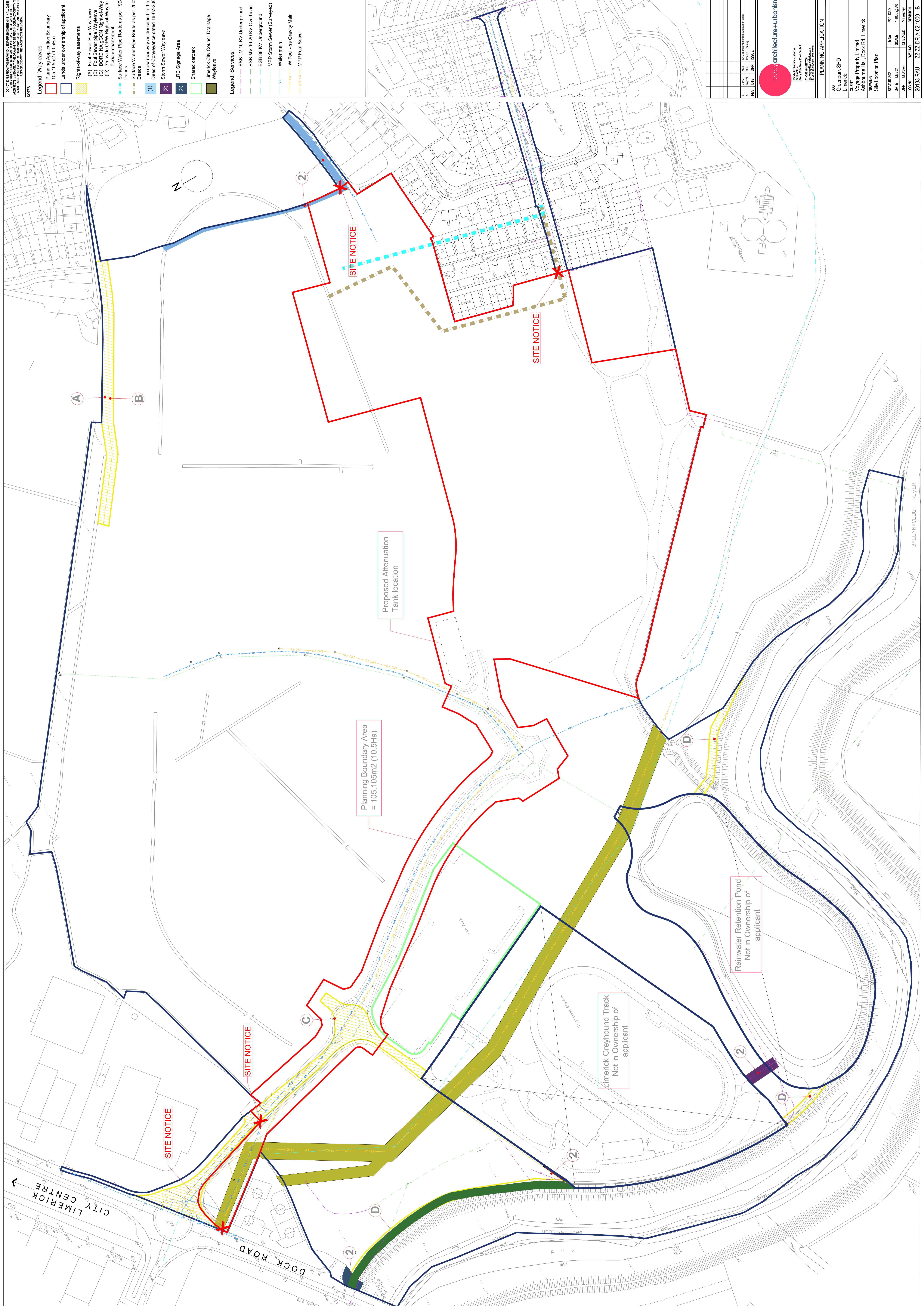
1. There is no reliance on the existing OPW maintained flood defences to provide any level of protection to the SHD area;



2. The proposed SHD mitigation measures are sustainable and have been developed with climate change and predicted sea level rise being fully considered. This will ensure that Limerick City and County Council will not be required to provide additional flood defence infrastructure in the future to protect the SHD site;
3. The entire SHD site will remain free from flooding during a 0.5% AEP Mid-Range Future Scenario event where overtopping of the existing defences occurs;
4. All buildings and key internal roads will be protected during a 0.5% AEP Mid-range Future Scenario event, even when a breach of the existing defences has also occurred. A total freeboard of 1m has been applied in this regard. This is a very high standard of defence.
5. It has been robustly demonstrated that there is **no increase** in flood risk, even during a breach event, to surrounding existing developments as a result of the proposed development;
6. A clear access and egress route for emergency vehicles can be provided to the SHD site through Log na gCapall and Greenpark Avenue, even during a breach event;
7. All storm drainage will be attenuated to existing run off rates and therefore will not cause capacity issues on the existing network or raise the increase of flooding elsewhere.

## Appendix A

### Site location map



NOTES  
1. THE INFORMATION CONTAINED HEREIN IS FOR INFORMATION ONLY AND DOES NOT CONSTITUTE A CONTRACT. THE APPLICANT IS RESPONSIBLE FOR OBTAINING ALL NECESSARY CONSENTS AND APPROVALS FROM THE RELEVANT AUTHORITIES AND FOR OBTAINING ALL NECESSARY CONSENTS AND APPROVALS FROM THE RELEVANT AUTHORITIES AND FOR OBTAINING ALL NECESSARY CONSENTS AND APPROVALS FROM THE RELEVANT AUTHORITIES.

- Legend: Wayleaves**
- Planning Application Boundary
  - 105.105m2 (10.5Ha)
  - Lands under ownership of applicant
  - Rights-of-way easements
  - (A) Foul Sewer Pipe Wayleave
  - (B) Surface Water Pipe Wayleave
  - (C) 7m wide OPW Right-of-Way to flood embankment
  - (D) Surface Water Pipe Route as per 1998
  - Deeds
  - Surface Water Pipe Route as per 2002
  - Deeds
  - The new roadway as described in the Deed of Conveyance dated 18/07/2001
  - Storm Sewer Wayleave
  - LRC Signage Area
  - Shared carpark
  - Limerick City Council Drainage
  - Wayleave

- Legend: Services**
- ESB LV 10 KV Underground
  - ESB MV 10-20 KV Overhead
  - ESB 38 KV Underground
  - MPP Storm Sewer (Surveyed)
  - Water main
  - IW Foul - ss Gravity Main
  - MPP Foul Sewer

REV	DATE	ISSUE
1	18/07/2021	Issue for Planning
2	18/07/2021	Issue for Planning
3	18/07/2021	Issue for Planning

**redby architecture+urbanism**

1000 Wellington Quay  
 Dublin 1, Ireland  
 T: +353 (0)1 488 2000  
 E: info@redby.com

**PLANNING APPLICATION**

**JOB**  
 Greenpark SHD  
 Limerick  
 City Council  
 Voyage Property Limited  
 Ashbourne Hall, Dock Rd, Limerick  
 Drawing  
 Site Location Plan

**STATUS** 352  
**JOB NO.** P001330  
**DATE** 18/07/21  
**SCALE** 1:1000 @ A0  
**DRAWN** J. Brown  
**CHECKED** J. Kennedy  
**DESIGNED** J. Kennedy  
**APPROVED** J. Kennedy  
**2013-01-01** ZZZZ-01-02-1000 B

CITY LIMERICK  
DOCK ROAD

SITE NOTICE

SITE NOTICE

SITE NOTICE

SITE NOTICE

SITE NOTICE

SITE NOTICE

SITE NOTICE

Planning Boundary Area  
= 105,105m2 (10.5Ha)

Proposed Attenuation  
Tank location

Limerick Greyhound Track  
Not in Ownership of  
applicant

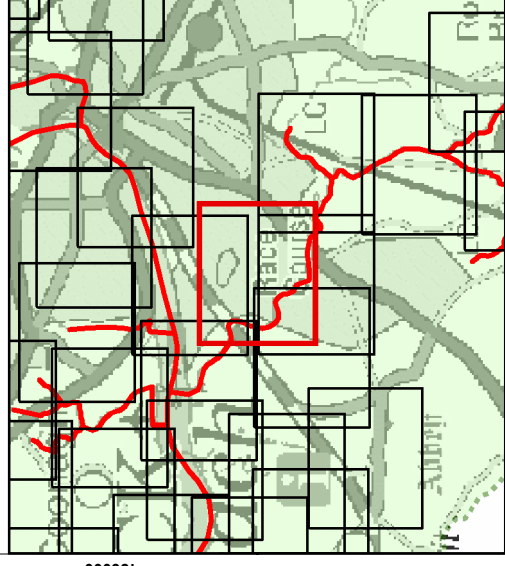
Rainwater Retention Pond  
Not in Ownership of  
applicant

BALLYNAULOGH RIVER

## Appendix B

### Flood Maps from Shannon CFRAM Study

Location Plan:



**Legend:**

- Nodes
- Model Reach
- AFA Boundary
- Flood Defence: Wall
- Flood Defence: Embankment
- Defended Area

- 10% AEP Fluvial Flood Extent**  
(1 in 10 chance in any given year)
- 
- 1% AEP Fluvial Flood Extent**  
(1 in 100 chance in any given year)
- 
- 0.1% AEP Fluvial Flood Extent**  
(1 in 1000 chance in any given year)
- 

**IMPORTANT USER NOTE:**  
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

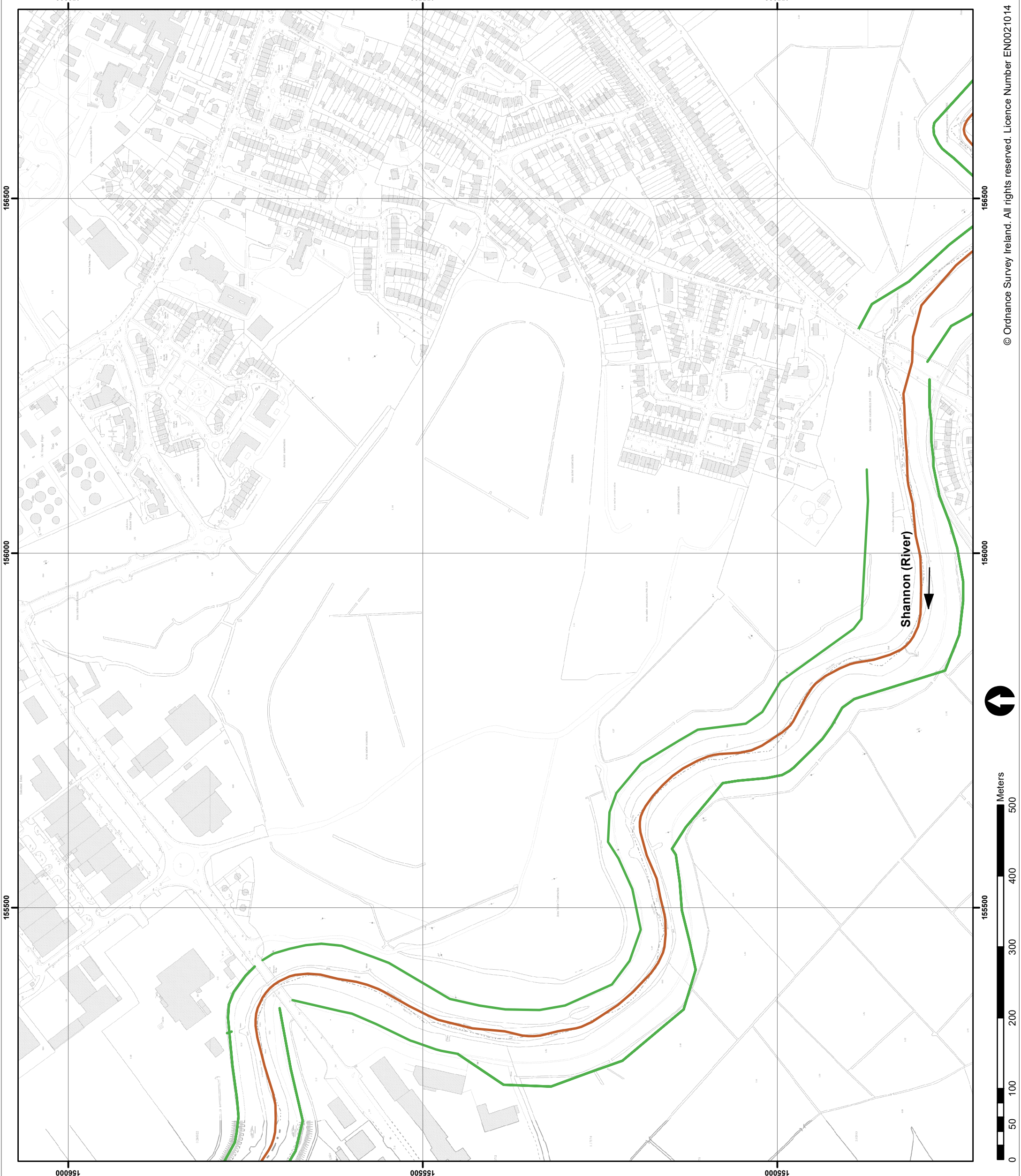


The Office of Public Works  
Jonathan Swift Street  
Trim  
Co. Meath  
C15 NX36

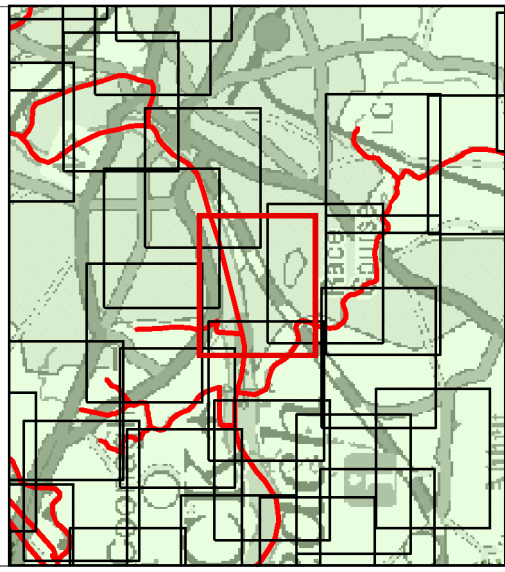


Merrion House  
Merrion Road  
Dublin 4  
D04 R2C5

Project:	SHANNON CFRAM STUDY
Map Type:	EXTENT
Source:	FLUVIAL
Area:	LIMERICK
Scenario:	EXISTING
Drawn by:	EH
Date:	June 2016
Checked by:	KM
Date:	June 2016
Reviewed by:	MC
Date:	June 2016
Approved by:	PS
Date:	June 2016
Map No.:	S2526LIK_EXFCD_F1_65
Sheet:	65 of 65
Revision:	0
Map Scale:	1: 5000
Plot Scale:	1:1 @ A3



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**Legend:**

- Nodes
- Model Reach
- AFA Boundary
- Flood Defence: Wall
- Flood Defence: Embankment
- Defended Area
- 10% AEP Coastal Flood Extent**  
(1 in 10 chance in any given year)
- 0.5% AEP Coastal Flood Extent**  
(1 in 200 chance in any given year)
- 0.1% AEP Coastal Flood Extent**  
(1 in 1000 chance in any given year)

**IMPORTANT USER NOTE:**  
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

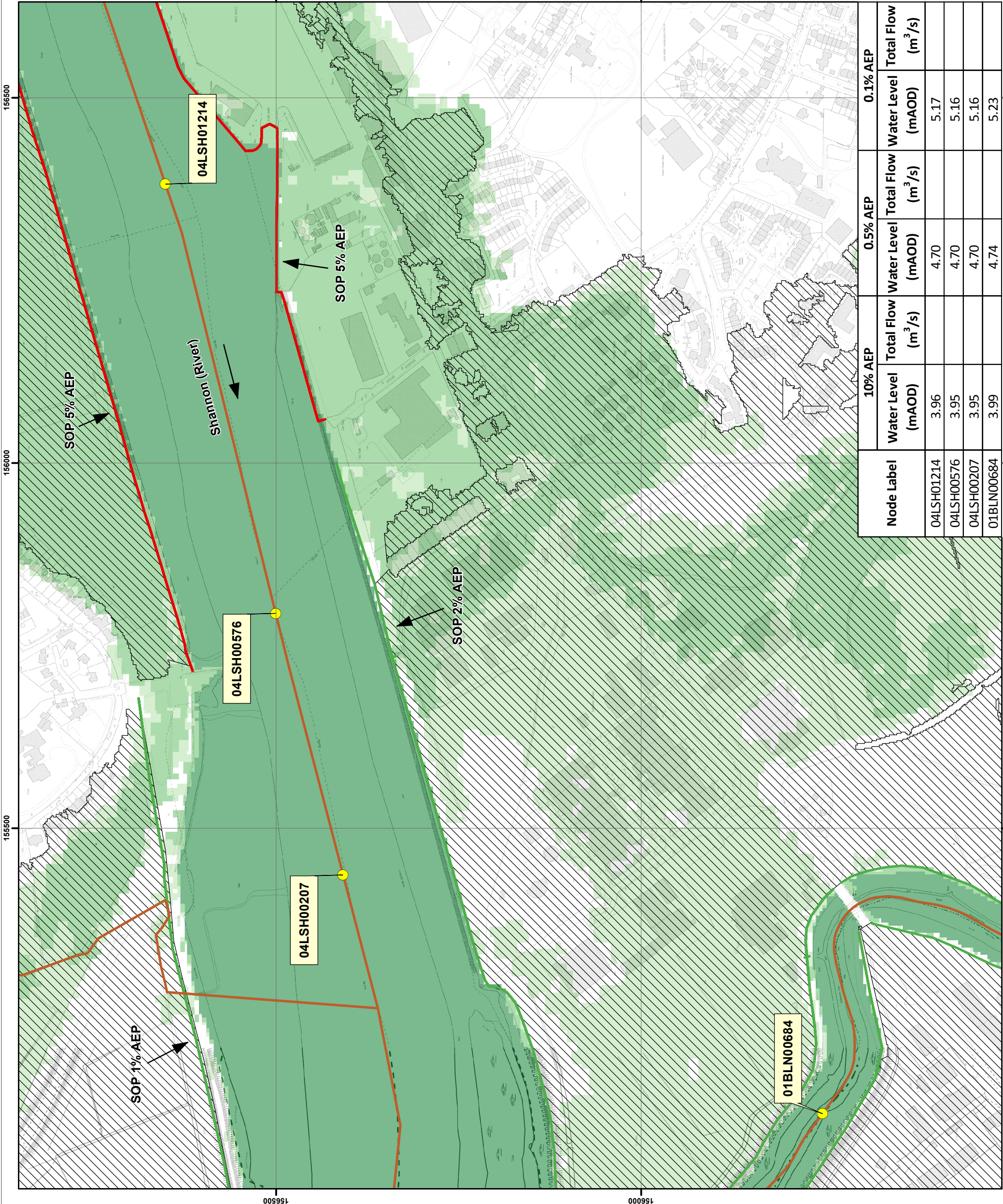


The Office of Public Works  
Jonathan Swift Street  
Trim  
Co. Meath  
C15 NX36



Merrion House  
Merrion Road  
Dublin 4  
D04 R2C5

Project:	SHANNON CFRAM STUDY
Map Type:	EXTENT
Source:	COASTAL - TIDAL
Area:	LIMERICK
Scenario:	EXISTING
Drawn by:	EH
Date:	June 2016
Checked by:	KM
Date:	June 2016
Reviewed by:	MC
Date:	June 2016
Approved by:	PS
Date:	June 2016
Map No.:	S2526LIK_EXCCD_F1_26
Sheet: 26 of 65	Revision: 0
Map Scale: 1: 5000	Plot Scale: 1:1 @ A3



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	Water Level (mAOD)	Total Flow (m <sup>3</sup> /s)	Water Level (mAOD)	Total Flow (m <sup>3</sup> /s)	Water Level (mAOD)	Total Flow (m <sup>3</sup> /s)
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156000

156500

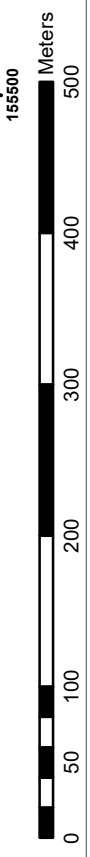
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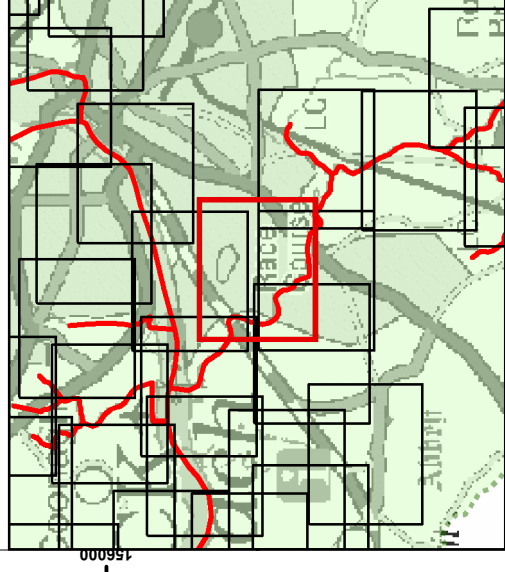
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156500



Location Plan:



**Legend:**

- Nodes
- Model Reach
- AFA Boundary
- Flood Defence: Wall
- Flood Defence: Embankment
- Defended Area

- 10% AEP Coastal Flood Extent**  
(1 in 10 chance in any given year)
- 0.5% AEP Coastal Flood Extent**  
(1 in 200 chance in any given year)
- 0.1% AEP Coastal Flood Extent**  
(1 in 1000 chance in any given year)

**IMPORTANT USER NOTE:**  
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.



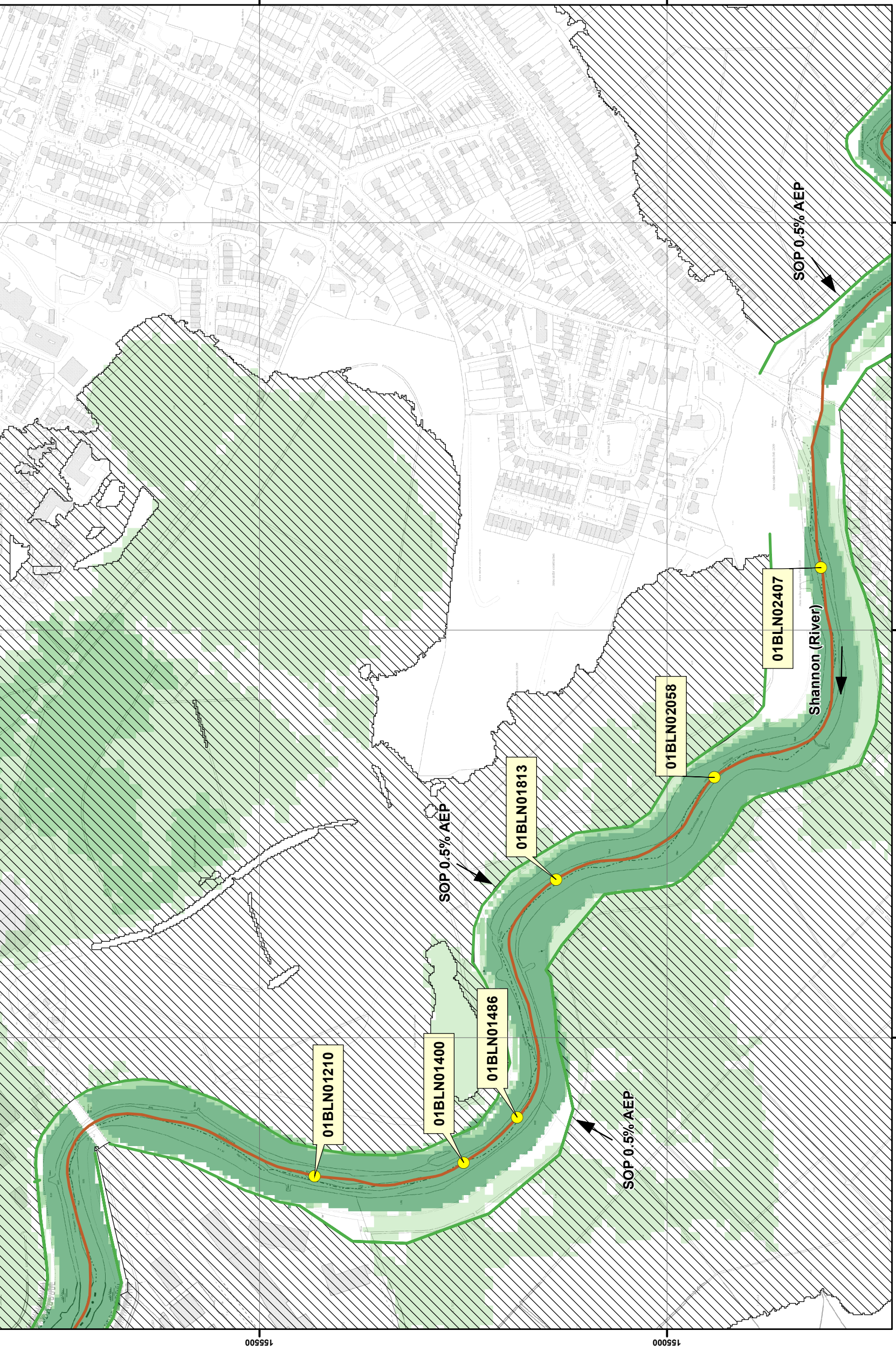
The Office of Public Works  
Jonathan Swift Street  
Trim  
Co. Meath  
C15 NX36



Merrion House  
Merrion Road  
Dublin 4  
D04 R2C5

Project:	SHANNON CFAM STUDY
Map Type:	EXTENT
Source:	COASTAL - TIDAL
Area:	LIMERICK
Scenario:	EXISTING
Drawn by:	EH
Checked by:	KM
Reviewed by:	MC
Approved by:	PS
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Sheet: 65 of 65	Revision: 0
Map Scale: 1: 5000	Plot Scale: 1:1 @ A3

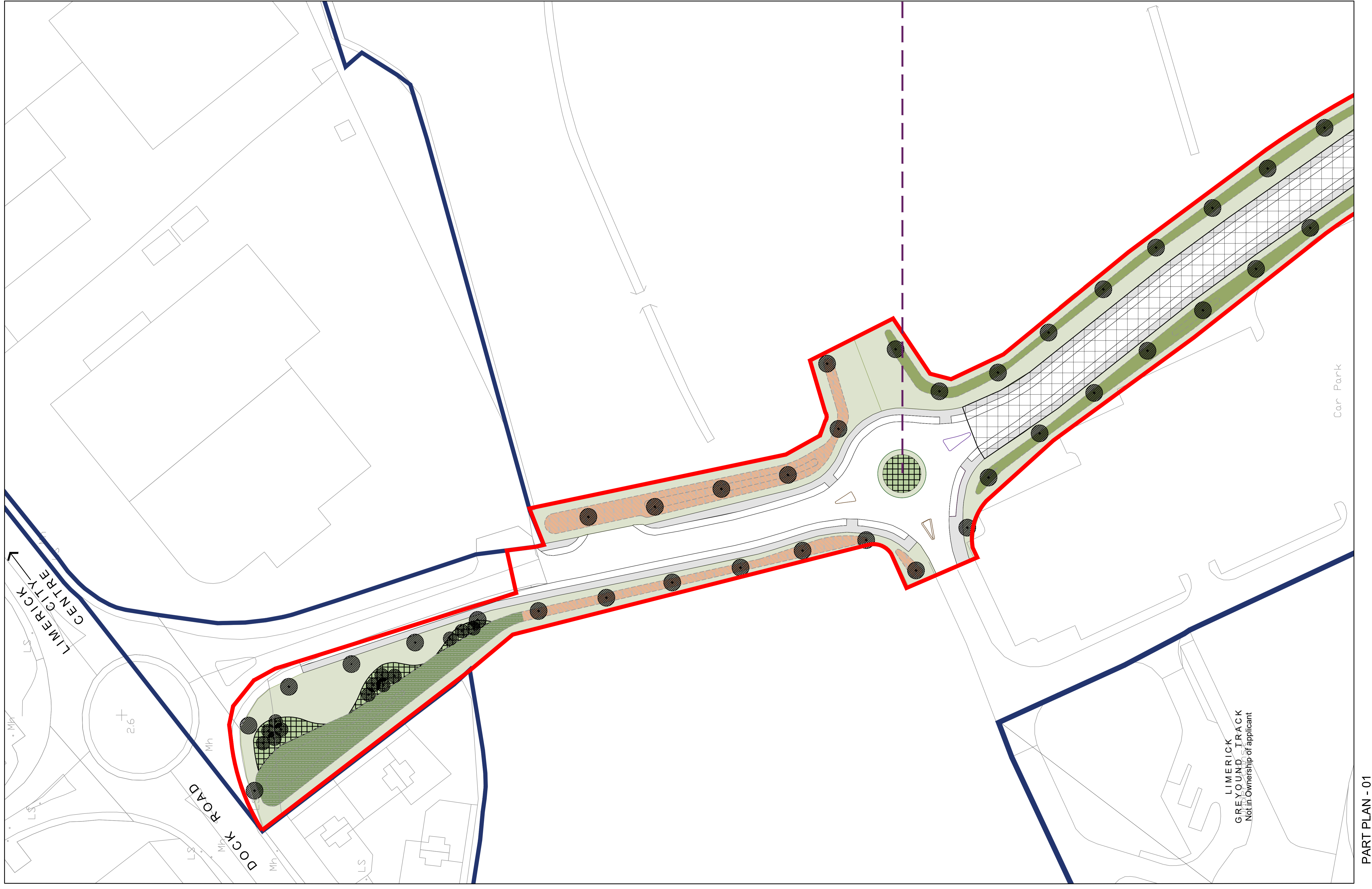
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01BLN01400	4.03		4.86		5.16	
01BLN01210	4.02		4.85		5.16	



## Appendix C

### Proposed site layout





PART PLAN - 01



PART PLAN - 02

NOTES  
 DON'T SCALE FROM THE DRAWING. USE FIGURES AND DIMENSIONS IN ALL CASES.  
 ARCHITECTS ARE RESPONSIBLE FOR THE ACCURACY OF THE DRAWING AND FOR THE INFORMATION CONTAINED THEREIN. THE ARCHITECTS ACCEPT NO LIABILITY FOR ANY ERRORS OR OMISSIONS WHICH MAY BE MADE OR FOR ANY DAMAGE CAUSED BY THE USE OF THIS DRAWING.  
 NOT REPRODUCED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION OF THE ARCHITECTS.

Legend:  
 Planning Application Boundary  
 103.102m<sup>2</sup> (10.2ha)  
 Lands under ownership of applicant  
 Proposed new link road. From existing roundabout to Limerick Greyhound track - to SHD Site  
 SHD Lands (Developable Area)  
 78.952m<sup>2</sup> (7.9ha)

Key Plan:  
 Part plan - 01  
 Part plan - 02

REV	DATE	BY	CHKD	ISSUE
1	20/05/23	MD	MD	PROPOSED SITE PLAN
2	20/05/23	MD	MD	PROPOSED SITE PLAN
3	20/05/23	MD	MD	PROPOSED SITE PLAN
4	20/05/23	MD	MD	PROPOSED SITE PLAN
5	20/05/23	MD	MD	PROPOSED SITE PLAN
6	20/05/23	MD	MD	PROPOSED SITE PLAN
7	20/05/23	MD	MD	PROPOSED SITE PLAN
8	20/05/23	MD	MD	PROPOSED SITE PLAN
9	20/05/23	MD	MD	PROPOSED SITE PLAN
10	20/05/23	MD	MD	PROPOSED SITE PLAN

reddy architecture+urbanism  
 reddy architecture + urbanism  
 11, Ashbourne Hall, Dock Rd, Limerick  
 T: +353 (0)87 627 4240  
 E: info@reddyarchitecture.com

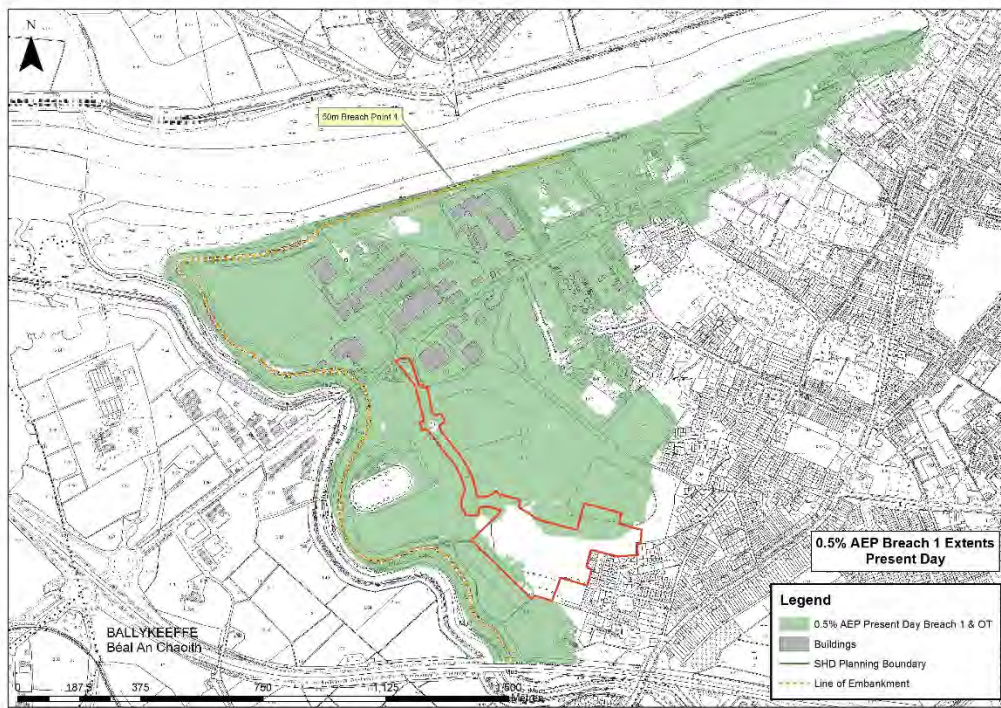
PLANNING APPLICATION  
 103 Greenpark SHD Limerick  
 CLIENT: Voyage Property Limited, Ashbourne Hall, Dock Rd, Limerick  
 Drawing: Proposed Site Plan - sht 1  
 STATUS: S22  
 JOB No.: 2001320  
 DATE: 20/05/23  
 SCALE: 1:500 @ A0  
 DRN: A/Nameo  
 CHECKED: M/Nameo  
 JOB No.: 2001320  
 DATE: 20/05/23  
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20133-RAU\_ZZZZ-DR-A-02.1003\_B

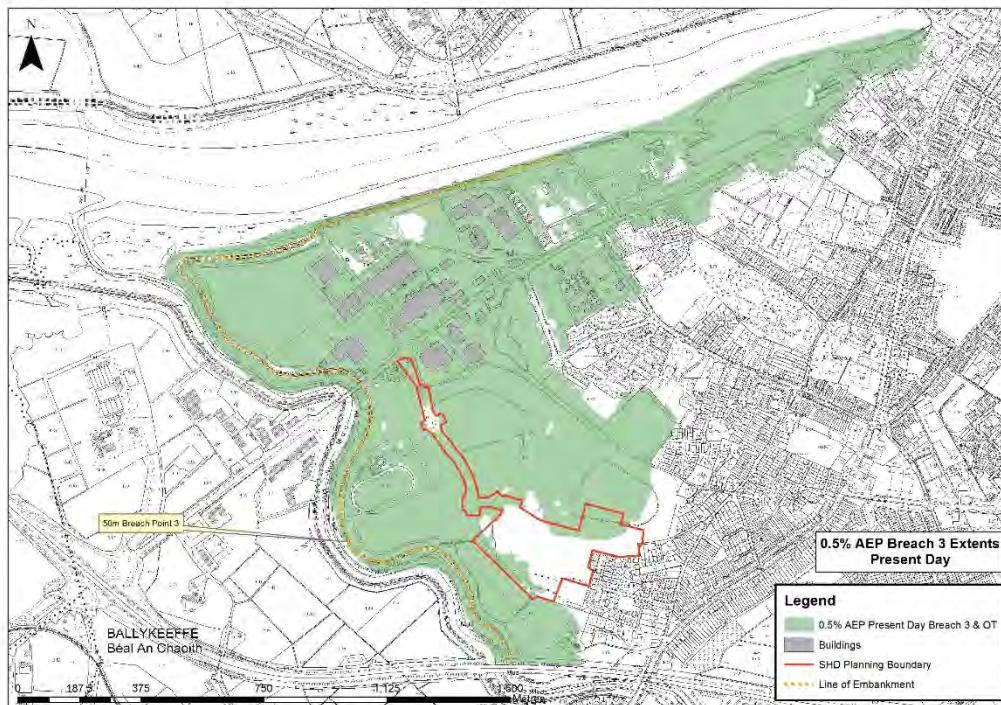


## Appendix D

### Breach modelling results- existing levels, present day scenario



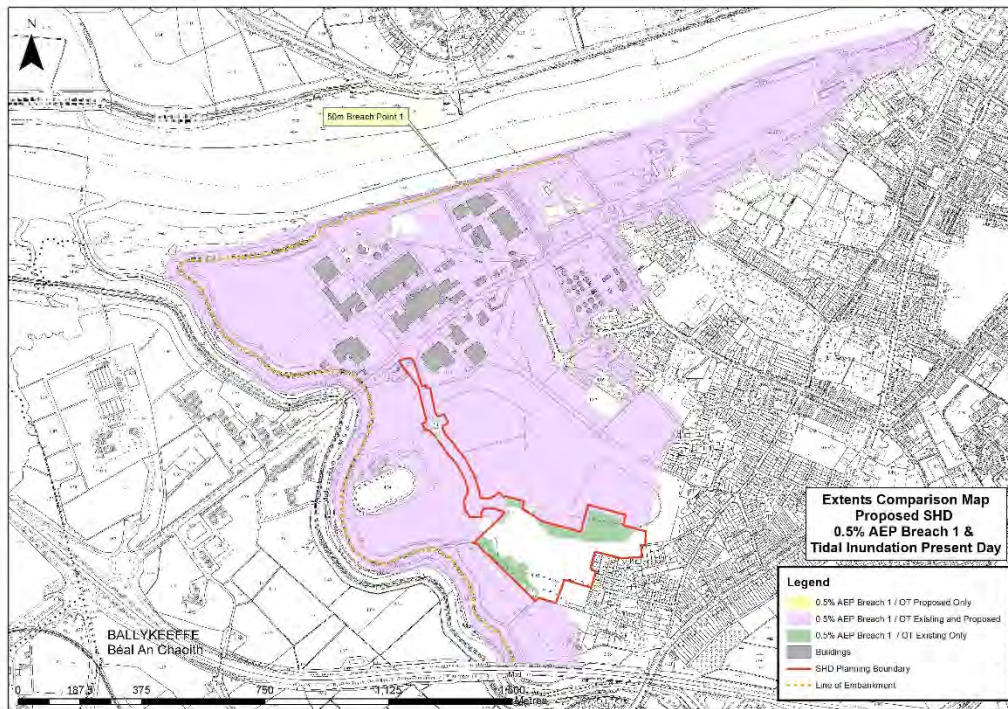
**Breach Location 1- 0.5% AEP event with existing ground levels**



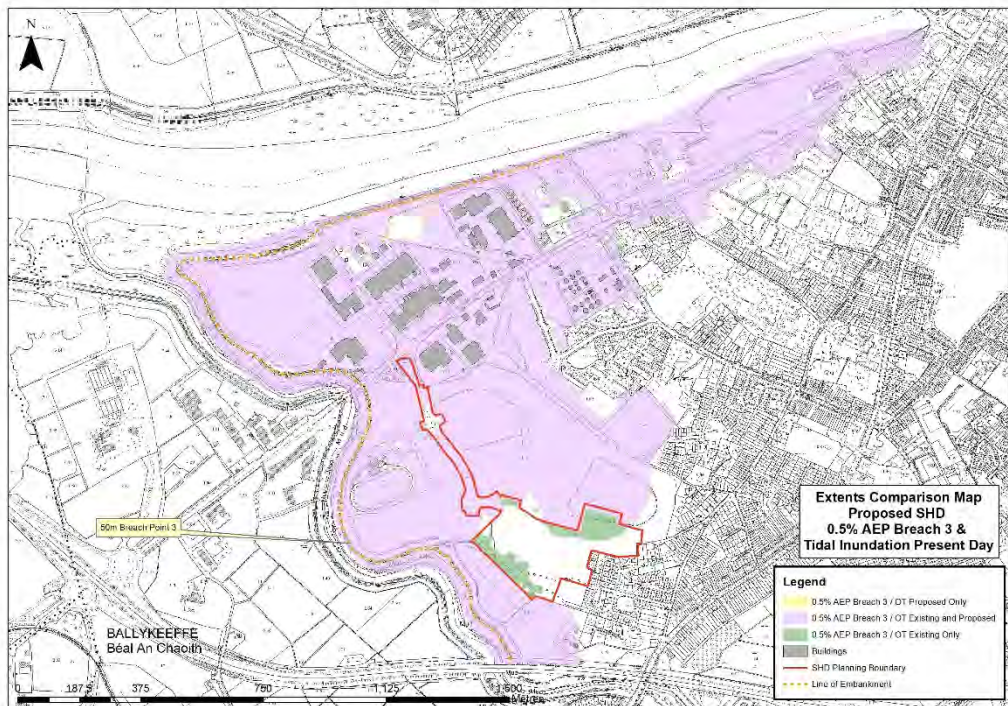
**Breach Location 3- 0.5% AEP event with existing ground levels**

## Appendix E

### Breach modelling results- site raised, present day scenario



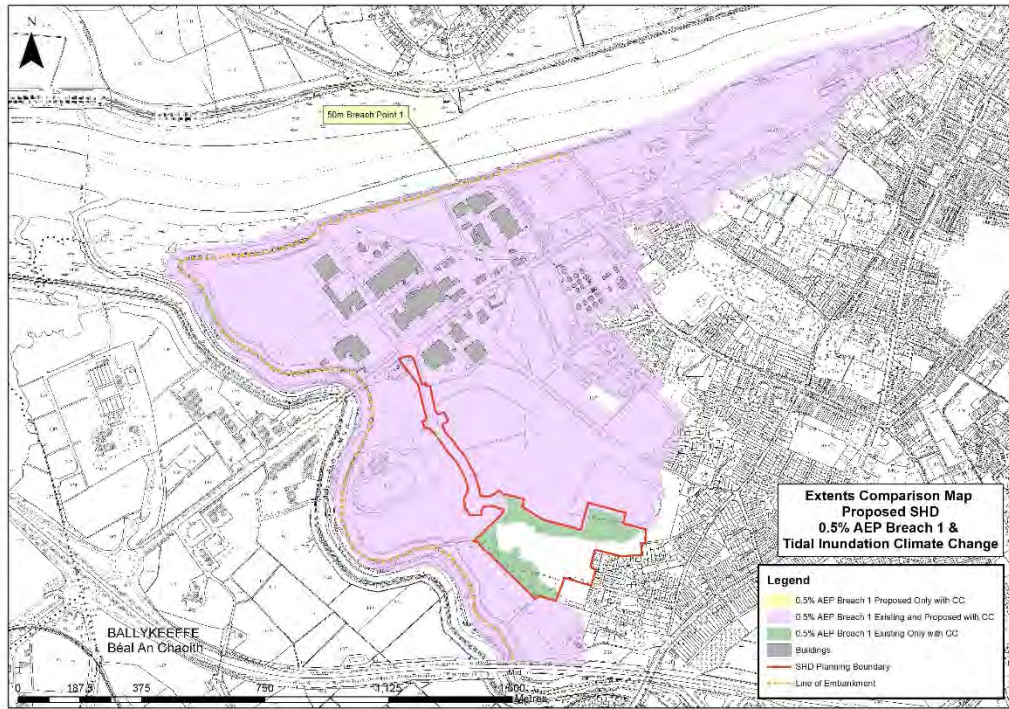
**Breach Location 1- Impact of raising proposed development lands (Present day)**



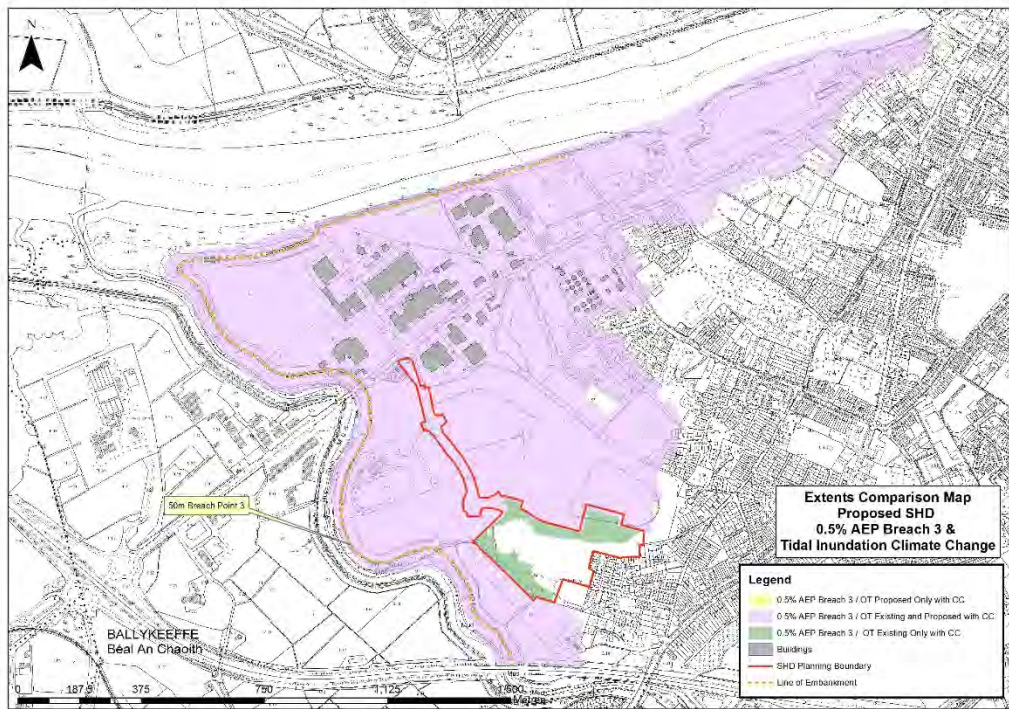
**Breach Location 3- Impact of raising proposed development lands (Present day)**

## Appendix F

### Breach modelling results- site raised, climate change scenario



**Breach Location 1- Impact of raising proposed development lands (Climate change)**

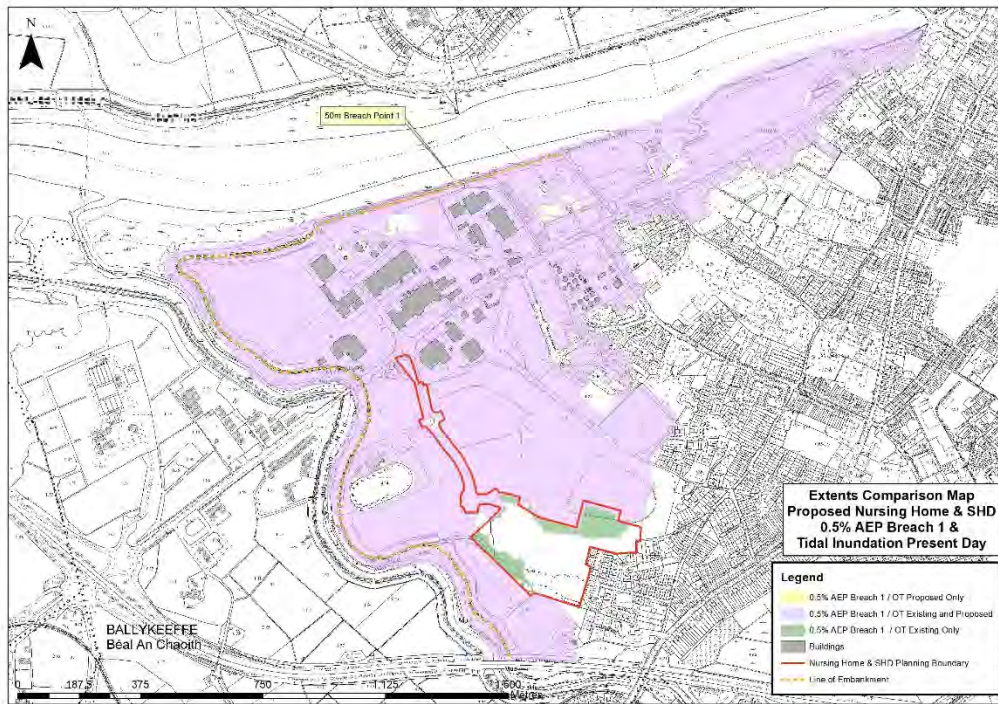


**Breach Location 3- Impact of raising proposed development lands (Climate change)**

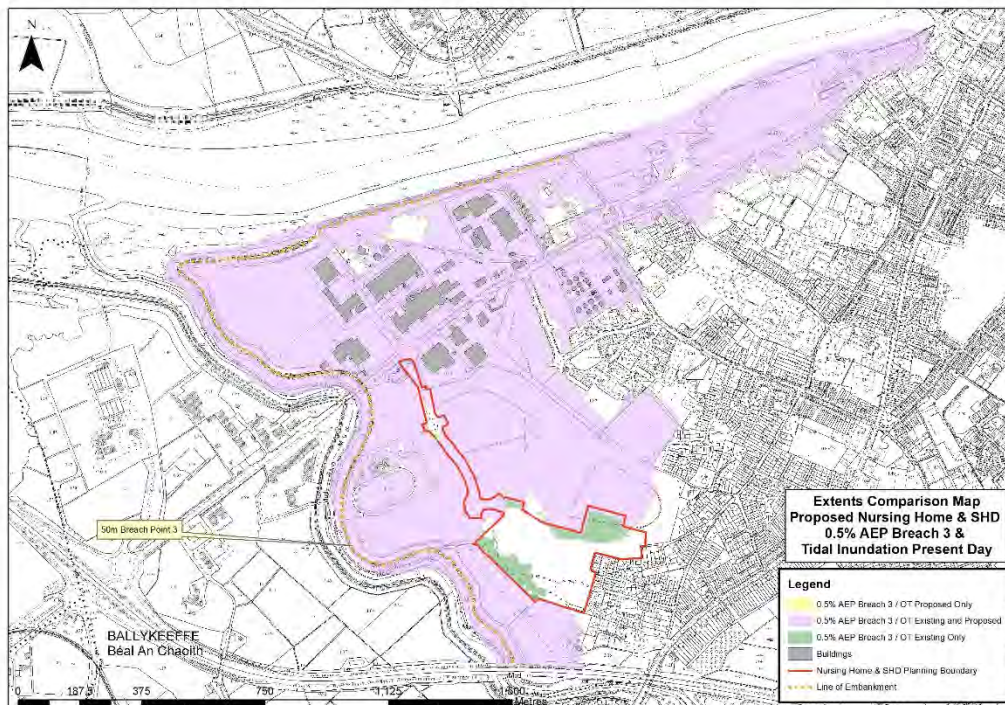


## Appendix G

### Breach modelling results- Nursing Home & SHD sites raised, present day scenario



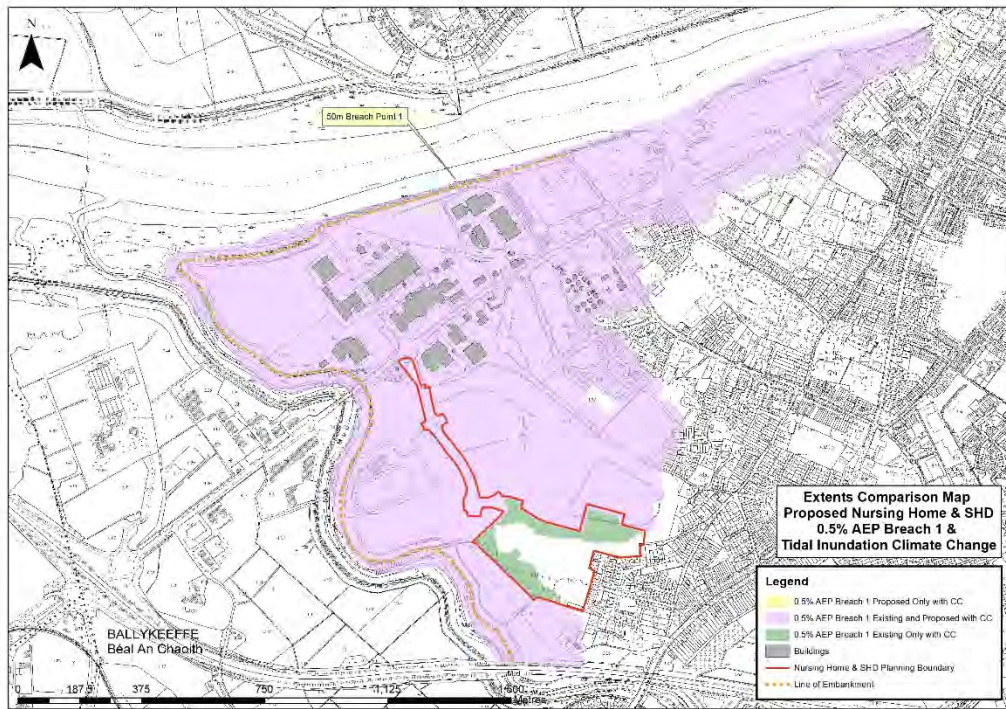
**Breach Location 1- Impact of raising nursing home & SHD sites (Present day)**



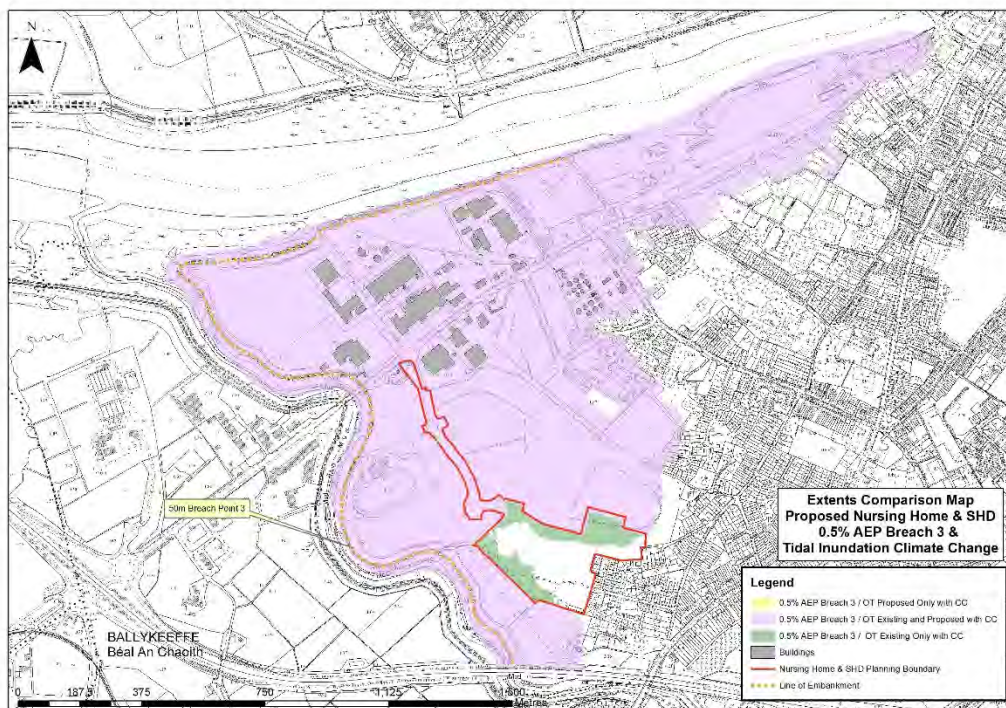
**Breach Location 3- Impact of raising nursing home & SHD sites (Present day)**

## Appendix H

### Breach modelling results- Nursing Home & SHD sites raised, climate change scenario



**Breach Location 1- Impact of raising nursing home & SHD sites (Climate change)**



**Breach Location 3- Impact of raising nursing home & SHD sites (Climate change)**

Limerick City and County Council  
County Hall  
Dooradoyle  
Limerick

Friday, 3<sup>rd</sup> September 2021

[By Email]

***DRAFT LIMERICK DEVELOPMENT PLAN 2022-2028***  
**- SUBMISSION -**

Dear Sir/Madam,

**RE: FORMER RACECOURSE LANDS, GREENPARK, LIMERICK**

**1.0 INTRODUCTION**

Tom Phillips + Associates, Town Planning Consultants, 80 Harcourt Street, Dublin 2 have been retained by Voyage Property Limited, Ashbourne Hall, Ashbourne Business Park, Corcanree, Dock Road, Limerick to make this submission in relation to the *Draft Limerick Development Plan 2022-2028* (generally referred to as the *Draft Plan* for the remainder of this submission) currently on public display. Voyage Property Limited is the owner of a strategic c.47 ha landholding comprising the former Racecourse lands located in Greenpark, Dock Road, Limerick. (The subject lands are generally referred to as the 'Greenpark Lands' for the remainder of this submission.)

The Draft Plan seeks to materially alter the land use zoning objectives that pertain to the lands under the current *Limerick City Development Plan 2010-2016* (generally referred to as the *Current Development Plan* for the remainder of this submission), which comprises General Mixed Use, New Residential, Neighbourhood Centre and Public Open Space zoning designations. The Draft Plan now proposes to replace the current General Mixed Use, Neighbourhood Centre and the majority of the New Residential zoning with a single use Enterprise and Employment zone. The Public Open Space zoning objective and a small residual area of Residential zoned land is retained. The proposed changes in the Draft Plan threaten the potential delivery of hundreds of new homes in the heart of Limerick City.

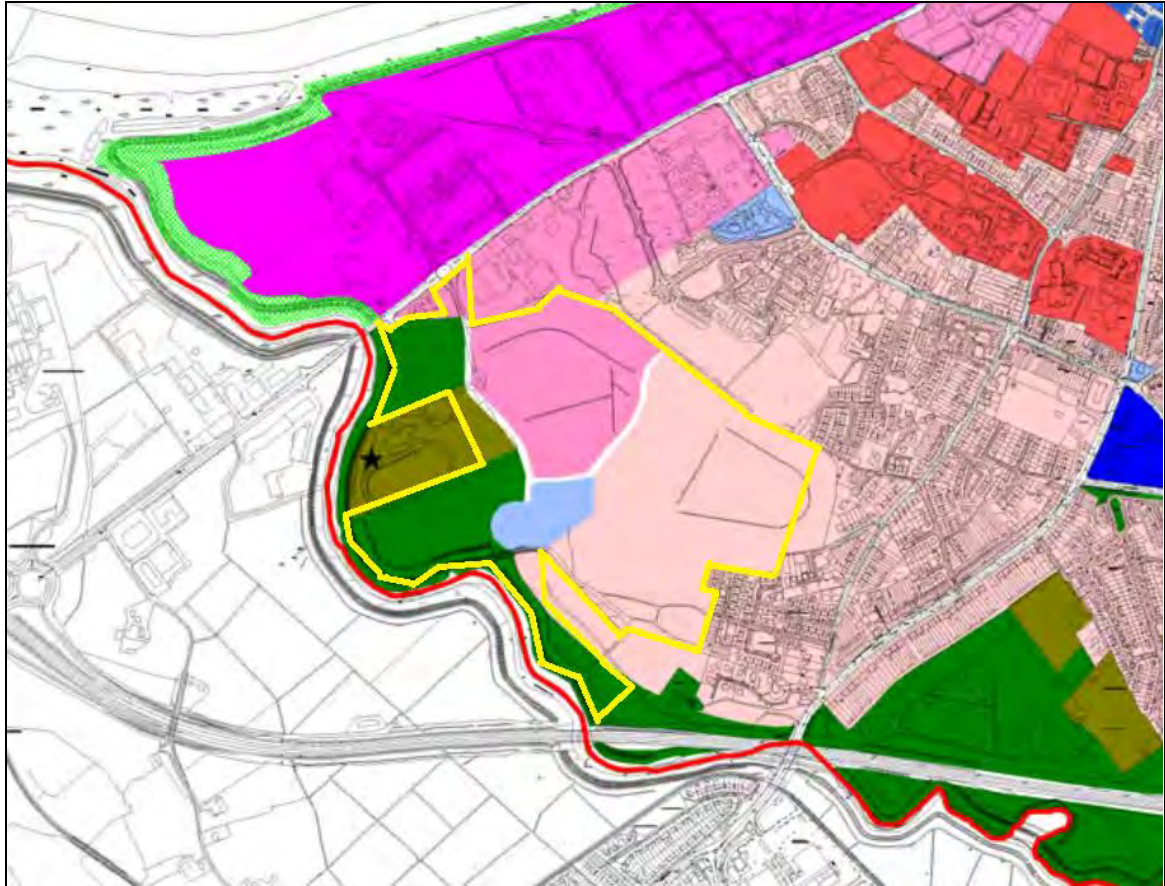
We wish to strongly object to these proposed changes, which are counter to National, Regional and Development Plan planning policies and objectives and do not accord with the core strategy for Limerick City and its environs as described in the Draft Plan.



## 1.1 Purpose of this Submission

As noted above, in the Current Development Plan, the Greenpark lands are currently zoned under four different zoning objectives as follows:

- Objective 5A - General Mixed Use (c.10.6 ha)
- Objective 2A - New Residential (c.19.3 ha)
- Objective 5C - Neighbourhood Centre (c.2.3 ha)
- Objective 6A - Public Open Space

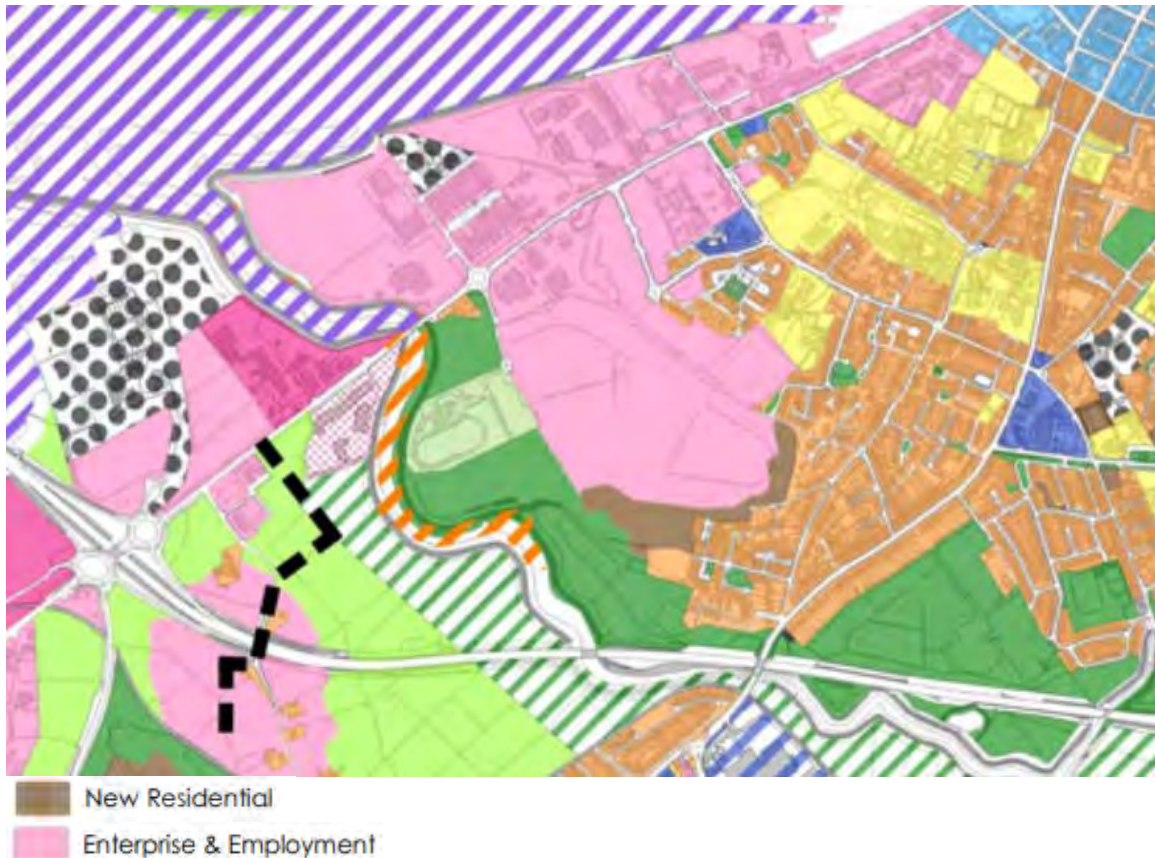




**Figure 1.1:** Extract of Land Use Zoning Map, with indicative site boundary in yellow, *Limerick City Council Development Plan 2010-2016* (cropped and annotated by Tom Phillips + Associates, 2021)

Under the Draft Plan, the zoning of the lands has changed significantly as follows:

- The General Mixed Use and Neighbourhood Centre zoning objectives have been removed from the lands, whilst the Residential component is very significantly reduced (from c.19.3 ha to c.4.4 ha). These areas have now been replaced with a single Enterprise and Employment zone (c.24.7 ha).
- The remaining residual New Residential zoned area comprises c.4.4 ha of land, which could not be considered a major residential development site in this context.
- An additional c.1.8 ha of land is now zoned for Public Open Space purposes in lieu of New Residential land use.



**Figure 1.2:** Extract of Land Use Zoning Map, *Draft Limerick Development Plan 2022-2028*  
(Cropped and annotated by Tom Phillips + Associates, 2021)

It should also be noted that both the General Mixed Use and Neighbourhood Centre zoning objectives currently pertaining to the lands both permit Residential use in principle, so the potential Residential yield of the entire landholding is being very drastically reduced on foot of the Draft Plan.

Residential use is not permitted under the proposed Enterprise and Employment zone, which leaves only c.4.4 ha of a strategic c.47 ha inner suburban landholding available for Residential purposes. This cannot be considered to represent a planning strategy in line with current National or Regional planning policy.

By way of this submission, therefore, we are seeking:

- The maintenance of c.19.3 ha of New Residential zoned land in line with the Current Development Plan zoning provisions pertaining to the site.

Our Client is amenable to the change in zoning from the current General Mixed Use and Neighbourhood Centre to Enterprise and Employment use. No other changes are being sought on foot of the Draft Plan.





## 1.2 Executive Summary

- Having reviewed the Draft Plan in detail, our core observation regarding the Greenpark Lands and the current Development Plan review process is the inexplicable absence of any meaningful reference to Greenpark in the written statement of the Draft Plan (Volume One), despite the site comprising one of the largest remaining and best located undeveloped strategic land banks in the inner suburbs of Limerick City. The Draft Plan will essentially eliminate the potential for hundreds of new homes in the heart of Limerick City.
- Notwithstanding the Greenpark Lands superb locational characteristics and size, they are not identified as a *'Limerick City Opportunity Site'* in the Draft Plan, despite being better located and larger than many of the other designated opportunity sites and being of a similar strategic size to the strongly promoted Colbert, Parkway and Mungret landholdings. Some of the other sites being promoted are significantly further away from the city centre.
- The absence of any such designation is entirely inconsistent with the *Limerick 2030 Interim Update and Review*, which comprises Volume Six of the Development Plan. The written statement includes a number of policy objectives, which underline the Planning Authority's commitment to implementing the *Limerick 2030 Interim Update*. The Planning Authority has an obligation to give effect to these objectives under Section 15 of the *Planning and Development Act 2000*, as amended.
- The limited references to the Greenpark Lands that are included in the Draft Plan documentation (in particular, see Volume 6 - *Limerick 2030 Interim Update*) identify the site as being both an employment opportunity site (c. 12 ha) and a *'major residential opportunity site'*. This promotes a mixed use approach to the future development of the lands in line with the Current Development Plan and current National planning policy. This is not, however, reflected in the proposed zoning of the lands in the Draft Plan that will now include c.4.4 ha of Residential zoned land only with some c.24.7 ha of Enterprise and Employment zoned land.
- In stark contrast to the Draft Plan provisions, the Current Development Plan explicitly identifies the Greenpark Lands as being capable of delivering 1,188 no. residential units with related development objectives seeking *'...the balanced development of the existing under utilised lands...in particular the former racecourse'* (see Chapter 14). The proposed change in zoning to create an overwhelmingly commercial site eliminates the majority of these potential new homes in the Draft Plan.
- The strategic importance of the Greenpark Lands ('Racecourse lands') as a major Residential site in Limerick City is further illustrated by way of its designation as a key development site under the *Rebuilding Ireland LIHAF* programme, which is a Government sponsored initiative prepared by the then Department of Housing, Planning, Community and Local Government in March 2017. In this document, 'Greenpark' is explicitly identified as being within the inner suburbs of Limerick City and described as a *'Major Urban Housing Development Site'* close to the *'heart of the city'* with the capability of supporting c.400 units by 2021 and the potential for 700 units in the longer term. The Draft Plan would require a significant change to Government Housing policy in the Limerick area.



- The enclosed Report prepared by Lisney (see Appendix B) on behalf of Voyage Property Limited analysing residential and commercial lands in Limerick City concludes that the extent of employment- related zoned land as proposed in the Draft Plan could provide c. 1.98 million sq m of accommodation (530,000 sq m of offices and 1.46 million sq m of industrial/logistics/manufacturing).
- Taking into consideration the likely potential for expansion of the office and industrial markets in Limerick in the medium-term due to LCCC'S commitment to economic growth and dynamic revitalisation via *Limerick 2030*, Lisney estimate that the proposed level of potential development is equivalent to over 20 years' requirements assuming a generous 60% increase in demand in the medium term. (It is estimated that this level of employment-related zoned land would satisfy the significantly larger Dublin market for 5 years).
- Demand for residential properties remains strong but with clear undersupply in the market. Based on CSO data, 516 units were completed in Limerick in the 12 months to the end of March 2021; 483 (94%) were houses and 33 (6%) were apartments. This remains well below what is required in the market and only added about 0.6% to the stock of residential properties across Limerick.
- Lisney note that there are only five new housing schemes currently available in Limerick City. Two are in Mungret with a further scheme on Ballyneety Road, all of which are further from the city centre than Greenpark. Of the other two schemes, 'Revington' (located off the North Circular Road) comprises a low density development of large 4 and 5 bedroom detached properties only. The future development of the Residential zoned lands in Greenpark in line with the Current Development Plan zoning would deliver a significantly more affordable housing proposal with a greater selection of housing types in an inner urban location.
- An Bord Pleanála ('the Board'), as part of the recent pre-application consultation process regarding a Strategic Housing Development proposal on a portion of the lands (July 2021), noted in its formal Opinion the '*...status of the Racecourse lands as one of the largest remaining undeveloped land banks in Limerick City and the strategic importance of the lands in the context of National planning policy, residential density guidelines and its accessible location relative to Limerick City Centre, Mary Immaculate College, Dooradoyle District Centre and employment zones such as the Raheen Industrial Estate and University Hospital Limerick campus*'.
- The Board also noted the availability of existing and proposed roads, pedestrian, cycle and public transport infrastructure in the vicinity of the site, in the context of the Draft Limerick Shannon Metropolitan Area Transport Strategy (LSMATS).
- The Greenpark Lands are subject to Flood Risk designations and are, accordingly, subject to the provisions of the '*Planning System and Flood Risk Management Guidelines for Planning Authorities 2009*' including the Development Plan Justification Test in respect of land use zoning. It is noted that the zoning of the lands under the Current Development Plan (adopted in 2010), including New Residential, were previously considered in the context of these Guidelines (see Policy WS8, which references that all new development proposals must comply fully with the above Guidelines).



- The Greenpark Lands also satisfy the criteria of the Development Plan Justification Test. It is noted in the 2009 Guidelines that the Development Plan Justification Test applies to *'...future development of areas in an urban settlement that are at moderate or high risk of flooding, for uses or development vulnerable to flooding that would generally be inappropriate as set out in Table 3.2'*. There is no distinction drawn, therefore, in this Test between land use types (residential, commercial) or whether the uses are highly or less vulnerable. Future planning applications on zoned lands will be required to demonstrate that the criteria of the Development Management Justification Test will also be satisfied by Applicants, which will necessitate the submission of a Site Specific Flood Risk Assessment (SSFRA).
- We contend that the site is suitable for significant Residential use being crucial to the achievement of a balanced *'compact growth'* strategy and projected population increase, which are envisaged for Limerick City. This is a key National, Regional and Draft Plan objective and necessitates the sustainable provision of well-located housing. As demonstrated in this submission, the Greenpark Lands satisfy the criteria of the Development Plan Justification Test for Residential use.
- A detailed Site Specific Flood Risk Assessment (SSFRA) was carried out by RPS, Consulting Engineers in respect of the subject lands (see Appendix A), which includes substantial and robust modelling and breach analysis that confirms that the site can be fully developed in a safe manner without impact on third party lands. This was submitted for discussion with representatives of Limerick City and County Council who confirmed that they were satisfied that the methodology and analysis in that assessment was robust and accurate.
- The re-development of the lands for a mix of commercial and residential uses of scale complies in full with current National (*NPF 2018, Development Plan Guidelines, Residential Density Guidelines*), Regional (*RSES 2020*) and Draft Plan (including *Limerick 2030 Interim Update*) planning objectives regarding the achievement of compact urban growth; the sequential zoning of land; meeting population growth projections for Limerick as a Nationally designated city of scale, and the sustainable re-development of inner suburban serviced lands adjoining the city centre and public transport corridors.
- The re-development of the Greenpark Lands for a mix of commercial and residential uses of scale complies in full with the recommendations included in *'The Future Development of Limerick City'* as produced by Indecon Research Economists and published by Limerick Chamber in June 2021. This notes that *'Increasing the population density in Limerick city is a critically important challenge for the future development of the city'* and recommends that *'Strategic development areas should be identified in the city to facilitate new quality affordable residential developments'*.
- *'The Future Development of Limerick City'* further recommends that *'The focus of all policies and investments should be on facilitating compact growth'* and that *'Targets should be set (and monitored) to achieve an increase in apartment and other residential regeneration developments in inner areas of the city'*.



- Having regard to all of the above planning context, it is submitted that there is no planning and development rationale consistent for the proposed zoning of the lands under the Draft Plan, which would reduce the extent of Residential zoned land from the current c.19.3 ha (capable of delivering c.800+ no. units) to the proposed c.4.4 ha (c.200 no. units). The weighting in favour of Enterprise and Employment zoning is entirely disproportionate.
- We request, therefore, that the current extent and location of Residential zoned land should be maintained on the Greenpark lands as per the current Development Plan zoning arrangements (c.19.3 ha). Our Client accepts that it is appropriate to zone c.12 ha of land for Enterprise and Employment purposes on the north-western part of the subject lands (essentially replacing the existing General Mixed Use and Neighbourhood Centre zones) in order to support and complement the economic growth strategy proposed for Limerick City and its environs and in line with the *Limerick 2030 Interim Update* vision for the site.
- If the Draft Plan is not amended, Limerick City will lose hundreds of potential new homes, which are capable of delivery in the short term. This site is not reliant on the provision of major new infrastructure and, being in single ownership, is free from complex legal ownership arrangements involving multiple parties that will delay other sites being progressed for development.

### **1.3 Site Location**

The c. 47 ha subject site is situated approximately 2 km to the south-west of Limerick City Centre and south of the River Shannon. The site generally comprises an extensive open area of the former Greenpark Racecourse (now re-located). The site is generally bounded by Ballinacloy River to the west and south-west and surrounding lands including the Greenpark Greyhound Stadium; Dock Road and industrial buildings to the north-west and existing clustered student accommodation and residential development to the south-east and east.



**Figure 1.3:** Aerial view of the subject site, with indicative site area in red  
(Source: Google Maps, annotated by Tom Phillips + Associates, 2021)

The overall landholding can be accessed from three existing points as follows (i) via Greenpark Avenue; (ii) via an existing gated entrance in the Log na gCapall residential estate to the south, which is accessed off South Circular Road, and ultimately the Ballinacurra Road (R526), and (iii) via the Dock Road to north of the site, via an access road, which has a shared roundabout with the Limerick Greyhound Stadium. An additional potential access point via an existing roundabout at Ashdown to the north, near Alandale Square, may be provided at a future date and forms part of the overall Masterplan vision for the Greenpark lands. The future development of the site will also benefit from good quality pedestrian and cyclist linkages that can be readily provided via Log na gCapall and Greenpark Avenue

The site is located within easy reach of O’Connell Avenue, which is an important arterial route in and out of Limerick City Centre. This area of the City is well serviced with a variety of primary and secondary schools and Mary Immaculate College, a third level institution, is also located in close proximity to the site. Public transport facilities service this area of Limerick, with the bus routes No. 13, 14, 301, 304, 304A, 304X, 315, 320, 321 and 435 available nearby on Ballinacurra Road.

The re-location of the racecourse has facilitated the potential re-development of these lands in line with the provisions and land use zoning as set out in the Current Development Plan e.g. office campus, housing (including crèche), nursing home, neighbourhood centre and open space.



### ***Change in Land Use Zoning***

We strongly object to this proposed change in zoning classification, which we submit is not grounded in rational planning analysis of the land use requirements of Limerick City, nor is it supported by National and Regional planning policy guidance, or Development Plan policy, all of which seek to promote ‘compact growth’ and the efficient use of underutilised urban lands close to city centres nationwide.

The subject lands are ideally located to deliver on this concept and facilitate a mixed use, sustainable form of development that can maximise their locational advantages for the benefit of future residents and employees, given their location within reasonable walking and cycling distance of the city centre and existing and emerging public transport routes (see the *Draft Limerick Shannon Metropolitan Area Transport Strategy (LSMATS)* for further details).

The lands are also serviced (foul/surface water drainage and water supply) and will be served by a new internal link road providing vehicular access from Dock Road that will be delivered by the landowner through the planning process. Thus, the future development of the lands is not contingent on the future provision of new infrastructure that is beyond the control of the landowner and can, accordingly, deliver new development in a timely manner including much needed homes for Limerick residents, which is crucial for the further economic development of Limerick City.

The land use zoning arrangement pertaining to the lands in the current Development Plan comprises an excellent planning model that will enable the creation of a new mixed use urban quarter in line with the much vaunted ‘10/15 minute city’ (see Volume Six of the Draft Plan, *Limerick 2030 Interim Update*) models where people can live, work and enjoy recreational amenities (in this case, significant areas of Public Open Space) all within a 10-15 minute walk/cycle catchment that is not dependent on the private car.

The juxtaposition of General Mixed Use (which strongly promotes employment generation), Neighbourhood Centre and Residential uses as per the current Development Plan will also ensure that there will not be an abrupt transition in scale and land use between the future development of the site and the well-established uses adjoining the site and will enable new development to reflect the two principal character areas that define the lands, viz:

- the north-western Commercial area proximate to the Greyhound Stadium and the traditional industrial/manufacturing/dock-based uses associated with Dock Road, and
- the south-eastern Residential area generally centred around the former racecourse track that adjoins the well-established housing areas situated off South Circular Road (Log na gCapall, Greenpark Avenue, Castlewell, Alandale and student housing clusters). By its nature, these areas will be more sensitive to the potential effects of new development on the Greenpark lands and will require to be designed accordingly.

In planning terms, it is wholly appropriate that well designed contemporary new residential development should adjoin existing long established generally lower density residential areas noted above, where potential planning and environmental impacts can be minimised at the design stage and existing residential amenity protected from the outset.

To the north, the existing General Mixed Use zone enables an appropriate transition to occur from the heavier, more traditional industrial/manufacturing/dock-based uses associated with Dock Road to a more office/services-based form of development in a high quality landscaped campus style setting. The centrally located Neighbourhood Centre zone ensures that future employees and residents of the development alike would have easy access to a range of local services including shops, etc.



Figure 1.4: Greenpark Masterplan 2020 (Annotated by Tom Phillips + Associates, 2021)

Based on this model of development, our Client has prepared a Masterplan for the entire lands ('Greenpark Masterplan'), which demonstrates how this vision might be delivered on the site. This Masterplan, which goes well beyond an architectural vision, also assesses the likely ecological, traffic, construction and flood impacts of the entire development of the lands and confirms that the development of the lands can occur safely and without any significant impacts on the local environment. This approach to the development of the lands fully accords with the Transitional Zoning policy noted in the Draft Plan (see page 348), which states:

*'Transitional Zoning Areas should be considered in the design of developments in order to avoid abrupt transitions in scale, density and use in the boundary areas of adjoining land use zones. In particular, developments which would be detrimental to the amenities of residential properties should be avoided in order to protect the amenities of such properties'.*



The proposed juxtaposition of c.24.7 ha of new Enterprise and Employment zoning, which is a very substantial commercial area that allows a wide range of permitted uses such as offices, machinery sales, builders providers, car parking, food and drink processing, manufacturing, fuel depot, light industry, logistics, plant storage and warehousing, adjoining existing low density residential areas would result in an abrupt transition in scale and use. In summary, therefore, the removal of the majority of the Residential land use component from the current zoning of the lands does not accord with contemporary planning policy and its replacement with a mono-use Enterprise and Employment zoning objective is a retrograde step.

This submission describes how the proposed zoning identified in the Draft Plan for the Greenpark lands runs counter to National and Regional planning policy guidance for sites such as this in an inner urban context. In addition, the policies and objectives of the Draft Plan itself, which must follow the policy framework set out at National and Regional level, also support the Residential development of a significant portion of the subject lands.

## 2.0 KEY ISSUES ARISING

- The 47 ha site comprises a zoned serviced strategic undeveloped and underutilised landholding (former Racecourse lands) located at Greenpark within the built-up inner suburban area of Limerick City. The mixed use re-development of the lands, including a strong Residential component, is explicitly supported by National, Regional and Development Plan policies and objectives and represents the optimum planning and design solution for the future sustainable re-development of the lands.
- The site meets all relevant criteria as an appropriate location to support Residential land use zoning when assessed against the provisions of *Development Plans - Guidelines for Planning Authorities 2007* and the recently published *Development Plan - Guidelines for Planning Authorities Draft for Consultation August 2021*. The lands are contiguous to the existing built footprint of Limerick City and located proximate to the city centre, a range of employment centres, public transport services and an established social infrastructure. The zoning of lands for Residential purposes is in accordance with the sequential approach to the zoning of land noted in the above Guidelines, given the location of the lands relative to Limerick city centre. The proposed zoning of a substantial tract of land for a single commercial use (Enterprise and Employment – c.24.7 ha) represents an inappropriate use of what is scarce urban serviced lands that can also contribute significantly to meeting a defined need for better located residential development and a projected population increase in the city.
- The inclusion of a significant Residential component in the re-development of the lands accords in full with the ‘compact city’ model of development, which underpins *Project Ireland 2040 - National Planning Framework (NPF) 2018* and includes the key objective that 50% of future housing during the lifetime of the Strategy will occur within the existing built footprint of urban areas (as opposed to greenfield or locations at a remove from urban centres, which are often car dependent and reliant on new infrastructure). Unlike other sites identified in the Draft Plan, Greenpark is not constrained by the absence of any services and can deliver housing within the lifetime of the Development Plan.





- This compact city strategy is replicated at Regional level in the *Regional Spatial & Economic Strategy (RSES) for the Southern Region 2020* and the Draft Plan. The subject site clearly represents a far superior and sustainable alternative to other Residential zoned lands identified in the Draft Plan, which are located at a significant remove from the city centre and its contiguous inner suburbs.
- The population growth projected to occur in Limerick City is defined at both National and Regional levels and requires to be met through appropriately located Residential zoned land. The population of Limerick City and suburbs in 2016 was 94,000 and the above referenced NPF seeks population growth of 50-60% to 2040, or 47,000-56,000 additional people. As noted above, 50% of this growth (c. 23,000 – 28,000) should occur within the existing built-up area of the city, which would naturally include the subject lands, given their inner suburban location. The subject lands are ideally located to contribute towards meeting these population growth targets in a sustainable location.
- The Draft Plan projects population growth of 34,177 persons to 2028. The Plan notes that the Limerick Metropolitan Area (city and suburbs) has the capacity to accommodate 12,322 no. units on zoned land. It is clear, therefore, that there is significant population growth forecast for Limerick City, which requires to be met by appropriately zoned and located land. Significant strategic sites such as Greenpark, as opposed to lands located in peripheral locations of the city, must be prioritised to comply with current planning guidance.
- The NPF also explicitly supports making better use of under-utilised land and buildings, including ‘infill’, ‘brownfield’ and publicly owned sites and vacant and under-occupied buildings, with higher housing and jobs densities, better serviced by existing facilities and public transport. The subject lands are undeveloped and highly underutilised but with the inherent advantages of being serviced and proximate to the city centre, major employment centres and public transport services.
- The Greenpark Lands are not noted anywhere in the *Limerick 2030* strategy as a potential location for significant new enterprise or employment uses, or as one of the ‘*knowledge locations*’.
- On the other hand, the *Limerick 2030 Interim Update* (see Volume Six of the Draft Plan), which is informed by the policy objectives of the RSES identifies the former Racecourse lands as part of the ‘*expanded plan*’ area and potentially being both ‘*...a major residential opportunity site*’ and a ‘*c.12 Ha enterprise and employment opportunity site*’. This mixed use form of development would accord with the Current Development Plan zoning parameters but is not reflected in the Draft Plan zoning provisions pertaining to the site. Policy ECON P1, Chapter 4 of Volume One (written statement) of the Draft Plan notes the importance of *Limerick 2030* as reviewed stating:

*‘It is a policy of the Council to support the review and implementation of Limerick 2030 – An Economic and Spatial Plan to guide the economic, social and physical renaissance of Limerick City Centre and the wider County/Mid-West Region’.*



- As part of the pre-application consultation process with An Bord Pleanála in relation to a proposed Strategic Housing Development (SHD) on part of the currently Residential zoned lands (see ABP Ref. 310233-21), the Board, in its Opinion of July 2021, noted a number of characteristics of the Greenpark lands in the context of future Residential development on the site, which we consider are pertinent to this submission:
  - o *The status of the Racecourse lands as one of the largest remaining undeveloped land banks in Limerick City.*
  - o *The strategic importance of the proposed development site and the Racecourse lands for the development of the Limerick Metropolitan area, in the context of national planning policy to achieve compact urban areas and, specifically, National Planning Objectives NPO 2a, NPO 3b, NPO 7, NPO8 regarding the development of Ireland’s existing cities; NPO 5 regarding the development of cities and towns of sufficient scale and quality to compete internationally and to be drivers of national and regional growth, investment and prosperity and NPO 35 to increase residential density in settlements, as set out in the National Planning Framework. [our emphasis]*
  - o *National planning policy on residential development as set out in the Sustainable Residential Development in Urban Areas Guidelines for Planning Authorities and the Design Standards for New Apartments Guidelines for Planning Authorities.*
  - o *Table 2.4 of the Core Strategy of the Limerick City Development Plan 2010-2016 (as varied), which identifies the Racecourse lands (36 ha) as having capacity for 1,188 no. residential units, also the objectives for the Racecourse lands set out in Development Plan Chapter 14.*
  - o *The accessible location of the proposed development site close to Limerick City Centre, Mary Immaculate College, Dooradoyle District Centre and employment zones such as the Raheen Industrial Estate and University Hospital Limerick campus.*
  - o *The availability of existing and proposed roads, pedestrian, cycle and public transport infrastructure in the vicinity of the site, in the context of the draft Limerick Shannon Metropolitan Area Transport Strategy (LSMATS).*
- It is evident from the above that An Bord Pleanála consider the former Racecourse lands to be a key land bank for Limerick and of strategic importance to the future development of the city in respect of meeting several key National planning objectives pertaining to the achievement of compact growth and the required increase in residential density mandated for the State’s main cities.
- The Board also acknowledge the status of the lands in the context of National residential density (2009) and apartment design guidelines (2018), both of which explicitly encourage higher density residential development on lands that share the locational characteristics of the Greenpark Lands including its proximity to Limerick city centre, major third level institutions, a district centre, several major centres of employment and existing and emerging public transport services.



- By way of further illustration of the site's strategic importance as a future Residential development area, we refer the Planning Authority to the document entitled '*Rebuilding Ireland, Project Descriptions Local Infrastructure Housing Activation Fund (LIHAF)*' prepared by the then Department of Housing, Planning, Community and Local Government in March 2017. In this document, 'Greenpark' is explicitly identified as being within the inner suburbs of Limerick City.
- Under the heading '*Public Infrastructure*', the proposed works required associated with the lands are described as follows: '*The public infrastructure proposed includes the upgrading of roads infrastructure and a new link road*'.
- Under the heading of '*Housing Delivery*', the subject lands are described as follows:

*'This is a **Major Urban Housing Development Site**. Greenpark, which is located between the Dock Road and the South Circular Road in the inner suburbs of Limerick City, is close to the heart of the City Centre and the commercial business district. This area is comprised of the lands in former use as a racecourse, which remain undeveloped, comprising of a 44 hectare site. Works proposed include the upgrading of roads infrastructure to support the development of approximately 400 units by 2021 with the potential for 700 homes to be delivered on the identified lands long term. The total length of the new link road will be 1,000 metres'. [Department's emphasis]*

A total of €4.93 million was proposed to be allocated to facilitate the infrastructure required to realise this project. Notably, Greenpark was one of only two projects identified in the Limerick City and County area, the other being Mungret described as being '*...approximately 5km to the southwest of Limerick City. Limerick City and County Council is a partial owner of the lands*'. A total of €10.5 million is allocated towards roads infrastructure necessary for the Mungret project to proceed on a phased basis.

- Having regard to all of the above planning context, it is submitted that there is no planning and development rationale that is consistent with current planning policy to reduce the extent of Residential zoned land from the current c.19.3 ha capable of delivering c. 800+ no. units to the proposed c.4.4 ha (c.200 no. units).
- We request, therefore, that the current extent and location of Residential zoned land should be maintained on the Greenpark lands as per the current Development Plan zoning arrangements. Our Client considers it appropriate to provide for the zoning of c.12 ha of land for Enterprise and Employment purposes on the north-western part of the subject lands (essentially replacing the existing General Mixed Use and Neighbourhood Centre zones) in order to support and complement the economic growth strategy proposed for Limerick City and its environs and in line with the *Limerick 2030* Interim Update vision for the site.



- The Greenpark Masterplan prepared on behalf of Voyage Property Limited shows that this extent of commercial land can deliver c. 40,000 sq m of employment floorspace in a high quality landscaped campus setting. It is submitted that this is a significant potential contribution to the economic and employment growth strategy earmarked for Limerick City (as referenced in the *Limerick 2030 Interim Update* as a 12 ha enterprise site) and can complement adjoining Residential development on the Greenpark Lands.
- Regarding flood risk management, the flood risk designations pertaining to the lands are noted and have been integrated into the overall masterplanning of the entire landholding from the outset (see Greenpark Masterplan as previously submitted to LCCC). A detailed Site Specific Flood Risk Assessment (SSFRA) was carried out by RPS, Consulting Engineers in respect of the subject lands, which includes substantial and robust modelling and breach analysis (see Appendix A attached). This was previously submitted for discussion with representatives of Limerick City and County Council who confirmed that they were satisfied that the methodology and analysis in that assessment was robust and accurate.
- The SSFRA confirms that the lands can be safely developed for mixed use purposes including a major new residential development (New Residential zoning) and will facilitate all necessary flood alleviation measures. As confirmed in the Draft Plan (see Volume 4), the Greenpark Lands also satisfy the Development Plan Justification Test criteria as provided for in the *Planning System and Flood Risk Management Guidelines for Planning Authorities 2009*, albeit we contend that the site is also suitable for Residential use, having regard to the relevant test criteria. It is noted that the Justification Test draws no distinction between land uses or vulnerability to flooding.



### 3.0 NATIONAL AND REGIONAL PLANNING POLICY

This section of the submission assesses the Greenpark lands in the context of the suite of current National and Regional planning policy guidance documents, all of which would support the Residential development of a significant part of the subject lands.

#### 3.1 *Project Ireland 2040 - National Planning Framework (NPF) 2018*



**Figure 3.1:** *Project Ireland 2040 - National Planning Framework (NPF)* (Source: Government of Ireland, 2018)

There have been a number of recent national policy changes that strongly support the sustainable redevelopment of the Greenpark lands incorporating a significant Residential component. In summary, the *National Planning Framework (NPF)* is the Government's plan to cater for the extra one million people that will be living in Ireland, the additional two thirds of a million people working in Ireland and the half a million extra homes needed in Ireland by 2040.

The Framework focuses on:

- Growing regions, their cities, towns and villages and rural fabric;
- Building more accessible urban centres of scale and
- Better outcomes for communities and the environment, through more effective and coordinated planning, investment and delivery.



The NPF states that in Ireland, the location of housing has taken on a dispersed and fragmented character, which has led to people living further away from their jobs and often being at a sizeable remove from important services such as education and healthcare. Development sprawl at every settlement level in Ireland has manifested as scattered development, ‘leapfrogging’, continuous suburbs and linear patterns of strip or ribbon development.

Under the concept of ‘*Compact Growth*’, which underpins much of the Strategy, the NPF is:

*‘Targeting a greater proportion (40%) of future housing development to happen within and close to existing built-up areas. Making better use of under-utilised land, including ‘infill’ and ‘brownfield’ and publicly owned sites together with higher housing and jobs densities, better serviced by existing facilities and public transport.’*

More balanced growth also means more concentrated growth. There are five cities in Ireland today in terms of population size (>50,000 people): Dublin, Cork, Limerick, Galway and Waterford. The NPF targets these five cities for 50% of overall national growth between them, with Ireland’s large and smaller towns, villages and rural areas accommodating the other 50% of growth.

The planned growth of the four cities including Limerick is designed to enhance their significant potential to become cities of scale. In the case of Limerick, the population of Limerick City and suburbs in 2016 was 94,000 and the NPF seeks population growth of 50-60% to 2040, or 47,000-56,000 additional people. As noted above, 40% of this growth (c. 19,000 – 22,000) should occur within the existing built-up area of the city including the subject lands.

The NPF also supports making better use of under-utilised land and buildings, including ‘infill’, ‘brownfield’ and publicly owned sites and vacant and under-occupied buildings, with higher housing and jobs densities, better serviced by existing facilities and public transport. This ‘compact growth’ strategy is designed to counter the prevailing situation whereby the fastest growing areas are at the edges of and outside the cities and towns. This results in:

- A constant process of infrastructure and services catch-up in building new roads, new schools, services and amenities and a struggle to bring jobs and homes together, meaning that there are remarkably high levels of car dependence and that it is difficult to provide good public transport;
- A gradual process of run-down of city and town centre and established suburban areas as jobs, retail and housing move out, leaving behind declining school enrolments, empty buildings and a lack of sufficient people to create strong and vibrant places, both day and night;
- Most development takes the form of greenfield sprawl that extends the physical footprint of urban areas, and when it is the principal form of development, this works against the creation of attractive, liveable, high quality urban places in which people are increasingly wishing to live, work and invest.



The NPF identifies the preferred approach, which is compact development that focuses on reusing previously developed, 'brownfield' land and building up infill sites, which may not have been built on before and either reusing or re-developing existing sites and buildings.

With regard to Limerick City and Metropolitan Area, the NPF supports growing and diversifying the City's employment base and attracting more people to live in the city, both within the city centre and in new, accessible green-field development areas. This means improving housing choice, supported by facilities and infrastructure.

The NPF identifies the following as a key growth enabler for new development in Limerick City:

*'Identifying infill and regeneration opportunities to intensify housing and employment development throughout inner suburban areas'.*

In summary, it is clear that National Planning Objectives NPO 2a, NPO 3b, NPO 5, NPO 7 and NPO8 regarding the development of Ireland's existing cities would support significant Residential development on the Greenpark lands. In addition, NPO 5 relates to the development of cities and towns of sufficient scale and quality to compete internationally and to be drivers of national and regional growth, investment and prosperity, whilst NPO 35 seeks to increase residential density in existing settlements. In summary, the key NPF objectives for Limerick seek increased population and employment activity. This means encouraging more people, jobs and activity generally within our existing urban areas, rather than mainly 'greenfield' development.

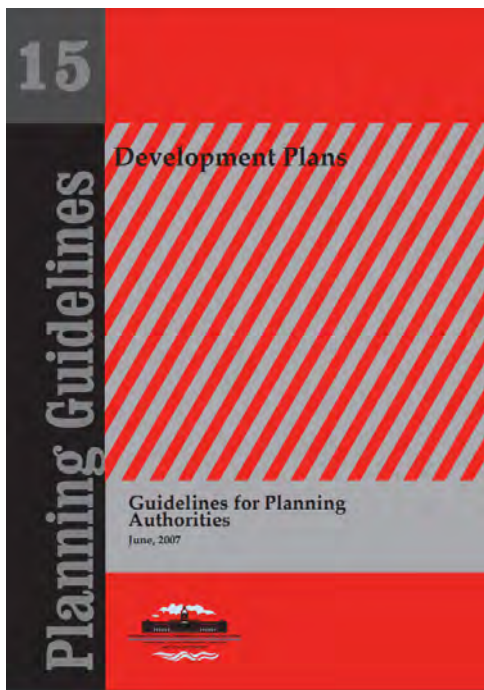
Key Issue Arising: The re-development of the Greenpark Lands inherently complies with the overarching policies and NPOs of the NPF to encourage '*compact growth*' and to accommodate part of the population increase projected for Limerick in appropriate locations. The lands are ideally situated in close proximity to Limerick city centre in an inner suburban location and, as a former racecourse, meet the definition of 'brownfield' lands. The lands are serviced and close to the established urban social infrastructure of the city and provide a far superior sustainable alternative to lands located in peripheral greenfield locations that are reliant on new infrastructure to become developable. The principal zoning of the Greenpark lands in the Current Development Plan for Mixed Use and New Residential purposes provide the perfect blend of land uses in that both will contribute to the realisation of NPF objectives in relation to population growth and increased economic activity.

The removal of the Residential zoning from a very significant part of the overall landholding runs counter to the policy objectives of the NPF that seek to promote Limerick as a city of scale with significant population growth and housing provision in inner suburban locations (see NPOs 2a, NPO 3b, NPO 5, NPO 7, NPO8 and NPO 35). The Greenpark Lands represent a textbook example of a well located landholding of a scale that will deliver on the above core planning objectives of the Strategy.



### 3.2 Development Plan Guidelines

There are currently two sets of National Guidelines governing the preparation of Development Plans at present in Ireland viz., the *Development Plan Guidelines for Planning Authorities 2007* and the recently published *Development Plan - Guidelines for Planning Authorities Draft for Consultation August 2021*.



**Figure 3.2:** *Development Plan Guidelines for Planning Authorities*  
(Source: Department of the Environment, Heritage and Local Government, 2007).

Both documents set out detailed best practice in the making and implementation of Development Plans and, of particular relevance to this case, the appropriate process for the zoning of lands including for Residential use. This is considered in further detail below.

#### *Development Plan Guidelines for Planning Authorities 2007*

Regarding the zoning of land, the 2007 Guidelines state:

*'Land-use zoning is therefore about identifying the quantity of land needed over the plan period, the best locations for such land, the acceptability or otherwise of the various classes of land use within any particular zone, and in the case of relevant land uses, the intensity of development to be permitted. Zoning gives a degree of certainty to residents, developers etc. The use of non-specific zoning designations should be avoided. Following the approach set out, a development plan should ensure that enough land will be available to meet anticipated development requirements and will be developed in a sequential and co-ordinated manner. This will avoid, for example, a situation where housing estates are built beyond the outer edges of existing built-up areas while intervening lands lie undeveloped resulting in deficiencies in terms of footpaths, lighting, drainage or adequate roads infrastructure. [our emphasis]*





Section 4.9 of the Guidelines note that:

*'Development plan land use zones have traditionally been single-use zones such as residential, industrial or commercial and related uses. This will continue to be appropriate in some cases. In other areas, such as city, town or neighbourhood centres, it may be more appropriate to consider mixed use zones where a wide range of compatible activities would normally be considered appropriate. This will help promote the achievement of sustainable development by facilitating a balance of housing, employment and local facilities within an area, and by promoting compatible re-use of existing development, thereby reducing the need to travel. It is important that zoning designations are applied in a manner which generally facilitates an appropriate mix of compatible uses within urban areas. Factors to be taken into account in determining compatibility include traffic impact, amenity considerations, possible phasing issues and the character or sense of place which it is intended to create or protect. The intention should be to guide and influence change in the interests of the common good, balancing various interests, in preference to creating homogenous land-use areas. [our emphasis]*

Section 4.12 states that:

*'...when considering the suitability of specific lands for development, within the process of preparing zoning objectives in making a development plan, the members are restricted to considering the proper planning and sustainable development of the area to which the development plan relates, statutory obligations and Government policy. Matters typically relevant to the proper planning and sustainable development of areas, inter alia, include:*

- *Need*
- *Policy Context*
- *Capacity of Water, Drainage and Roads Infrastructure*
- *Supporting Infrastructure and Facilities*
- *Physical Suitability*
- *Sequential Approach*
- *Environmental and Heritage policy, including conservation of habitats and other sensitive areas.*

In terms of Residential zoning on the Greenpark lands, there is a clear need for additional Residential development in appropriate locations (which includes these lands) in Limerick City as quantified in the RSES and Draft Development Plan and arising from significant projected population growth. As described above, and in the Draft Development Plan itself, the planning policy context at National and Regional level fully and unequivocally supports the zoning of Residential lands in this location. In terms of water, drainage and roads infrastructure, the Greenpark lands are fully serviced with access to mains drainage and water supply. A new internal link road providing vehicular access from Dock Road will be delivered by the landowner as part of the planning process. No other roads or services infrastructure is required to be provided to facilitate the development of the lands.



The Guidelines also note that supporting infrastructure, such as community facilities, health-care, schools, public open space, retail and other service provision and public transport is required when allocating land for development. Given the site's location proximate to the city centre and a well-established social infrastructure in the area, there will be good access to the required range of supporting services. The development of the lands will further augment these facilities as required.

Regarding physical suitability, Section 4.18 of the Guidelines state that:

*'The development plan should strive to ensure that the form and location of new development offers the best "value for money" in terms of efficient use of existing infrastructure, while minimising the need for costly new infrastructure. Where land in green-field locations is to be zoned, account should be taken, in considering the different options available, of the land's capacity for development by way of the most cost effective means of providing the necessary infrastructure.'*

The development of the Greenpark site would represent a highly sustainable model of development, as it would maximise the efficient use of public transport, roads and services infrastructure and minimise the requirement for costly new infrastructure required to service greenfield lands in more peripheral and far less sustainable locations. This section of the guidance notes the issue of flood risk, which is addressed elsewhere in this submission in the context of the subject lands (see Section 3.8 below).

In terms of the sequential approach to zoning, Section 4.19 of the Guidelines state:

*'In order to maximise the utility of existing and future infrastructure provision and promote the achievement of sustainability, a logical sequential approach should be taken to the zoning of land for development:*

- (i) Zoning should extend outwards from the centre of an urban area, with undeveloped lands closest to the core and public transport routes being given preference (i.e. 'leapfrogging' to more remote areas should be avoided);*
- (ii) A strong emphasis should be placed on encouraging infill opportunities and better use of under-utilised lands; and*
- (iii) Areas to be zoned should be contiguous to existing zoned development lands. Only in exceptional circumstances should the above principles be contravened, for example, where a barrier to development is involved such as a lake close to a town. Any exceptions must be clearly justified by local circumstances and such justification must be set out in the written statement of the development plan.'*

The Greenpark Lands fully adhere to the sequential approach described above regarding the zoning of lands. The site is within 2km of the city core and is contiguous to existing Residential zoned lands/housing areas. Its zoning and consequent development clearly follows a logical sequential approach and would avoid 'leapfrogging' or the zoning of more remote lands further from the city centre. In addition, the site comprises a major infill opportunity and, as a former 47 ha racecourse, comprises a significantly underutilised land bank in need of regeneration.



Finally, with regard to Environmental and Heritage policy, including conservation of habitats and other sensitive areas, the site has been subject to a holistic site wide Ecological Impact Assessment and also a Natura Impact Statement. There are no environmental or heritage designations in play that would preclude the zoning and consequent development of the lands. In summary, therefore, the zoning of the lands accords with the criteria noted in the above referenced Guidelines and Greenpark would have an important role in meeting the predicted residential housing requirements necessary to accommodate a growing urban population.

*Development Plan - Guidelines for Planning Authorities Draft for Consultation August 2021*

These Draft Guidelines are designed to ultimately replace and update the 2007 Guidance and will reflect the changes in the policy, institutional and regulatory framework that have occurred since 2007.



**Figure 3.3:** *Development Plan - Guidelines for Planning Authorities Draft for Consultation*  
(Source: Department of Housing, Local Government and Heritage, 2021)

Section 6.2.4 of the Draft Guidelines relate to ‘*Sequential Development in the City Context*’ and notes:

*‘While sequential development at the city scale is not comparable to town settlements with a single central spatial focus from which the town has grown historically, city development must also be approached sequentially, taking into consideration multiple opportunities for the intensification of development at appropriate scales relative to context. In a city area, development policy must ensure that the focus of the development plan is on securing a sufficient quantum of infill and brownfield development and regeneration to meet national policy objectives. As part of this approach, prioritising new development along high quality public transport corridors must be integrated into the policies and objectives of the development plan, in order to support and reinforce public*



*transport investment. Similarly, parts of urban areas identified as specific focus for regeneration, may be appropriate for prioritised new residential development in tandem with programmed investment in new infrastructure and amenities'. [our emphasis]*

The Greenpark Lands comprise a significant brownfield infill site in need of regeneration that can contribute significantly to the provision of new residential development and employment growth in a sustainable manner close to the city centre and public transport corridors. As noted above, the site is also appropriately located in terms of the sequential approach being contiguous to existing zoned lands and a logical site for development purposes in the context of the growth of the core city area.

Section 6.2.5 of the Draft Guidelines relates to 'Zoning for Employment Uses' and notes that:

*'Ensuring that the economic or employment strategy of the development plan is translated into the appropriate land use zoning proposals is an important consideration in the plan preparation process. The evidence and rationale underpinning the zoning of land for employment purposes must be clear and strategic in nature. Development plan preparation should include a comprehensive approach to estimating the differing zoning requirements for employment uses.*

*The development plan should provide an overview of the existing quantum and rate of take-up of zoned employment land, both developed and undeveloped and should also include relevant servicing information. The plan must include a rationale for any requirement to zone additional lands, based on projected population, economic and employment growth and change over the lifetime of the development plan.*

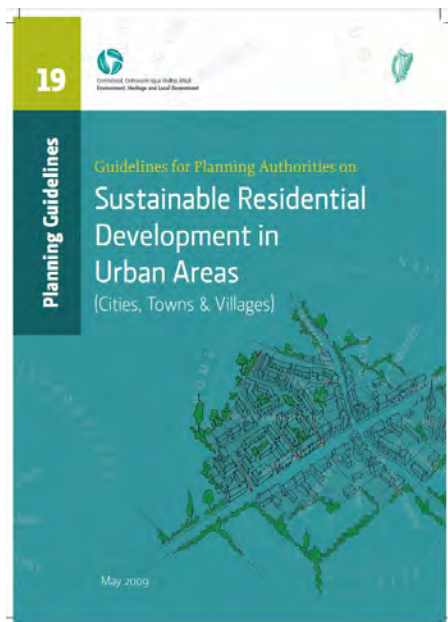
*Estimating the land-use zoning requirement for employment development may require some flexibility and a strategic, long-term perspective. However, proposed employment zonings must have a credible rationale, particularly with regard to location and type of employment. It should be possible to demonstrate that the quantum of land zoned is not significantly out of step with estimated future demand arising from population, economic and employment growth and change. The economic policy objectives of the Regional Spatial and Economic Strategy will be instructive in this regard and the development plan must demonstrate consistency with these'.*

In our opinion, the zoning of the additional lands in Greenpark from c.10.6 ha of General Mixed Use zoned land to c.24.7 ha of Enterprise and Employment lands is not consistent with the commitment under the Draft Plan to give effect to the *Limerick 2030 Interim Update*. It is also submitted that the existing and proposed employment centres noted in the Draft Plan may not be in line with 'estimated future demand' noted above for this quantum of employment-related lands (see Appendix B – Lisney Report). This also requires to be considered in the context of the consequent reduction in Residential zoned land from c.19.3 ha to c.4.4 ha, where significant future population growth and housing demand is quantified in detail in both the NPF, RSES and Draft Development Plan and will categorically exist, especially in accessible inner urban locations such as Greenpark.



### 3.3 Residential Density and Apartment Design Guidelines

There are two key National planning guidance documents that govern levels of residential density on zoned land in appropriate locations. It is evident that the Greenpark lands enjoy the locational characteristics required for compliance with these Guidelines and readily applicable to the site. These are described in greater detail below.



**Figure 3.4:** Sustainable Residential Development in Urban Areas – Guidelines for Planning Authorities  
(Source: Department of Environment, Heritage and Local Government, 2009)

#### *Sustainable Residential Development in Urban Areas – Guidelines for Planning Authorities (2009)*

These Guidelines provide national guidance in relation to the appropriate locations for the siting of higher density residential development, having regard to the locational characteristics of the lands in question. In this regard, it is considered that the subject lands may comprise either ‘Brownfield’ lands or an ‘Inner Suburban/Infill’ site, as it shares characteristics of both as per the descriptions included in the Guidelines. Section 5.7 of the Guidelines describes ‘Brownfield’ lands (within city or town centres) as follows:

*‘Brownfield’ lands, which may be defined as “any land which has been subjected to building, engineering or other operations, excluding temporary uses or urban green spaces”, generally comprise redundant industrial lands or docks but may also include former barracks, hospitals or even occasionally, obsolete housing areas. Where such significant sites exist and, in particular, are close to existing or future public transport corridors, the opportunity for their re-development to higher densities, subject to the safeguards expressed above or in accordance with local area plans, should be promoted, as should the potential for car-free developments at these locations’.*



The Greenpark lands comprise a former racecourse, so the site was subjected to some previous building (grandstand, racetrack, fencing, ancillary structures, etc) but is now a redundant site close to the city centre. It is a significant landholding, given its site area (c. 47 ha). It is close to public transport routes (existing and emerging), so is deemed an appropriate location for higher density residential development.

Regarding Inner Suburban/Infill sites, Section 5.9 of the Guidelines state:

*'The provision of additional dwellings within inner suburban areas of towns or cities, proximate to existing or due to be improved public transport corridors, has the revitalising areas by utilising the capacity of existing social and physical infrastructure. Such development can be provided either by infill or by sub-division: (i) Infill residential development Potential sites may range from small gap infill, unused or derelict land and backland areas, up to larger residual sites or sites assembled from a multiplicity of ownerships.*

*In residential areas whose character is established by their density or architectural form, a balance has to be struck between the reasonable protection of the amenities and privacy of adjoining dwellings, the protection of established character and the need to provide residential infill. The local area plan should set out the planning authority's views with regard to the range of densities acceptable within the area. The design approach should be based on a recognition of the need to protect the amenities of directly adjoining neighbours and the general character of the area and its amenities, i.e. views, architectural quality, civic design etc. Local authority intervention may be needed to facilitate this type of infill development, in particular with regard to the provision of access to backlands'.*

As noted above, the site is acknowledged as being an 'inner suburban' location in the *Rebuilding Ireland LIHAF* document pertaining to Greenpark and is also an Infill site, as it is bounded by existing development on several boundaries and, to be developed successfully, will require to recognise the need to protect the amenities of directly adjoining neighbours, which in this case, principally comprises the established adjoining residential communities to the east of the lands. It also comprises a large site (47 ha) capable of significant residential development.

The site is also in close proximity to public transport corridors, which are assessed under Section 5.8 of the Guidelines, which state:

*"Walking distances from public transport nodes (e.g., stations/halts/bus stops) should be used in defining such corridors. It is recommended that increased densities should be promoted within 500 metres walking distance of a bus stop, or within 1 km of a light rail stop or rail station. The capacity of public transport (e.g., the number of train services during peak house) should also be taken into consideration in considering appropriate densities... In general, minimum net densities of 50 dwellings per hectare, subject to appropriate design and amenity standards, should be applied within public transport corridors, with the highest densities being located at rail stations / bus stops, and decreasing with distance away from such nodes."*



Whilst the subject lands do not have the benefit of being proximate to very high quality public transportation services at present, they are within reasonable proximity of a number of bus routes with further improvements due to come on stream under the above referenced LSMATS. In our opinion, on the basis of these Guidelines, the Greenpark lands are appropriate for densities in the range of 35-50 units per ha. As previously noted, the SHD scheme delivers a residential density of 47 no. units per ha (in line with what was proposed on the submitted Greenpark Masterplan Residential zoned lands, subject to planning parameters) which accords with the above guidance.

*Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities (March 2018)*

These guidelines seek to promote high density apartment development on Residential zoned land in appropriate locations in line with the above referenced NPF overarching policies in relation to encouraging residential development within existing urban settlements. Having regard to the site's location close to Limerick city centre, and within reasonable walking/cycling distances of some employment centres and public transport routes, these Guidelines are appropriate for application to the Greenpark lands.

In our view, applying the locational criteria noted in the Guidelines objectively, the site cannot be classified as a 'Centrally Accessible Urban Location' appropriate for very high density apartment development (in excess of 50 units per ha) arising from its relative walking distances from the city centre, major employment centres and the absence of high frequency public transport routes.

The site would, however, meet most of the criteria in respect of what is classified as an 'Intermediate Urban Location' as per these Guidelines. As such, this would require overall residential densities on the site to be in the order of 45 units per ha. The aforementioned SHD proposal demonstrates that a density of 47 units per ha can be achieved on the application site (and c.47 units per ha on the overall Residential zoned lands as per Greenpark Masterplan).

Key Issue Arising: The above density and apartment design guidelines both identify the required locational characteristics necessary to support higher density residential development in urban areas. Where such sites exist, there is an imperative that they are used to accommodate sustainable forms of residential development ahead of other less suitable land uses that could be sited elsewhere. The Greenpark Lands unequivocally meet the locational characteristics noted in both Guidance documents and, therefore, must be considered appropriate to deliver Residential development at the densities discussed above.



### 3.4 Regional Spatial & Economic Strategy (RSES) for the Southern Region 2020

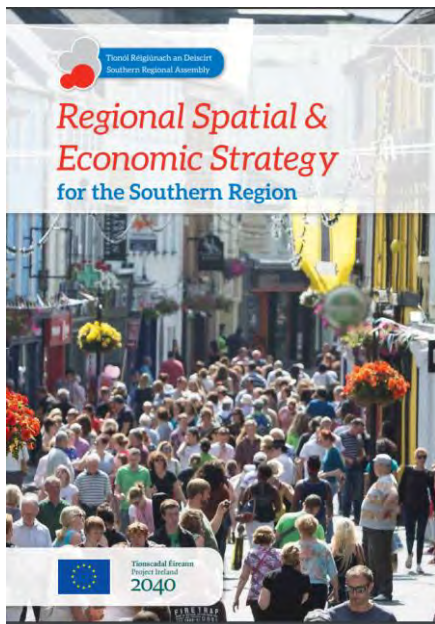


Figure 3.5: Regional Spatial & Economic Strategy (RSES) for the Southern Region  
(Source: Southern Regional Assembly, 2020)

Each of the three Regional Assemblies have prepared their own RSES which will provide a long-term regional level strategic planning and economic framework in support of the implementation of the *National Planning Framework*. The RSES for the Southern Region was adopted in January 2020, which includes the Limerick City Metropolitan Area and encompasses the Greenpark lands. The RSES seeks to achieve balanced regional development and full implementation of *Project Ireland 2040 – the National Planning Framework*. It will be implemented in partnership with local authorities and state agencies to deliver on this vision and build a cohesive and sustainable region.

Regarding Employment and Enterprise use in Limerick, the RSES notes ‘key employment locations’ including the Shannon Free Zone, National Technology Park, IDA Raheen Business Park, Limerick’s Dock Road, Annacotty Business Park, Ballysimon and Clondrinagh Industrial Estates with development in progress in Limerick City Centre (Gardens, Opera, Cleeves).

The *Limerick Metropolitan Area Spatial Plan (LMASP)* identifies a number of key infrastructure and transformative projects within Limerick City including:

- Projects identified within the *Limerick 2030* plan;
- Densification of development in the city centre including identification and assembly of brownfield sites for development;
- Development of key strategic sites including Opera site, Cleeves, Arthur’s Quay and continuation of the riverside links;
- Potential for alternative uses in Limerick Docklands;
- Development of a new business park on the north side of Limerick City linked with Limerick IT, Moyross and building on the regeneration process.





MASP Objective 2(f) seeks ‘investment to achieve the regeneration and consolidation in the city suburbs’.

In terms of population, the LMASP identifies a projected population increase in the Limerick City and Suburbs (located in Limerick) of 22,328 persons by 2026 and by 33,528 by 2031. As noted in the NPF, some 50% of this population growth will occur within the existing built-up area of the city, which equates to c. 11,000 – 17,000 people.

Regarding employment distribution, the LMASP notes that:

*‘Modern service companies require high quality office space in areas that offer a good quality of life and reliable public transport. The completed Gardens International Centre, the Opera Centre and the planned Cleeves development have the capacity to add 7,000 additional jobs. There is also existing capacity in Ballysimon (c. 54.6 hectares), Clondrinagh (c. 27.7 hectares) and Annacotty (c. 37.5 hectares). The MASP supports further plans for development of central sites for continued employment growth, which should also add to the core regeneration of Limerick City. The proposed development of the Dock Road provides significant potential. Concentrations of employment outside the City Centre area are predominantly at locations in Shannon, Castletroy and Raheen. The MASP area has capacity for expansion of scale at these primary locations. These strategic locations offer the capacity to cater for companies that complements access to an international airport and third level graduates.’*

Table 3 of the LMASP identifies strategic employment locations in the area including higher level institutions, public hospitals, the Shannon Free Zone (195 ha), the National Technological Park (71 ha), Raheen (57.5 ha), Cleeves (4 ha), Dock Road (113.2 ha) and a new Northside Business Campus.

Key Issue Arising: It is submitted that there is no evidence basis for the increase in the former Mixed Use zone in Greenpark from the current c. 10.6 ha to c. 24.7 ha of Enterprise and Employment zoning (an over 230% increase in land area) with significant uncertainty over the demand for, and viability of, same. The demand for such a quantum of additional Enterprise and Employment zoned land cannot be justified and its viability is open to serious question and would serve to undermine the strategy of seeking to deliver the transformational projects earmarked for the city centre many of which include a substantial office and employment-based component. (This issue is discussed in further detail below in respect of *Limerick 2030*.)

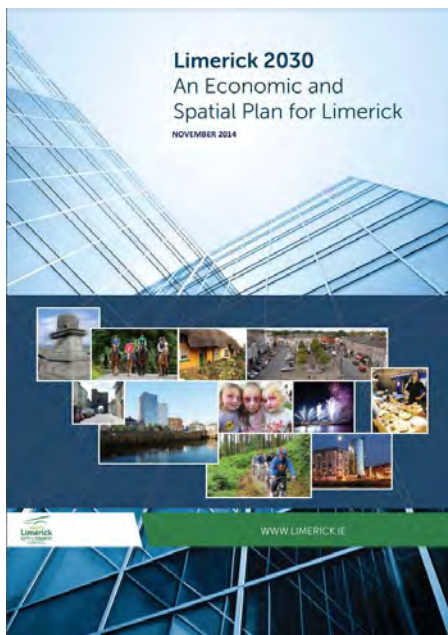
In this context, the omission of c.15 ha of Residential zoned land in a highly accessible location to facilitate this zoning change is contrary to proper planning and sustainable development. The ambitious targets identified to significantly increase numbers working in the city will necessitate a consequent increase in residential development to provide good quality and well located housing accommodation for this cohort of people.

The removal of a substantive Residential land use from this location is counterintuitive in that context. As noted above, however, our Client does accept that the provision of c.12 ha of Enterprise and Employment zoned land as a direct replacement for the current Mixed Use and Neighbourhood Centre zonings is appropriate.



Such a quantum on part of the subject lands could be complementary to the future transition of the Dock Road as a new employment area. However, it is crucial that the quantum of the existing Residential zoning is retained.

### 3.5 Limerick 2030 – An Economic and Spatial Plan for Limerick



**Figure 3.6:** Limerick 2030 – An Economic and Spatial Plan for Limerick  
(Source: Limerick City and County Council, 2014)

*Limerick 2030* was published in 2014 and is described as a ‘once in a generation’ plan designed to guide the economic, social and physical renaissance of Limerick City Centre and the wider County/Mid-West Region. The plan included targets of €1 billion in enterprise and investment infrastructure and the creation of 12,000 jobs and seeks to integrate economic development with spatial planning throughout the city centre area. In order to deliver the required changes to Limerick city centre, seven ‘transformational projects’ have been identified as being key to the strategy. These are:

1. A ‘World Class’ Waterfront – a renaissance of Limerick’s entire Waterfront;
2. The ‘Limerick Cultural Centre’ – an iconic destination building on the Waterfront;
3. ‘Great streets’ – a transformation of the City’s three main streets – O’Connell Street, Catherine Street and Henry Street;
4. A new City Square/Plaza – to define the focal point or ‘heart’ of the City Centre;
5. A City Centre higher education campus - the creation of a multi-versity combining facilities from Limerick Institute of Technology, University of Limerick and Mary Immaculate College in the heart of the City Centre;
6. Renewal of the Georgian Quarter – a concentrated programme to restore the Georgian part of the City to its former glory; and
7. Colbert Station renewal – a new public transport interchange and enhanced station environment.



It is clear, therefore, that *Limerick 2030* is centred on reimagining and revitalising Limerick City Centre as the primary location for new business and enterprise in the Region with particular emphasis on the ‘knowledge economy’. The Plan notes that Limerick had traditionally been the focus of FDI in IT Manufacturing. As a sector, this has shifted towards lower-cost locations, most recently in Eastern Europe and the Far East. *Limerick 2030* considers that this has been to the detriment of Limerick, which had seen its labour and business costs rise prior to the recession.

Notably, the plan states that the IDA clustering policy is not deemed to be effective for Limerick, where an emphasis on a broad sector approach to promote innovation and interaction with distinctive strengths in ICT and Digital is needed. The plan recommends that Limerick should capture elements of sectors which are clustering elsewhere based on a competitive proposition focussed on its skills, R&D assets and a regenerated City Centre. *Limerick 2030* identifies a number of knowledge economy locations across Limerick and the wider area each bringing different strengths and characteristics including the City Centre, Raheen/Dooradoyle, Castletroy/Plassey, Newcastle West and Shannon.

The plan also describes several potential city centre sites as new business/enterprise locations as follows:

*‘The Opera Site is a major opportunity site for new business activity – tying into the heart of the City’s shopping offer. The Plan envisages that a key component of this mix would be an ‘Innovation Hub’ closely aligned to new higher education facilities, providing graduation space for fledgling businesses as highlighted in the economic strategy. The Plan advocates detailed consideration of the removal and redevelopment of Sarsfield House, currently occupied by the Revenue Commissioners. This could generate a pre-let to help kick-start the redevelopment of the Opera Site. Secondly, the revitalisation of the Georgian Quarter is intended to reinforce the cluster of important professional service businesses already located there, benefiting from good access to the railway station and ready access by car. There is also potential to reinforce Henry Street and the Waterfront as a business location. This can be achieved by the redevelopment of the site at Bishop’s Quay for mixed use, complementing the ‘Hanging Garden’ Site directly opposite on Henry Street.’*

*Limerick 2030* also identifies the need for an ‘urban’ Science and Technology Park in the city centre. The plan identifies potential alternative locations for this technology park, subject to further feasibility, on the former ‘Cleeves’ Site at the entrance to the Shannon Bridge on the north side of the River; or to the south of Colbert Station (described as being ‘ripe for redevelopment/regeneration’) or at the Docks area to the immediate west of Steamboat Quay.

*Limerick 2030* states that there is the potential to generate over 12,000 new high value jobs in the Limerick area with approximately 5,000 new jobs specifically identified for the city centre. This would include higher value jobs linked to key sectors identified by the *Limerick 2030* Economic Strategy at locations such as the Medical Park at King’s Island, the Opera Site, the Colbert Station area, etc. The plan notes that the Limerick Quays also have the potential to accommodate additional office employment, as well as hotel and leisure employment. Wider and secondary economic impacts can be expected from this activity.



With regard to residential development, *Limerick 2030* identifies the potential for a minimum of 800-1,000 new homes in the city centre located in the Georgian Quarter and Irishtown (renovation, conversion and infill). The Plan notes that *'The wider invigoration of the City Centre can be expected to lead to organic and private sector-led development activity which could substantially increase housing outputs'*.

Key Issue Arising: *Limerick 2030* seeks to provide a spatial planning and policy framework to reinvigorate the city centre and to establish the area as the primary new office and enterprise location in the region. In this regard, seven specific 'transformational' projects are identified to be progressed in the city in order to deliver this vision. The plan notes the creation of an urban technology park as an important part of the strategy with several potential city locations identified (Opera site, Colbert lands, Cleeves, etc), together with knowledge economy locations across the wider county each bringing different strengths and characteristics including the City Centre, Raheen/Dooradoyle, Castletroy/Plassey, Newcastle West and Shannon. An estimated total of 12,000 jobs are proposed to be delivered in the wider area (5,000 in the city centre) and c. 800-1,000 new housing units.

The Greenpark lands are not noted anywhere in the *Limerick 2030* strategy as a potential location for significant new enterprise or employment uses or as one of the *'knowledge locations'*. This is notwithstanding the fact that when *Limerick 2030* was published in 2014, the Greenpark lands comprised some 10.6 ha of 'General Mixed Use' (Objective 5A) zoned lands, the primary purpose of which was *'to provide for a range of employment and related uses'*.

Thus, it is clear that the primary focus of the *Limerick 2030* strategy was the regeneration of the city centre to be largely delivered by the creation of new office floorspace including a significant new urban technology park. Whilst significant progress has been made since 2014 in advancing several of the *Limerick 2030* projects, there is still considerable work to be done regarding the completion of these projects. In that context, it is again unclear as to why the Planning Authority has zoned an additional c.14 ha of lands just outside the city centre for Enterprise and Employment purposes (24.7 ha in total including the former Mixed Use and Neighbourhood Centre zoned lands) and significantly reduced the Residential zoned area.

As noted above, the Greenpark lands were not identified as being of strategic importance in this regard in *Limerick 2030*. In our opinion (see Appendix B - Lisney Report), there is sufficient zoned land for Enterprise and Employment use in the city that would likely accommodate potential demand for this form of development in Limerick City for many years to come. As such, there would seem to be no rationale for substantially increasing the extent of Enterprise and Employment zoned lands in a location not identified as being of strategic importance in the Planning Authority's key regeneration strategy.

In this regard, the enclosed Report prepared by Lisney (see Appendix B) on behalf of Voyage Property Limited analysing residential and commercial lands in Limerick City concludes that the extent of employment-related zoned land as proposed in the Draft Plan could provide c. 1.98 million sq m of accommodation (530,000 sq m of offices and 1.46 million sq m of industrial/logistics/manufacturing).



Taking into consideration the likely potential for expansion of the office and industrial markets in Limerick in the medium-term due to LCCC'S commitment to economic growth and dynamic revitalisation via *Limerick 2030*, Lisney estimate that the proposed level of potential development is equivalent to over 20 years' requirements assuming a generous 60% increase in demand in the medium term. (It is estimated that this level of employment-related zoned land would satisfy the significantly larger Dublin market for 5 years). This extent of Enterprise and Employment zoned land might also serve to undermine the *Limerick 2030* central strategy, should these lands attract users at the expense of the city centre.

Given the extent of other Enterprise and Employment zoned lands proposed in the Draft Plan, we would also query whether this extent of zoned land is required to facilitate the likely demand arising in Limerick over the life of this Development Plan (and several future Plans) and, consequently, whether this is the correct use of this site, given its location. It is acknowledged that there may be an indirect or secondary demand for lands outside the city centre, but still in close proximity, for certain employment uses. As such, our Client is amenable to the former Mixed Use and Neighbourhood Centre zoned lands (as per the Current Development Plan) being zoned for Enterprise and Employment use to ensure that this extent of enterprise and employment zoned lands remains available to cater for any potential demand that might arise in this regard.

Regarding residential use, we note that *Limerick 2030* identifies the potential for a minimum of 800-1,000 new homes in the city centre located in the Georgian Quarter and Irishtown (renovation, conversion and infill). The Plan notes that '*The wider invigoration of the City Centre can be expected to lead to organic and private sector-led development activity which could substantially increase housing outputs*'.

Whilst the estimated delivery of 800-1,000 residential units in the city centre is to be welcomed, it is a relatively small quantum of housing to meet the accommodation needs of a rejuvenated city employing up to an additional 12,000 people. The Greenpark Residential lands, which are in close proximity to the city centre are superbly located to contribute to meeting this demand and to provide a range of additional residential unit types and sizes within easy walking/cycling distance of the city proximate to public transport services.

In summary, it is considered that Greenpark is ideally located to complement the *Limerick 2030* plan in terms of providing proximate commercial floorspace arising from secondary or indirect demand generated by the rejuvenation of the city centre but, crucially, also Residential land use to facilitate new employees that are seeking to live in close proximity to their places of work, without being reliant on the private car and unsustainable commuting.

### **3.6 *Limerick 2030 Interim Update***

*Limerick 2030 Interim Update June 2021* (see Volume 6 of the Draft Development Plan) reviews and analyses the progress of the Limerick 2030 Plan 2013 over the last seven years and updates the plan with new targets and recommendations to take the city and county to 2030. This updated plan builds on the original Limerick 2030 objectives and project ambitions. The focus of this document is to complement the original plan's emphasis on transformational sites and projects, as well as capturing emerging projects and opportunity areas.



The interim update notes that Limerick City centre has a very low population compared to the suburbs (with some areas suffering population decline between 2011 and 2016), indicating a level of sprawl. The Limerick 2030 Plan outlines the importance of the city growing and consolidating its population in order to realise the goals set out in the plan, with an appropriate critical mass being an important influence on the feasibility and achievability of the Limerick 2030 vision.

The interim update notes the policy requirements of the NPF and RSES (neither of which existed in 2013 at the time of the publication of the original Limerick 2030), with the NPF including a target of half (50%) of future population and employment growth to be focused in the existing five cities and their suburbs. It further notes that:

*‘For Limerick, compact growth (both in the city centre and across the county’s towns and villages) is thus a key priority to 2030. The city centre and its environs have opportunities to significantly increase population over the next 8 years. Housing delivery is central to this. A diverse offer of quality homes attracts and retains talent, and is vital to enabling the city centre and the region’s wider economic growth’.*

The revised plan identifies a series a new opportunity sites and identifies potential connections between them to the work progressed to date – building new opportunity from the transformations of the current plan. The Greenpark Lands (referred to in the interim update as the ‘old Greenpark Racecourse’) is identified as one such new opportunity site as described below.

The interim update adds the following objective to the initial Limerick 2030 spatial plan:

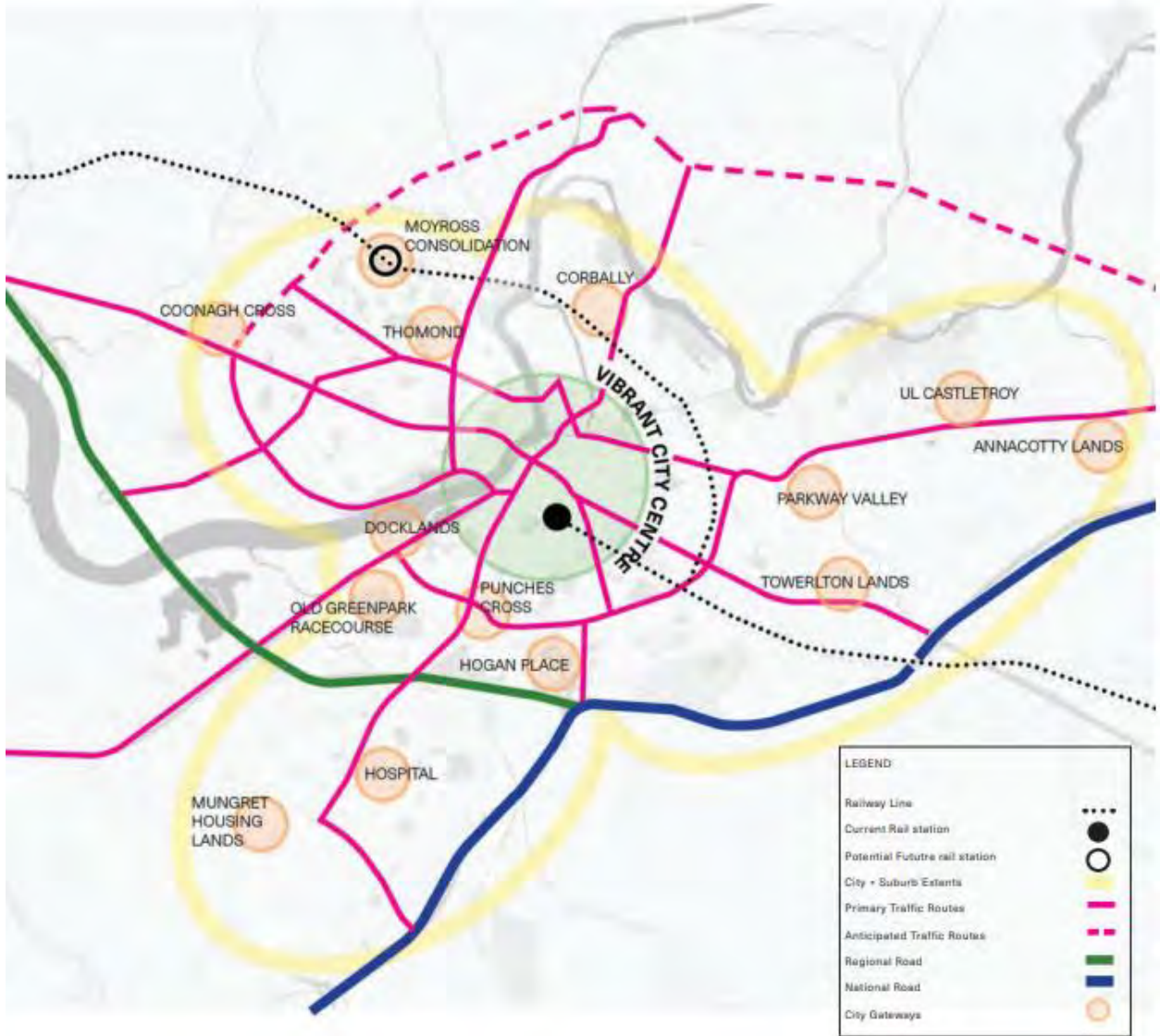
*‘To expand the provisions of the plan to encompass opportunities for transformation across the wider city and outlying urban areas’.*

The ‘expanded plan’ concept is described as follows:

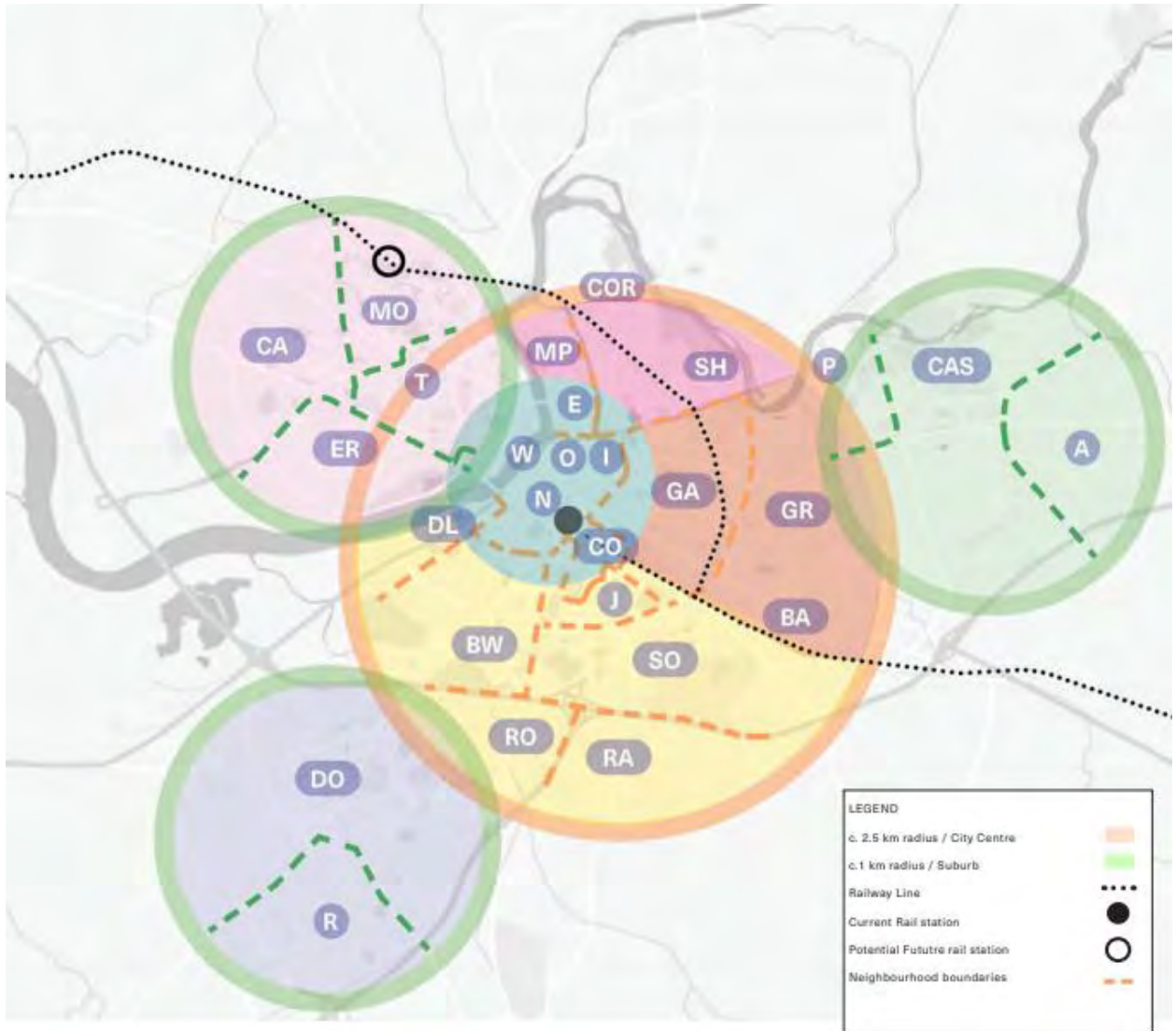
*‘The expansion of the spatial plan allows it to consolidate this city identity and to ensure that the growth is managed in a way that not only avoids sprawl but actively reinforces the sense of a coherent urban area’. (see pg 78)*

In this regard, the ‘old Greenpark Racecourse’ is identified as a ‘City Gateway’ clearly located within the inner part of the city and suburbs as delineated on page 79 of the interim update document.

The graphic on page 85 of *Limerick 2030 Interim Update* (see Figure 3.9 below) also illustrates the subject lands as being comfortably within the 2.5km radius of the city centre and notes part of the site as being ‘enterprise and employment’ lands (site no. 21). (As an aside, we would query whether some of the graphics used in the Interim Update (see pages 82 and 85) accurately represent the centre of Limerick City and whether the radii as shown are centred on the city centre proper. We submit that these may not be accurate in that regard, which could change how certain sites including Greenpark are represented in locational terms and in the associated analysis.)



**Figure 3.7: 'Gateways in a Polycentric City'**  
(Source: Draft Limerick Development Plan 2022-2028 – Limerick 2030 Interim Update, 2021, Page 79)



**Figure 3.8:** 'The City Neighbourhoods'.  
(Source: *Draft Limerick Development Plan 2022-2028 – Limerick 2030 Interim Update*, 2021, Page 82)





**Figure 3.9: 'Opportunities and Destinations'**  
(Source: *Draft Limerick Development Plan 2022-2028 – Limerick 2030 Interim Update*, 2021, Page 85)

The expansion of the city's urban settlement is further described in Chapter 7 (Spatial Opportunities) and notes that *'...proposals in Moyross and King's Island each assume a new pedestrian bridge at Thomond Weir; so proposals at the Limerick Docks and at Clonmacken reference a new pedestrian bridge at Barrington Pier; so proposals in the Dooradoyle-Raheen neighbourhood forge linkages to the Greenpark Racecourse lands and the Limerick Docks'* (our emphasis - see pg 108). The vision for the site in the expanded growth strategy is explained under the heading of 'Limerick Docklands' (see pg 120) and is described as follows:

*'Greenpark Racecourse site should be progressed as a **major residential opportunity site** along its northern extents and the opportunity explored for the feasibility of **the provision of a c.12Ha enterprise and employment opportunity site** accessed from Dock Road to supplement the IDA lands at capacity in the Castletroy/ UL neighbourhood.*  
**[our emphasis]**

It is clear, therefore, from the above statement that c. 12 ha of the Greenpark lands is identified as being potentially feasible as an enterprise and employment 'opportunity site' accessed from Dock Road, together with a 'major residential opportunity site' all within an emerging 'expanded plan' area for the city centre.



The land use zoning of the Greenpark Lands in the Draft Plan does not, however, support this vision for the site and retains only c.4.4 ha of Residential zoned land, which could not be considered a ‘major residential opportunity site’ as described above. This contrasts with the c.12 ha of land earmarked as a potential enterprise and employment opportunity site to be accessed from Dock Road, which does equate to the existing General Mixed Use and Neighbourhood Centre zones in the Current Development Plan (c. 12 ha). This confirms that this part of the site is deemed the correct general location for this form of development.

In line with the above recommendation, we would request that the lands are otherwise zoned to facilitate the major residential opportunity as identified to be realised on the lands.

### 3.7 *The Future Development of Limerick City, June 2021*



**Figure 3.10:** *The Future Development of Limerick City.* (Source: Limerick Chamber, 2021)

Limerick Chamber appointed Indecon Research Economists in late 2020 to undertake ‘an independent benchmarking assessment of the performance of Limerick city versus other Irish cities; to analyse international experiences and best practice; and to outline recommendations that support the development of an environmentally and economically sustainable future Limerick city’. This report, known as ‘*The Future Development of Limerick City*’ (generally referred to below as ‘*Future Limerick*’) identifies a ‘Future Limerick Model, which includes the following key concepts:

- Compact growth with high density housing and;
- Location of employment opportunities in proximity to residential areas.



The re-development of the Greenpark Lands would deliver the above objectives through the mixed use development model that can deliver substantial employment opportunities in close proximity to new residential areas.

The *Future Limerick* report was commissioned as a result of concerns held by Limerick Chamber and its members surrounding *inter alia*: *'the pace of delivery of key public projects; **the lack of private commercial and residential development in the city centre**; the decline in footfall in the city centre; the emerging skills shortage across several sectors'*. [our emphasis]

In this regard, *Future Limerick* notes that:

*'The current crisis in our city centre is a result of poor planning decisions by successive administrations leading to significant sprawl of large housing and retail developments across suburbs. This 'hollowing out' has contributed to several problems in our city centre including increased numbers of vacant buildings and a general sense of diminishing shared public space'.*

With regard to future housing provision, the Report states:

*'There is a need to ensure that housing supply increases to meet forecasted population growth for Limerick. ESRI estimates that the population in Limerick city and county will grow by 10% by 2040. Indecon notes that this rate is lower than the national average and would fail to meet the targets of the National Planning Framework. However, even with this lower level of population growth, there will be a requirement for approximately 1,100 new homes per year over the next 20 years. This would represent a 100% increase on the current annual delivery rate for Limerick City and County. This does not account for historical undersupply of affordable homes that has led to Ireland having the highest rate in the EU (47.2%) of individuals aged 25-29 still living with their parents'.*

There is a clear and significant demand for, and shortage of, well-located new housing in the Limerick City and environs area that can facilitate the population growth envisaged for the settlement in National and Regional planning policy. Greenpark is ideally located to contribute to meeting this demand in a sustainable manner.

*Future Limerick* concludes that:

*'Population density is important in ensuring a sustainable economic base and in realising the benefits of economic externalities. This is fundamental to meeting climate change objectives and in supporting a vibrant retail and local service economy. The population density in Limerick city and suburbs is higher than Cork but is lower than Galway and Dublin. Increasing the population density in Limerick city is a critically important challenge for the future development of the city'.*

In order to achieve the objectives of population density in the city and the required levels of new housing, *Future Limerick* recommends that:



- *Strategic development areas should be identified in the city to facilitate new quality affordable residential developments. This could potentially be introduced in tandem with strengthened regulation and improved access to finance for small and medium developers.*
- *The focus of all policies and investments should be on facilitating compact growth.*
- ***Targets should be set (and monitored) to achieve an increase in apartment and other residential regeneration developments in inner areas of the city. [our emphasis]***

We submit that Greenpark comprises a ‘strategic development area’ and should be so designated in the Development Plan as a suitable to meet the ‘compact growth’ policy underpinning the planning of the city. As an ‘inner area of the city’, the Greenpark Lands represent a residential regeneration area that can facilitate a mix of residential unit types and sizes including apartments.

*Future Limerick* also recognises that the planning of the city area will play a significant role in tackling climate change and unsustainable commuting patterns. It states:

*‘Evidence on the commuting patterns of the population in Limerick city examined by Indecon indicated that more than half of the population in Limerick city rely on a car to travel to work or school or college. Ensuring that the infrastructure and services are available to reduce this percentage, is an important challenge for the city.’*

The Greenpark Lands are superbly located to minimise the need to travel and reduce reliance on the private car. In this regard, it is noted that:

*‘Indecon has used Geographic Information System (GIS) techniques to analyse the accessibility to essential facilities (Hospitals, Schools, Parks) within the Limerick metropolitan area. The results show that accessibility to services by pedestrians is particularly high in most of the electoral districts of the metropolitan area, where it is possible to reach these facilities within 10 minutes from virtually every point. Highlighting and utilising the strength of proximity within Limerick city should be a core element of a future sustainable strategy. The results of the analysis carried out suggest that the city has the potential to facilitate a significant shift in commuting patterns’.*

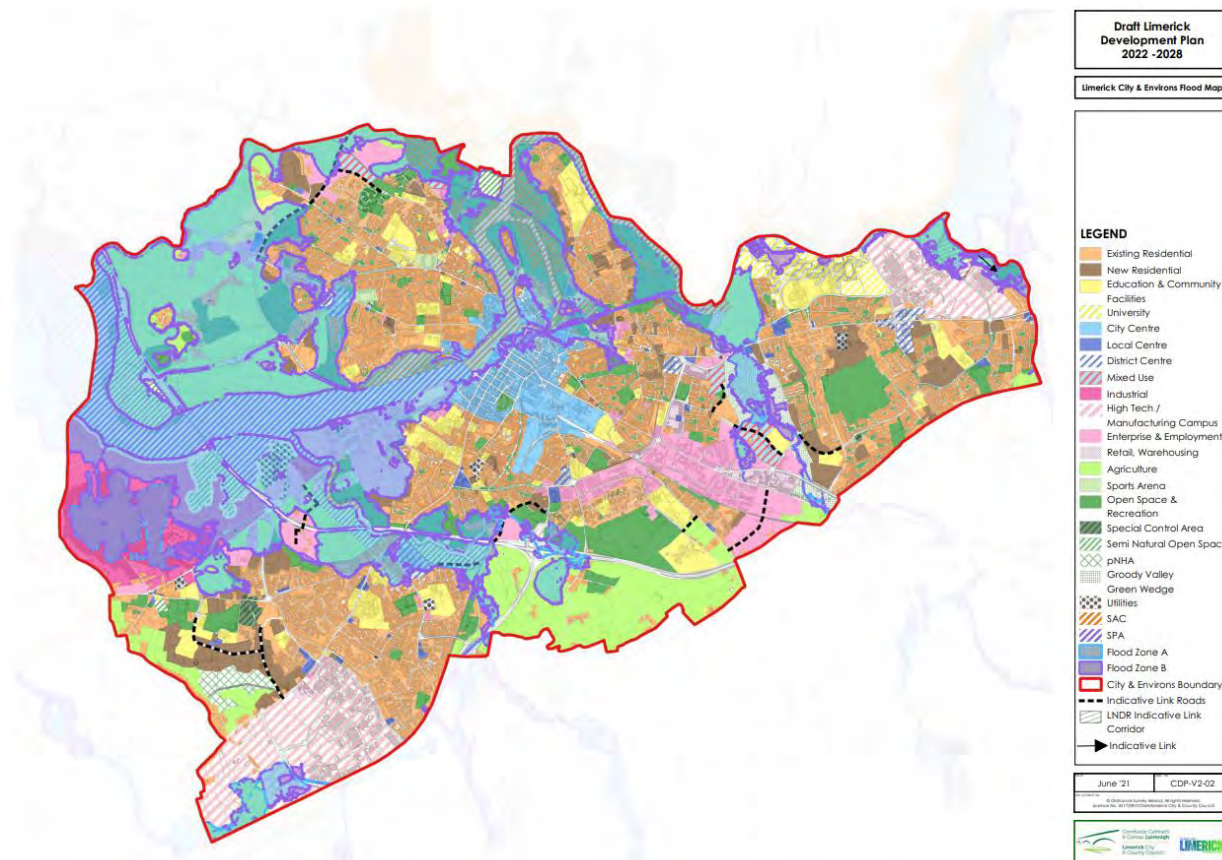
Greenpark is located within reasonable walking/cycling distance from the city centre, hospitals, schools, open space and several major places of employment together with a well-established social infrastructure. Its promotion as an appropriate location to facilitate sustainable development is entirely consistent with the above recommendations.

### **3.8 Flood Risk Considerations**

It is acknowledged that the Greenpark Lands are subject to flood risk designations viz., principally Flood Zones A (High Probability of Flooding) and B (Moderate Probability of Flooding). The existence of these designations has formed a central tenet of the future planning and development of the lands and its design from the outset (see Greenpark Masterplan).



This Masterplan sets out a detailed vision for the future development of the lands and includes a detailed Site Specific Flood Risk Assessment (SSFRA) prepared by RPS, Consulting Engineers, which includes substantial and robust modelling work and breach analysis. The Masterplan illustrates how the SSFRA recommendations can be implemented and managed on the lands to ensure that future development can take place safely and in line with National and Regional planning policy.



**Figure 3.11:** ‘Limerick City and Environs Flood Map’  
(Source: *Draft Limerick Development Plan 2022-2028* – Volume 2, Limerick City and County Council, 2021)

It should also be noted that the lands have been zoned for both General Mixed Use, Neighbourhood Centre and Residential uses since 2010 under the Current Development Plan, which was adopted having regard to the provisions of the *Planning System and Flood Risk Management Guidelines for Planning Authorities 2009*.

Limerick City is a ‘strategically located urban centre’ as referenced in the 2009 Guidelines much of which is subject to flood risk designations including significant areas of land in the city centre and inner suburbs. It is, however, earmarked for ‘continued growth and development’ in order to ‘bring about compact and sustainable urban development and more balanced regional development’.



The Development Plan Guidelines as referenced in the *Planning System and Flood Risk Management Guidelines for Planning Authorities 2009* are described in detail in Section 3.2 of this submission and these explicitly support the sequential development of urban areas, which would comfortably include Greenpark in the Limerick City context.

It is submitted that Limerick City must continue to be developed in a sequential manner in order to achieve these overriding National and Regional planning objectives; otherwise, very significant tracts of scarce serviced urban lands in close proximity to the city centre may not be developed and a wholly unsustainable growth model focused on lands in outer suburban locations will be promoted. As illustrated in the enclosed SSFRA (see Appendix A), the Greenpark Lands can be developed safely and will not increase flood risk elsewhere.

It is noted that since the Flood Risk Management Guidelines were published in 2009, the National Spatial Strategy and Regional Planning Guidelines referenced in that document have been replaced by the *National Planning Framework (NPF) 2018* and the *Regional Spatial & Economic Strategy (RSES) for the Southern Region 2020* respectively, which are described in detail above in this submission (see Sections 3.1 and 3.4). Both planning guidance documents, however, remain centred on the promotion and delivery of the ‘compact growth’ concept and explicitly support the redevelopment of underutilised lands in inner urban locations. In addition, it is a stated NPF and RSES objective to meet 50% of all new housing provision within the existing built-up area of the country’s main cities (including Limerick), which also underpins the overall growth strategy of the Draft Plan.

Thus, notwithstanding the flood risk designations pertaining to the lands, it is evident that the strategic nature of the Greenpark lands located in close proximity to Limerick city centre means that they are ideally located to meet these National, Regional and Draft Plan policy objectives. As noted above, the alternative to this strategy is the zoning and development of lands in peripheral remote locations well beyond the core and inner suburban areas, which will give rise to an inherently unsustainable pattern of development that will undermine the compact city strategy that will encourage reliance on the car. This, in turn, will result in the new Development Plan failing to comply with mandated National and Regional planning guidance.

The *Planning System and Flood Risk Management Guidelines for Planning Authorities 2009* note the requirement for a ‘Plan-making Justification Test’ described in Chapter 4 and used at the plan preparation and adoption stage, where it is intended to zone or otherwise designate land, which is at moderate or high risk of flooding. It is noted that the Justification Test will apply to ‘uses or development vulnerable to flooding’ with no distinction drawn between ‘highly’ or ‘less vulnerable development’ or particular land uses. Section 4.23 and Box 4.1 of the Guidelines describe the Development Plan Justification Test in detail. The relevant components of the Justification Test, which must be satisfied, are set out below when assessed against the Greenpark site.



### 3.8.1 Development Plan Justification Test

The following criteria are identified in the Development Plan Justification Test (Box 4.1) in the 2009 Guidelines. These are set out below in italics and assessed in turn.

*'The urban settlement is targeted for growth under the National Spatial Strategy, regional planning guidelines, statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended'.*

As noted above, the NPF and RSES replace the above referenced National Spatial Strategy and regional planning guidelines respectively. As described in detail in Sections 3.1 and 3.4 of this submission, Limerick City and suburbs is targeted for significant and ambitious population growth of 50-60% (47,000 – 56,000 people) to 2040 with 50% of this growth mandated to occur within the existing built-up area of the city, which would naturally include the subject lands, given their inner suburban location.

Similarly, the Draft Plan projects population growth of 34,177 persons to 2028. The Plan notes that the Limerick Metropolitan Area (city and suburbs) has the capacity to accommodate 12,322 no. units on zoned land. It is clear, therefore, that there is significant population growth forecast for Limerick City that will generate future demand for housing, which requires to be met by appropriately zoned and located land. Significant strategic sites such as Greenpark close to the city centre, as opposed to lands located in peripheral locations of the city, should be prioritised as required by all current planning guidance. This criterion is met by the subject lands.

The next criterion noted in Box 4.1 states:

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

*(i) Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement';*

The Greenpark site is a strategically important zoned and serviced landholding of notable scale (47 ha) located in the inner suburbs of Limerick City within 2km of the city centre. Moreover, it is explicitly identified in the *Limerick 2030 Interim Update June 2021* (see Volume Six of the Draft Plan) as part of the 'expanded plan' area described as follows:

*'The expansion of the spatial plan allows it to consolidate this city identity and to ensure that the growth is managed in a way that not only avoids sprawl but actively reinforces the sense of a coherent urban area'. (see pg 78)*

In this regard, the 'old Greenpark Racecourse' is identified as a 'City Gateway' clearly located within the inner part of the city and suburbs as delineated on page 79 of the *Limerick 2030 Interim Update* document. The graphic on page 85 also illustrates the subject lands as being comfortably within the 2.5km radius of the city centre and notes part of the site as being 'enterprise and employment' lands (site no. 21).



The expansion of the city's urban settlement is further described in Chapter 7 (Spatial Opportunities) and notes that '*...proposals in Moyross and King's Island each assume a new pedestrian bridge at Thomond Weir; so proposals at the Limerick Docks and at Clonmacken reference a new pedestrian bridge at Barrington Pier; so proposals in the Dooradoyle-Raheen neighbourhood forge linkages to the Greenpark Racecourse lands and the Limerick Docks*' (our emphasis - see pg 108). The vision for the site in the expanded growth strategy is explained under the heading of 'Limerick Docklands' (see pg 120) and are noted as follows:

*'Greenpark Racecourse site should be progressed as a **major residential opportunity site** along its northern extents and the opportunity explored for the feasibility of **the provision of a c.12Ha enterprise and employment opportunity site** accessed from Dock Road to supplement the IDA lands at capacity in the Castletroy/ UL neighbourhood.*  
**[our emphasis]**

It is clear from the above statement that c.12 ha of the Greenpark lands is identified as being potentially feasible as an enterprise and employment '*opportunity site*' accessed from Dock Road, together with a '*major residential opportunity site*' all within an emerging '*expanded plan*' area for the city centre. Given this planning context, it is clear, therefore, that the lands are '*essential to facilitate regeneration and/or expansion of the centre of the urban settlement*'. This criterion is met by the subject lands.

*(ii) Comprises significant previously developed and/or under-utilised lands;*

The Greenpark site comprises a strategically important land bank of significance (47 ha) and constitute the former Limerick racecourse, so is '*previously developed*', having accommodated another land use with associated ancillary development. At present, the lands are undeveloped and are grossly underutilised, having regard to their strategic locational context on the edge of core city area in the city's inner suburbs proximate to several employment areas and public transportation corridors. This criterion is met by the subject lands.

*(iii) Is within or adjoining the core of an established or designated urban settlement;*

Limerick is a designated urban settlement and growth area under the provisions of the NPF and RSES with projected population growth in the order of 47,000-56,000 people up to 2040. The Draft Plan envisages growth of c. 34,000 people to 2028. The Greenpark Lands are centrally located within the inner suburbs of Limerick City within 2 km of the city core and adjoining the existing built-up area of the city centre. This criterion is met by the subject lands.

*(iv) Will be essential in achieving compact and sustainable urban growth;*

Limerick City is a designated growth centre in the NPF and RSES, whilst ambitious population and economic growth are explicitly supported in the current Draft Development Plan and the Limerick 2030 Plan Interim Update. All relevant planning policy (National, Regional and Draft Plan) require this growth to be delivered in accordance with the compact city model utilising underutilised brownfield and centrally located lands where possible.





The projected growth of Limerick is earmarked to be accommodated in the city centre and the adjoining inner suburbs, where possible, in line with National planning policies and guidance in respect of the sequential approach to the zoning of land (see also Section 3.2 above). The Greenpark lands are of scale (47 ha), so can deliver a significant contribution towards meeting both economic and residential growth targets in a sustainable location proximate to the city centre, employment centres, established social infrastructure and existing and emerging public transport corridors. The *Limerick 2030 Interim Update* (see Volume 6 of the Draft Plan) further support these objectives and explicitly reference the subject lands as forming an important part of the 'expanded plan' strategy as both an employment (c.12 ha) and major residential opportunity site.

The lands will, therefore, be essential in achieving this compact city model of sustainable urban growth being contiguous to the existing built-up area and promoting the use of cycling, walking and public transport. If the lands are not developed in this manner, it will promote the zoning and development of lands, particularly for residential purposes, in greenfield remote locations on the periphery of the existing built-up area at a significant remove from the city centre often requiring costly and significant new infrastructure and likely highly car dependent. This latter form of development is the antithesis of the 'compact city' and results in an unsustainable form of growth that will serve to undermine the overriding planning strategy guiding the growth of Limerick. This criterion is met by the subject lands.

- (v) *There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement*

There are no suitable alternative lands to accommodate the appropriate combination of commercial and residential use within, or adjoining the city's core area that are at a lower risk of flooding. There are limited available development lands adjoining the subject site that are located closer to the city centre and, where such limited sites exist, these are also designated as being at risk of flooding or otherwise committed for development/already developed. This criterion is met by the subject lands.

In summary, therefore, the Greenpark Lands satisfy the criteria included in the Development Plan Justification Test and are, therefore, appropriate to be zoned for development including commercial and residential uses.

The final requirement of the Development Plan Justification Test requires the preparation of a flood risk assessment to an appropriate level. In this regard, a detailed SSFRA was completed by RPS Consulting Engineers in respect of the Greenpark Lands (see below). The Guidelines state:

*'A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere.'*



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

As noted, RPS have undertaken a detailed site specific flood risk assessment (SSFRA) for the Greenpark Lands in accordance with the sequential approach required under *The Planning System and Flood Risk Management Guidelines for Planning Authorities (2009)* (PSFRMG). The SSFRA is appended to this submission as Appendix A.

The SSFRA identified that the risk of flooding to the Greenpark Lands is low, as the OPW maintained Arterial Drainage scheme provides protection during both the 0.5% and 0.1% AEP tidal events. This was established previously by modelling during the OPW CFRAM process and, more recently, by comprehensive modelling undertaken by RPS to inform the SSFRA. The lands are still predominantly classed as Flood Zone A, in accordance with the *PSFRMG*, due to the residual risk of breach of the OPW embankments, which were constructed of a material of unknown origin.

The focus of the RPS SSFRA was, therefore, to demonstrate, that during a breach scenario, the risk to property and life could be safely managed in the knowledge that this event could be sudden and without warning. The general approach to this was to raise the Greenpark Lands above the predicted breach level with a suitable allowance for Climate Change and freeboard, while ensuring there was no unacceptable adverse impacts to neighbouring lands or property. This was achieved and the mitigation measures provided the following benefits to ensure long term sustainability and a neutral impact on surrounding lands:

1. There is no reliance on the existing OPW embankments to provide protection to the Greenpark Lands.
2. The proposed mitigation is entirely self-sufficient, sustainable and will place no burden on Limerick City and County Council to provide additional flood defence infrastructure in the future.
3. The Greenpark Lands will remain free from flooding during a 0.5% AEP Mid-Range Future Scenario event where overtopping of the existing defences occurs.
4. The Greenpark Lands will be protected during a 0.5% AEP Mid-range Future Scenario event, even when a breach of the existing defences has also occurred.
5. It has been robustly demonstrated that there is no increase in flood risk, even during a breach event, to surrounding developments.
6. A clear access and egress route for emergency vehicles can be provided through Log na gCapall, even during a breach event. This is essential, given that Dock Road itself will be impassable due to the depth of water.
7. All storm drainage will be attenuated to existing run-off rates and, therefore, will not cause capacity issues on the existing network or raise the increase of flooding elsewhere.



The RPS SSFRA, the analysis undertaken and the report produced meets the requirement of the final criterion of the Development Plan Justification Test.

Key Issue Arising: The application of the *Planning System and Flood Risk Management Guidelines 2009*, at the Development Plan stage, demonstrates that the Greenpark Lands satisfy the requirements of the Development Plan Justification Test.

#### **4.0 DRAFT LIMERICK DEVELOPMENT PLAN 2022-2028**

##### Future Residential Development

The written statement (Volume 1) of the Draft Development Plan sets out the Planning Authority's vision for the Limerick City and County administrative area. Chapter 2 of the Draft Plan sets out the core strategy, which informs the overall framework for the objectives and policies throughout the Draft Plan. The Core Strategy provides a rationale for the amount of land proposed to be zoned for new residential development and for mixed use development, involving a residential component that is required to meet the proposed population growth over the lifetime of the Draft Plan period, at settlement level. This section reinforces that the Draft Development Plan must be underpinned by the policy objectives of the NPF and RSES (as described above in this submission) in respect of achieving the projected population growth in Limerick City and Environs of at least 50% by 2040 and promoting the compact growth concept with 50% of new housing development to occur within the existing built-up area of the city environs.

Table 2.4 identifies the Limerick Settlement Hierarchy with the top of the hierarchy (Level 1) described as the Limerick City Metropolitan Area, which comprises '*Limerick City and Environs, including Mungret and Annacotty*'. The bulk of new population and housing growth will occur within this area.

Table 2.3 estimates a total household projection for the Plan period (2022-2028) of 15,591 and a population growth of 33,618 persons in Limerick city and suburbs to 2031. Table 2.6 identifies '*Density Assumptions per Settlement Hierarchy*', which is broken down into Density Zones 1-3 for City Centre, Central & Accessible Locations (100+ units per ha); Intermediate Urban Locations/Transport Corridors (45+ units per ha) and Suburban Edge (35+ units per ha) respectively. Figure 2.2 of the Draft Plan suggests that the site is located at the interface of the Intermediate Urban Location and the Suburban Edge, which would give an appropriate residential density of 35-45 units per ha for the Greenpark Lands. (As noted above, the current SHD proposal on part of the subject lands shows a density of 47 units per ha as being achievable on the lands).

Section 2.4 of the Draft Plan notes that:

*'Guidance throughout the Draft Plan on housing densities, building height and development layouts, are all aimed at ensuring the economic use of land for development, compact, quality neighbourhoods and integration with infrastructure and non-residential land uses that nurtures sustainable travel patterns and choices.'*



Table 2.7 comprises the core strategy table and suggests that no additional zoned land is required to accommodate additional growth in the Level 1 settlement tier (Limerick Metropolitan City and Environs including Mungret and Annacotty) with 358 ha of existing zoned undeveloped land available with capacity for 12,322 residential units.

Key Issue Arising: Given that the Residential zoning of the Greenpark Lands has decreased by c. 15 ha in the Draft Plan with capacity for c. 650+ no. residential units in a highly accessible inner suburban location, we submit that there may be lands identified for residential development purposes that are less suitable when assessed against the relevant National, Regional and Draft Plan policies and the sequential approach to the zoning of residential land as set out in the Development Plan Guidelines.

Chapter 3 of the Draft Plan further details the proposed settlement and housing strategy for Limerick, which once again reinforces that the strategy aligns with the overriding policy objectives of the NPF and RSES (see Policies SS P1 and SS P2).

Regarding 'compact growth', Objective SS 01 states:

*'It is an objective of the Council to strengthen the core of settlements and encourage compact growth, through the development of infill sites, brownfield lands, under-utilised land/buildings, vacant sites and derelict sites, within the existing built-up footprint of the settlements and develop outwards from the centre in a sequential manner'.*

Policy SS P3 Level 1 – Growing Limerick City Metropolitan Area, including Mungret and Annacotty states that:

*'It is a policy of the Council to strengthen and consolidate Limerick City Metropolitan Area as a key driver of social and economic growth in Limerick and become a vibrant living, retailing and working City. In accordance with national and regional policy it is a requirement that at least 50% of all new homes will be located within the existing built-up footprint of the settlement, in order to deliver compact growth and reduce unsustainable urban sprawl'.*

Regarding Housing Mix, Objective HO 01 states:

*'It is an objective of the Council to ensure that new developments are socially inclusive and provide for a wide variety of housing types, sizes and tenure, throughout Limerick, to cater for the demands established in the Draft Housing Strategy and the Housing Need Demand Assessment'.*

Section 3.7.4 of the Draft Plan again notes the key objectives of the NPF and RSES that seek to increase the density of development in all built up areas, in order to achieve the indicated population targets in a compact and sustainable manner. The Draft Plan confirms that increased densities will facilitate optimising the use of serviced lands and maximising the viability of investment in social and physical infrastructure, in particular public transport. Integration of land use and transport planning is identified as being crucial to deliver the '10 minute city/town' concept and this will be supported with higher densities at appropriate locations.



Key Issue Arising: As noted throughout Section 3 of this submission above, the Greenpark Lands are a textbook example of a significant underutilised and undeveloped infill urban land bank located in close proximity to the city centre, areas of employment, existing social infrastructure and public transport corridors. The lands are inherently suitable to accommodate substantial residential development as an expansion of the core urban area of Limerick.

Allied to an Enterprise and Employment zoned area adjoining the Residential component, this would enable the creation of a highly sustainable '10 minute' city district as referenced above and encourage walking, cycling and the use of public transport. The lands are also serviced, so do not require expensive and lengthy infrastructural upgrades to become available for development in the short term. The development of a significant portion of the lands for Residential purposes will contribute significantly to the achievement of the above Draft Plan objectives (viz., compact growth, urban consolidation and housing mix).

#### Future Employment Development

Chapter 4 of the Draft Development Plan is entitled 'A Strong Economy' with the aim of supporting the growth of employment and enterprise, retail, tourism and the marine economy in Limerick, in a manner, which ensures that economic development does not impact adversely on the environment. Section 4.3.1 notes that the Limerick 2030 Economic and Spatial Plan for Limerick has the ambition to create a City Centre that can attract new inward business investment and encourage the formation of new local business by providing high quality, flexible space.

It is noted that:

*'The Draft Plan seeks to protect and promote the strategic employment locations identified in the RSES. Chapter 10: Compact Growth and Revitalisation identifies opportunity sites for future development. In line with the Core Strategy, the Draft Plan considers how best to ensure that there are sufficient zoned lands available in appropriate locations, to support the range of future employment needs for Limerick'.*

Policy ECON P1 notes the importance of *Limerick 2030* stating:

*'It is a policy of the Council to support the review and implementation of Limerick 2030 – An Economic and Spatial Plan to guide the economic, social and physical renaissance of Limerick City Centre and the wider County/Mid-West Region'.*

Policy ECON P3 states that:

*'It is a policy of the Council to: a) Promote, facilitate and enable economic development and employment generating activities in Limerick City Centre, at Strategic Employment Locations and other appropriately zoned locations in a sustainable manner. b) Facilitate the future sustainable economic development of Limerick City and Environs to optimise the benefits of its strategic location in the Limerick Shannon Metropolitan Area, in accordance with the National Planning Framework and the Regional Spatial and Economic Strategy'.*



Section 4.7 of the Draft Development Plan focuses on Enterprise and Employment. The National and Regional policy context is noted particularly the provisions of the MASP, which supports Limerick City in becoming a major economic force in the Irish and international economy, a leading centre for commercial investment.

Section 4.7.2 relates to Strategic Employment Locations in Limerick City and Environs. It states that:

*'The Local Authority is committed to the delivery of a vibrant and compact community where people live close to where they work in Limerick City Centre, which must be prioritised for investment. The strategic employment areas identified, support the objectives for compact growth of the settlement of Limerick City and Environs... With an increase of critical mass in the City and Environs, it is envisaged that population and jobs growth will occur in a sustainable manner focusing on clusters and smart specialisation.'*

Regarding the Docklands area, the Draft Plan states:

*'The maintenance of the city's existing working port and associated industries will also be supported in the Draft Plan. These lands represent an invaluable asset for the future maritime related economic development of the City Centre. There is also potential for significant development of underutilised City Centre lands within the Docklands area for a major employment and residential quarter'.*

The juxtaposition of employment residential land uses is further restated in the Draft Plan:

*'It is therefore acknowledged that additional locations may become available and the Local Authority recognises the need to be flexible to accommodate employment opportunities and the aims of revitalising and regenerating Limerick City, for higher density living and higher value jobs during the lifetime of the Draft Plan.'*

Objective ECON O13 'Strategic Employment Locations City and Environs' sets out policy provisions that promote a diverse range of employment opportunities in appropriate locations and explicitly identifies the following as 'Strategic Employment Locations' in line with the RSES MASP:

- Limerick City Centre,
- University Hospital Limerick,
- Raheen Business Park,
- the National Technology Park,
- Higher Education Institutes,
- Public Hospitals,
- Dock Road,
- Northside Business Campus,
- Opera Centre and
- Cleeves Site



Key Issue Arising: Notwithstanding that the quantum of zoned Enterprise and Employment zoned lands increasing to c.24.7 ha in the Draft Development Plan (a c.14 ha increase from the General Mixed Use zone in the existing Development Plan), which is a very significant site area, the Greenpark Lands are not identified at any stage in the Draft Plan as a Strategic Employment Location. This is despite the fact that this would comprise one of the largest Enterprise and Employment zoned land parcels in the inner suburban part of the city environs.

As noted above, however, the *Limerick 2030 Interim Update* identifies Greenpark ('old racecourse') as being both an employment opportunity site (c.12 ha) and a major residential opportunity site. All of the above suggests that whilst part of the Greenpark Lands may have a role in supporting the future economic growth of the city centre and an emerging new Docklands centre, they do not represent a Strategic Employment Location. Given its locational characteristics, the overall site comprises a landholding ideally suited to accommodating mixed use development in line with the above Draft Plan policies that seek to co-locate employment and residential development in line with sustainable development principles.

Chapter 10 relates to Compact Growth and Revitalisation and, as with all other parts of the Draft Plan, this provides the National and Regional planning context, which explicitly supports:

- The City Centre as the primary location at the heart of the Metropolitan Area and Region;
- Compact growth and revitalisation of Limerick City Centre and suburbs;
- Densification of development in the City Centre, including identification and assembly of brownfield sites for development.

It is also explicitly referenced that Limerick City and County Council will have regard to, *inter alia*, *Limerick 2030: An Economic and Spatial Plan for Limerick*.

Regarding 'compact growth', the Draft Plan makes a series of statements all of which clearly support the development of the Greenpark Lands for uses including Residential:

*'Limerick City and County Council acknowledges the social and economic benefits of more compact settlements and is committed to delivering compact growth, through active land management and initiatives to revitalise urban settlements. The policies and objectives in this Draft Plan promote the efficient use of urban lands to achieve compact growth, through the intensification, consolidation and positive revitalisation of the City, towns and villages throughout Limerick.*

*The compact growth concept requires the provision of higher densities and mixed-use developments in urban settlements, in order to ensure a more efficient use of scarce lands and optimise public investment in infrastructure. This requires the integration of land use and transport, an intensification of use of existing underutilised lands and the consolidation of the built environment through the development of brownfield and infill lands, as well as the reuse of vacant and derelict buildings in urban settlements. In conjunction with the provision of social and green infrastructure, the principles of compact growth set the foundations for a higher quality of life, through the promotion of mixed-use settlements, served by sustainable modes of transport and the creation of an attractive environment in which to live, work and do business.*



*Successful compact growth requires enhanced connectivity and accessibility for pedestrians and cyclists, as well as the provision of viable public transport services through the concentration of higher density developments at strategic employment locations and along public transport nodes. There are many sustainability benefits of the compact growth concept compared to that of urban sprawl or greenfield developments at the edge of settlements. Such benefits include maximising the viability and cost efficiency of providing public transport and other infrastructure, as well as reduced car dependency and commuting times, which will facilitate the mitigation of climate change, through a reduction in traffic congestion, energy consumption and greenhouse gas emissions.*

*The Local Authority acknowledges the social and economic benefits of more compact settlements as outlined above. Therefore, this Draft Plan will continue to support the sequential approach to the delivery of development, with priority given to the revitalisation of settlements and the consolidation of the existing built environment, through the development of brownfield, infill and backland urban sites’.*

Policy CGR P1 provides policy support for the above principles. It is submitted that the Greenpark Lands enjoy all the locational characteristics described in the above commentary and comprise an ideal site that would demonstrate how the above principles could be implemented in practice.

Chapter 10 also addresses the importance of Brownfield sites in achieving compact urban growth and describes these sites as follows:

*‘Brownfield land is a term used to describe previously developed land that is not currently in use and which has the potential for redevelopment. Often such lands are of large scale and have previously been in use for industrial or commercial purposes and became derelict due to obsolescence, vacancy or demolition of structures*

*Redeveloping brownfield sites provides opportunities for revitalisation of the built environment and reuse of existing infrastructure including roads and utilities. The Planning Authority will encourage the redevelopment of brownfield sites in settlements throughout Limerick, in accordance with the concept of compact growth and the Development Management Standards of this Draft Plan. A number of strategic brownfield sites have been identified for redevelopment in Limerick City Centre, which will have transformational effects on the revitalisation of the City. Such strategic sites include, for example, the Opera Centre, Cleeves Riverside Quarter, the University of Limerick Riverside Campus and Colbert Station Quarter. Some of these projects are briefly outlined under the Limerick City Revitalisation Projects and Opportunity Sites section further below’.*

As above, the Greenpark Lands are not identified as being a Brownfield Site despite being located in the inner suburbs of the city and comprising a largescale site (47 ha) that was formerly in use.

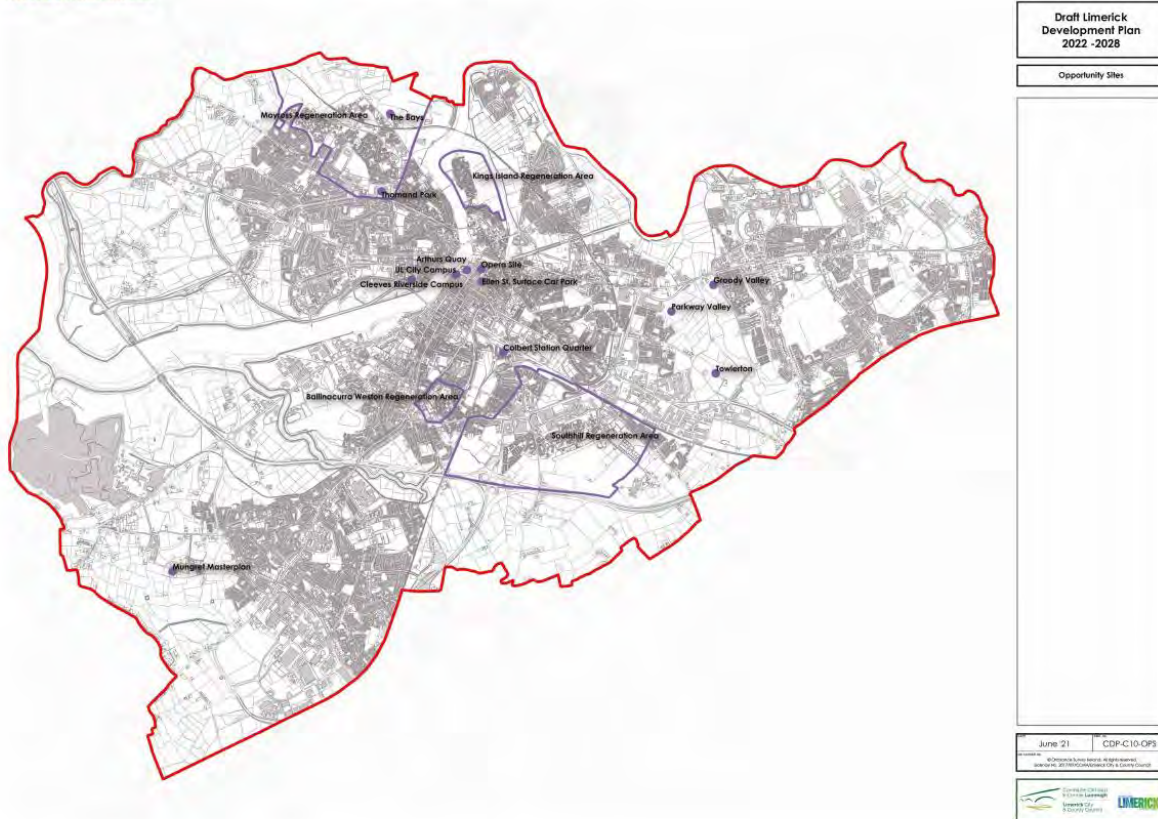
This chapter also reinforces the importance of Limerick 2030 in the future regeneration of the city and environs:





*‘The key tool for the revitalisation of Limerick is the Limerick 2030 – An Economic and Spatial Plan. The Limerick 2030 Plan sets out a blueprint for the economic and spatial revitalisation of Limerick City, to reposition it as a world class City in Ireland and Europe. The NPF sees its implementation as a growth enabler, which can act as an exemplar to other cities not just nationally but internationally. The establishment of the Limerick Twenty Thirty Strategic Development DAC (Designated Activity Company) has accelerated the implementation of the Limerick 2030 Plan, with actions proposed over a 20-year period. The DAC is the first entity of its kind created by a Local Authority to deliver a City and countywide programme of investment. It is the biggest single Irish commercial property development programme undertaken outside of Dublin.’*

Map 10.1: Opportunities Sites



**Figure 3.12:** ‘Opportunity Sites’

(Source: *Draft Limerick Development Plan 2022-2028*, Limerick City and County Council, 2021, Page 261)

Section 10.4.2 relates to the ‘Limerick City Opportunity Sites’, which are noted to include the Opera Site, Cleeves Riverside Quarter, UL City Campus, Arthur’s Quay, Colbert Quarter, Ellen Street Car Park, Thomond Park, The Bays, Moyross, Mungret Masterplan, Parkway Valley, Groody Valley and Towlerton. These sites are illustrated on Map 10.1 together with the regeneration areas of Kings Island, Southhill and Ballinacurra-Weston. It is notable that Greenpark is not an identified ‘Opportunity Site’ despite its size and strategic location in the context of Limerick city centre. As noted above, however, the *Limerick 2030 Interim Update* identifies Greenpark (‘old racecourse’) as being both an employment opportunity site (c.12 ha) and a major residential opportunity site.



Key Issue Arising: It is apparent that the Greenpark Lands meet the policy objectives outlined in the Draft Plan regarding the achievement of compact growth and revitalisation objectives. Its re-development for a mixture of employment and residential uses will inherently accord with the relevant planning objectives. In spatial planning terms, It is remarkable, therefore, that the lands do not feature as one of the identified Opportunity Sites (see Volume One written statement) in the Limerick City and Suburbs area, given the strategic size of the landholding (47 ha) and its location close to the city centre, centres of employment and public transport corridors. Moreover, the lands are hardly mentioned at all anywhere in the Draft Plan, which seems scarcely believable, given the superb locational characteristics of the site and their suitability for sustainable new development in line with National and Regional planning policies. This omission makes little sense, having regard to the fact that the site meets virtually all relevant Draft Plan policies and objectives regarding compact growth, regeneration, sustainable development, mixed use, densification, the 10 minute city, etc.

In terms of size, the site is significantly larger than Towlerton (16.4 ha), Groody Valley (2.4 ha) and Parkway (16.4 ha) and is, in relative terms, of similar scale to Colbert (69 ha) and Mungret (59.6 ha). It is also significantly closer to the city centre than Mungret, Towlerton, Groody Valley and Parkway and, therefore, in terms of the sequential development of cities from the centre outwards as per National guidance, it should clearly be a site of significant priority on those grounds alone as a sustainable development opportunity. It is also a serviced site and can be developed with relative ease and speed through the provision of a new internal link road from Dock Road, which can be delivered by the landowner through the planning process.

The virtual disappearance of Greenpark from the Draft Plan is in stark contrast to the Current Development Plan, which explicitly identified the site as being part of the South Circular/Ballinacurra Area with an objective:

*‘To seek the balanced development of the existing under-utilised lands in the area in particular the former racecourse lands.’*

The existing Development Plan notes that the c. 36 ha of undeveloped, zoned land at the former race course could release 1,188 residential units and its explicitly noted in Table 2.5 (core strategy) as the *‘former racecourse’*. It is submitted that with the adoption of the NPF and the RSES, as now copperfastened by the *Limerick 2030 Interim Update*, the lands are more suitable for a mix of commercial and residential development in National planning policy terms than was the case in 2010.



## 5.0 CONCLUSION

We contend that this submission provides a compelling evidence-based planning case as to why the proposed overwhelmingly commercial zoning of the Greenpark Lands in the Draft Plan is not supported by National and Regional planning policies and objectives, particularly in the context of the ambitious projected growth of Limerick in population terms and as an NPF-designated city of scale. In summary, the overriding planning policy imperative at all levels of the Irish planning hierarchy is that 50% of anticipated future housing and population growth to 2040 requires to be accommodated within the existing built footprint of urban centres preferably on underutilised lands close to existing city centres, public transport routes, employment centres and services. This is the mandated growth model enshrined in the NPF and RSES LMASP that must now be adhered to in the Draft Limerick Development Plan and is the sustainable alternative to continued urban sprawl and new car-reliant greenfield development on the periphery of cities often involving complex ownership arrangements, costly significant new infrastructure provision and lengthy development programmes.

The Greenpark Lands comprise a serviced underutilised 47 ha site located within 2 km of Limerick city centre consisting of a former racecourse that can be developed in the short-term. As described in detail in this submission, it is ideally located to deliver both residential and commercial development in a mixed use planning model that will deliver substantial housing provision and also significantly contribute to the ongoing economic growth of Limerick by way of employment-based uses. It is proximate to established social infrastructure, public open space zoned land, existing and emerging public transport routes, employment centres, third level institutions and the city centre. Its re-development will facilitate and encourage the use of public transport, walking and cycling in the city. This vision is fully supported in the zoning provisions of the Current Development Plan, which also explicitly acknowledges the site's importance as a strategic residential land bank with the capability of accommodating over 1,100 housing units. We contend that this model of development remains appropriate and wholly in compliance with current planning policy.

As described above, our Client is fully cognisant of the flood risk designations that apply to the lands and the provisions of the *Planning System and Flood Risk Management Guidelines for Planning Authorities (2009)*, which were also in force when the Current Development Plan was adopted in 2010. We do not consider that these designations constitute grounds to alter the current zoning of the lands as now proposed. This change is not supported by the 2009 Guidelines, given the strategic central location of the Greenpark Lands adjoining the city centre and their crucial role in meeting the core strategic planning objectives underpinning the future growth of Limerick as required in the NPF, the LMASP and the Draft Plan. As confirmed in this submission, the lands satisfy the criteria of the Development Plan Justification Test (see 2009 Guidelines) as being appropriate for land use zoning. This Test does not distinguish between particular land uses, so commercial and residential uses are deemed appropriate on the site.

In addition, the entirety of the lands have been subject to a Site Specific Flood Risk Assessment (SSFRA), which informed the vision for the lands and was integrated into the design of the overall landholding as detailed in the Greenpark Masterplan. The SSFRA confirms that the lands can be developed safely with appropriate mitigation measures and will not increase flood risk on other lands.



The substantial reduction in Residential zoned land proposed in the Draft Plan at Greenpark is counter to planning policy and the provisions of a wide range of National and Regional planning policy documents including:

- *Project Ireland 2040 - National Planning Framework (NPF) 2018*
- *Development Plan Guidelines for Planning Authorities 2007*
- *Development Plan - Guidelines for Planning Authorities Draft for Consultation August 2021*
- *Sustainable Residential Development in Urban Areas – Guidelines for Planning Authorities 2009*
- *Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities, March 2018*
- *The Planning System and Flood Risk Management Guidelines for Planning Authorities (2009)*
- *Rebuilding Ireland, Project Descriptions Local Infrastructure Housing Activation Fund (LIHAF) 2017*
- *Regional Spatial & Economic Strategy (RSES) for the Southern Region 2020*
- *Limerick Metropolitan Area Spatial Plan (LMA SP) 2020*

At the local planning level, numerous policies and objectives of the Draft Plan also fully support the re-development of the Greenpark Lands for a mix of uses including a significant residential component as detailed above in this submission. The recently published '*The Future Development of Limerick City*' published by Limerick Chamber further supports this planning approach and strategic residential regeneration in the inner urban areas of Limerick.

Despite the site's strategic size and location, it is not identified as an 'Opportunity Site' in Volume One of the Draft Plan, notwithstanding being larger and better located than many of those so designated. Whilst Greenpark is not specifically referenced in the written statement (Volume One), the lands are clearly identified in the *Limerick 2030 Interim Update* (see Volume Six of the Draft Plan) as being a '*City Gateway*' clearly located within the inner part of the city and suburbs. They are further described as forming a '*major residential opportunity site*' and the Interim Update makes reference to exploring the opportunity for the '*...feasibility of the provision of a c.12Ha enterprise and employment opportunity site accessed from Dock Road*'.

The written statement notes the importance of the *Limerick 2030 Interim Update* in Policy ECON P1, which confirms the Council's policy support regarding '*...the review and implementation of Limerick 2030 – An Economic and Spatial Plan to guide the economic, social and physical renaissance of Limerick City Centre and the wider County/Mid-West Region*'.

However, the proposed Enterprise and Employment zoning of the lands in the Draft Plan does not reflect this aspect of the *Limerick 2030 Interim Update*. In summary terms, the overwhelming provision of Enterprise and Employment zoned lands at Greenpark (in the context of the overall Draft Plan that will provide over 20 years supply of employment zoned land assuming a 60% increase in demand for employment based floorspace – see Lisney Report enclosed in Appendix B) and the consequent substantial reduction in Residential zoning cannot be supported in the midst of an acute and ongoing housing crisis.



We request, therefore, that the existing quantum of New Residential zoned lands be retained in the Draft Plan as described above in the interest of the proper planning and sustainable development of Limerick City. Our Client is amenable to the proposed change from General Mixed Use and Neighbourhood Centre zoned land to Enterprise and Employment in order to support the City's economic growth strategy.

We look forward to written acknowledgement of receipt of this submission.

Yours sincerely

---

**John Gannon**  
**Director**  
**Tom Phillips + Associates**

**Encl.**



## **APPENDIX A**

Site Specific Flood Risk Assessment for Greenpark  
as prepared by RPS, Consulting Engineers



## **APPENDIX B**

Lisney Report

**Shannon Minerals,  
Pa Healy Road  
LCC – C62 – 41**



Kieran O'Hanlon

Response to Chief Executives Report on Public Consultation  
and  
Motion to Change Landuse Using Zoning in the Draft Plan

On behalf of:

O'Mara Family – Land at Pa Healy Road

January 2022



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Limerick | Dublin | t: 061 435000 | f:061 405555 | e:info@hraplanning.ie | w:www.hraplanning.ie

Title:	22005a Draft Development Plan Motion
Project:	Response to CE Report & Motion to Change Zoning
Prepared by:	MH
Date:	January 2022
Issue:	Issue 1
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## **1.0 INTRODUCTION**

HRA PLANNING has been retained by the O'Mara Family to prepare a response to the Chief Executives Report on submissions received in respect of the Draft Limerick Development Plan 2022 – 2028 and to prepare a motion on behalf of Councillor Kieran O'Hanlon to secure a change in zoning from Enterprise & Employment Use to Mixed Use purposes.

A submission was made by AK Planning on behalf of the O'Mara family at Draft Plan stage, setting out the reasons why it was considered that the zoning afforded to the land should be changed from Enterprise & Employment Use to Mixed Use purposes. It is not the purpose of this submission to revisit the issues originally raised, but rather to concentrate on the core reasons why the planning authority does not consider mixed use zoning appropriate to the land as detailed in the Chief Executives Report, including:

- Flooding;
- Justification Test;
- Sequential Approach; and
- Sustainable Neighbourhoods

In advance, it is considered necessary to set out a number of pertinent points regarding the characteristics of the site, in particular its close connections to the city centre, immediately adjoining facilities and services.

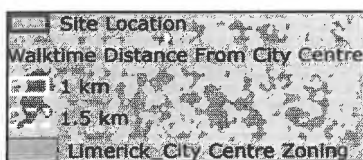
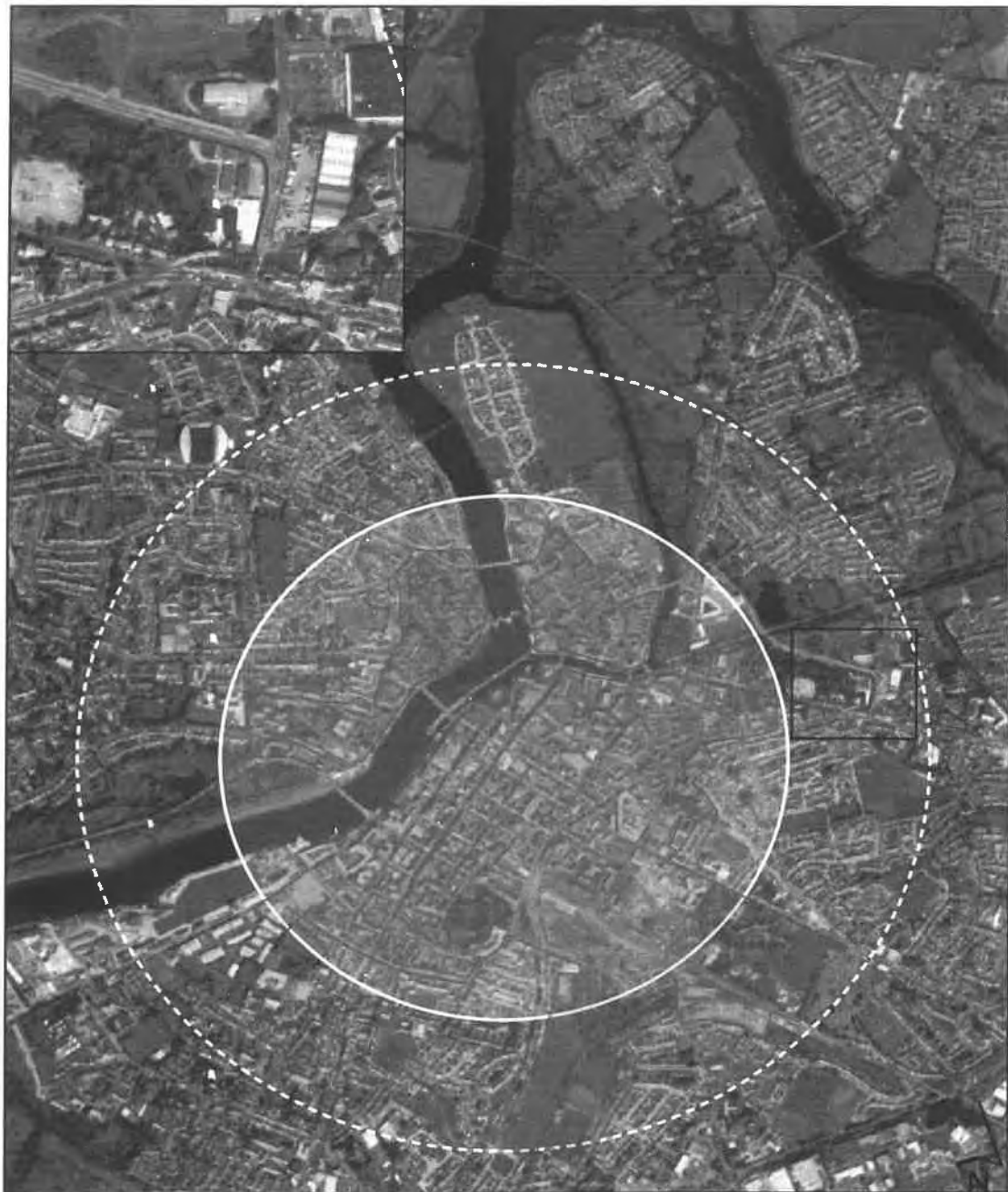
## **2.0 BACKGROUND**

### **2.1 Site Context**

The 1.01 hectares brownfield site is situated on a prominent corner site with frontage onto Upper Clare Street, Park Road and the Pa Healy Road as illustrated in Figure 1.0. Brownfield in nature, the site comprises 2,000sqm of vacant industrial building with the existing primary access to the site off Pa Healy Road.

The site is fully serviced with a surface water and gravity foul sewer and a potable water supply. It benefits from public lighting, footpaths and a cycleway route and will adjoin a significant secondary school with capacity to accommodate 750 no. students.

The site is located within a 10 - 15 minute walk of Limerick city centre; a 7 minute walk from St. Johns Hospital; a 4 minute walk from O'Briens Public Park and the Limerick School of Art & Design; and a 25 minute walk from the University of Limerick. The site is also well serviced by existing bus routes, with 2 no. bus stops within a 2 minute walk of the site (See Figure 2.0 for bus stops in the area). The site is effectively serviced by the 323, 341, 323 X and 304A bus routes. The 304A Raheen – University bus route provides effective connectivity to both sides of the city (Raheen & Castletroy) every 20 minutes.



**Figure 1.0** Site Location & Context in Proximity to City Core

It is noted that the site will be situated immediately adjacent to the proposed Bus Connects Corridor on the Dublin Road, which will provide a 10 minute regular bus service as per the Limerick Shannon Metropolitan Area Transport Study (LSMATS).

## 2.2 Adjoining Gaelcholaiste

Significantly, planning permission was recently granted for a new 7.800sqm post primary (Gaelcholaiste) school on adjoining lands to the southwest of the site (old Dawn Dairies site – planning references P19/1252). The primary permitted access to the new school is off the Pa Healy Road, via a shared access with the subject lands. A condition of the shared agreement is that Heavy Goods Vehicles (HGV's) would not utilise the shared access, as to do so would directly conflict with school traffic development.

The agreement with the school was made at a time when the subject land was zoned for mixed use purposes in the Limerick City Development Plan 2010 – 2016 and there was a genuine and realistic assumption that the site would change to residential use in accordance with its mixed use zoning. There was no indication at that time that the subject land would be rezoned to enterprise & employment purposes as proposed in the Draft Plan. The O'Mara family wish to uphold their agreement with the Limerick Clare Education Training Board (LCETB) and facilitate the permitted shared access to the new school. However, the proposed change in zoning of the land to enterprise & employment use is likely to compromise such an agreement as such zoning is likely to result in HGV movements on the access road, contrary to the original agreement.

In such instance, where enterprise & employment use is maintained on the subject site, the O'Mara family shall maintain their existing access arrangements, which permits HGV access. Unfortunately, in such instance a shared access road with the Gaelcholaiste will not be facilitated, notwithstanding the adverse impact that such decision will place on the planning permission granted by Limerick City & County Council.

## 2.3 Flooding

A Flood Risk Assessment (FRA) was prepared by CS Consulting Group in respect of the land and was submitted to the planning authority as part of the Draft Plan submission. The FRA acknowledges that the site is subject to coastal flooding and contrary to the CFRAM maps, the site is not subject to fluvial flooding.

It is noted that the subject site exhibits the same flooding characteristics as the adjoining Dawn Dairies site on which a new school was granted planning permission (P19/1252). Within the Planning System and Flood Risk Management Guidelines for Planning Authorities (the Flooding Guidelines), a school, similar to residential development is considered to be Highly Vulnerable Development. However, the Justification Test was undertaken in support of the development proposal and was deemed acceptable by the planning authority subject to mitigation measures and management of residual risk. In this instance the school mitigated against flooding by proposing a finished floor level of 5.30mOD.

Similar to the recently permitted school, a mixed use development on the subject site can be comprehensively mitigated to ensure effective management of residual risks.

#### 2.4 Development Proposal





Significant resources and financial investment have been spent to date in advancing a development proposal on the site under its current mixed use zoning. An unexpected change in the zoning of the site to proposed enterprise & employment use, will adversely impact such efforts rendering the scheme incompatible with the proposed amended land use zoning.

The proposed development and the design of finished ground levels are responsive to the potential of flood risk. Having conducted a flood risk assessment (FRA), that the level of predicted flood risk, derived from a worst-case coastal flood event (where the probability of flooding from the sea is highest (greater than 0.5% AEP for coastal flooding), would occur in this area at 5.15mOD (Malin). Similar, to the recently permitted school on the adjoining site, a proposed finished floor level of 5.30mOD would provide flood protection against all flood events.

Consistent with the Planning System and Flood Risk Management Guidelines for Planning Authorities (the Flooding Guidelines), and specifically the recommended approach set out in Section 5.16 of those guidelines, the proposed development seeks to mitigate and manage the potential for flood risk through the proposed design in order to further reduce such risk to an acceptable level. In this regard, and as per those Guidelines, the proposed development has adopted a precautionary approach proposing less vulnerable car parking use at ground floor level and maintaining residential use at first floor level thereby ensuring that such use is situated out of the floodplain.

Other mitigation and emergency plan measures can be proposed as part of the development proposal. These include patron awareness and education of flood risk scenarios and protocols and restrictions of use of the parking area in certain instances of flood risk to all residents and patrons of the development as part of operational management mechanisms prior to first and each occupation. This will be delivered by early warning advise and updates which will be sourced from Met Eireann and relayed to residents through the development management. Given the designed finished floor levels, inundation of development will not be anticipated and accessibility in/out of the development will be maintained via the shared access road with the Gaelcholaiste which was permitted under planning permission P19/1252. Such access was deemed safe and appropriate from a flooding perspective when assessed as part of the school proposal and it is considered that such assessment and conclusions would be applicable to the subject site.



-  Site Location
-  School Site location
-  Bus Eireann Routes
-  Bus Eireann Stops



**Figure 2.0** Site In Context of Permitted New Post Primary School



### **3.0 THE CASE FOR MIXED USE ZONING**

As per Section 3.7 of the Flooding Guidelines, although there is a need for future development to avoid areas at risk of flooding, it is recognised in the Guidelines that the existing urban structure of the country contains many well established cities and urban centres, which will continue to be at risk of flooding. Accordingly, the flood risk management guidelines do facilitate development within areas of flood risk which contribute to compact sustainable growth of established urban city areas where the type and extent for flood risk has been established, where the potential flood risks can be mitigated, and, where the proposed development would not give rise to residual flood risk effect to the proposed development, or to surrounding people, environment or the economy. It is submitted that development on the subject site, similar to the permitted Gaelcholaiste, can comply with Section 4 of the Flooding Guidelines and therefore should be considered from a zoning perspective.

#### **3.1 Flooding & Planning Precedence**

Notwithstanding that Limerick City & County Council has established its own precedence in granting planning permission for the Gaelcholaiste on adjoining land, there is other similar precedence adopted by other Councils in Ireland and approved by An Bord Pleanála. Further to the flood risk management case set out above, the O'Mara Family submit that its interpretation of the Flood Risk Management Guidelines, is consistent with the interpretation and application of those guidelines also by both Cork City Council and by An Bord Pleanála (ABP) in their recent assessment of a planning application for student housing development presented to them.

In this regard, reference is made to a planning application submitted to Cork City Council and subsequently appealed by the first party to An Bord Pleanála for development consisting of the construction of a four-storey student accommodation building located in the Mardyke area of Cork City adjacent to the River Lee (Cork City Council ref: 21/39853 and An Bord Pleanála ref: ABP-309974-21).

In its assessment, the Board acknowledged that that site was identified as being the subject of both a 1% AEP fluvial flood risk and a 0.5% AEP tidal flood risk. The Board thus categorised the site as being with Flood zone A (under the Planning System and Flood Risk Management Guidelines) and the proposed residential use as being highly vulnerable development. Accordingly, the flood risk management Justification Test was applicable to that application. In its assessment of the Justification Test, the Board acknowledged that the site was suitably zoned for residential use, it acknowledged that proposed design levels were raised to exceed predicted worst case flood levels under the 1% AEP flood event scenario; that an emergency plan was proposed which included evacuation of occupants during worst case events, and it considered that the proposed building would represent good urban design, vibrancy and activity of the streetscape. On that basis, the Board stated that the proposed development passed the 'Justification Test' and that the proposed development would be consistent with The Planning System and Flood Risk Management Guidelines.

The applicant submits that there are parallels between that approved scheme and the proposed development. This includes the urban city location proximity to both the city and the university; the same potential coastal flood risk; the suitability of raising the design level and its tie-in with the urban streetscape. In that instance, the River Lee flood relief scheme is not in place, and there are no current urban protection measures other than the design and mitigation. That said, the particular difference from the Cork Mardyke scheme, is that the proposed development the subject of this application, is brownfield in nature, is visually unattractive in its current state and is not reliant upon emergency evacuation and thus is considered an even more appropriate scheme of development without that requirement.

### 3.2 Flooding & the Justification Test

In order to achieve the aims and objectives and comply with the requirements of the Guidelines, the Local Authority's approach to the zoning of land is to avoid development in areas at risk, where possible and substitute less vulnerable uses, where avoidance is not possible. A precautionary approach has been adopted by the local authority in line with the Guidelines. Whilst this approach is noted and acceptable in principle, it is considered that the Local Authority also has a duty to promote compact growth and to facilitate residential development in proximity to the city core and adjoining services (schools) and facilities (public parks).

The Local Authority state in the Chief Executives Report that in considering the Justification Test the Draft Plan takes a City Centre first approach to the spatial development of Limerick City and Environs. It is stated that 'the core' is defined as the area zoned "City Centre". As detailed in Section 2(iii) of the Justification Test, the subject site must be either within or adjoining the core. As detailed in the Justification Test below (Table 1.0) and illustrated in Figure 1.0, the subject site adjoins the city centre zoned area. The O'Mara family thus submits, contrary to the opinion of the local authority, that the proposed development does in fact comply with the Justification Test, similar to the adjoining Gaelcholaiste development on adjoining lands recently granted planning

**Criteria to be Addressed**

**Planning Response**

The urban settlement is targeted for growth under the National Spatial Strategy, regional planning guidelines, statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.

Limerick has been identified in the National Planning Framework (NPF) as one of the five cities in the country which is the subject of a Metropolitan Area Strategic Plan. This emphasises the Metropolitan Area's national importance, for significant additional growth. This is echoed in the Regional Spatial and Economic Strategy for the Southern Region, which mentions that the Limerick Shannon Metropolitan area is "a key economic driver for the region and Ireland". Limerick has been identified for significant population growth in the NPF along with an objective that 50% of that future growth be located within the city and its suburbs. (NPO2a).

The City is located at a pivotal point on the Atlantic Economic Corridor. The NPF and RSES confirms that Limerick has the potential to generate and be the focus of significant employment and housing growth.

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

- a. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement
- b. Comprises previously developed and/or under-utilised land.
- c. Is within or adjoining the core of an established or designated urban settlement.

The subject site is brownfield in nature and along with adjoining lands is in need of regeneration. An adjoining site comprising the former Dawn Dairy complex is to be redeveloped as a school. This regeneration initiative cannot be considered in isolation and synergies between the school site and neighbouring brownfield land must be exploited to ensure sustainable compact growth and mixed use development.

The land is brownfield in nature comprising circa 2,000sqm of an industrial building with extensive hardcore material over the entirety of the site. The site previously operated as Shannon Minerals but closed its doors a number of years ago. The juxtaposition of the site with high visibility frontage onto three public roads, reinforces the need for high quality development and regeneration of the site.

The site adjoins the centre of the urban settlement (city core). As illustrated in Figure 1.0 the city centre zoning (blue) extends for a distance of 1.5km, encompassing a 15 minute walk-time. The subject site is located within the 10 and 15 minute walk-time catchment and is situated the same distance from the center of Limerick city as the city centre zoning that covers the Colbert Station lands The Pa Healy Road was originally constructed to open up land for development and to provide a connection between Rhebogue and Corbally.

Development on the subject land would facilitate such regeneration and development within walking distance of the city core.

- d. Will be essential in achieving compact and sustainable urban growth.  
The site is fully serviceable, has both pedestrian and cycle links, is served by existing public transport and neighbours a proposed Bus Connects route. It is located within a 15 minute walk of the city core, adjoining city centre zoning. It adjoins a proposed new 750 student school, is located beside a public park, is within 7 minutes walking distance of an established hospital and within a 25 minute walk of the university. It is situated adjoining city centre zoned land. Its development would result in increased synergies, generating a sustainable mix of uses.

- e. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.  
It is requested that the site is afforded a mixed use zoning capable of accommodating residential use. There are no other identified mixed use zoned sites in closer proximity to the city centre. Most of the mixed use and residential zoned lands in Limerick are located in the 'suburbs' at out of centre locations, substantially removed from the city centre. Development of the subject site would facilitate compact growth and provide for housing in an area of the city accommodating substantial existing and proposed new services including a new school. Population growth should be located in proximity to such infrastructure, resulting in shared trips and enhanced connectivity.

A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment

**Table 1.0** Justification Test (Box 4.1 of Guidelines)

The Limerick City Development Plan 2010 – 2016 identified various strategically located urban centres and zoned land whose continued growth and development is/was encouraged in order to bring about compact and sustainable urban development and more balanced regional development. The subject site is one of the very few sites adjoining the city centre that remains undeveloped and which is capable of immediate development. Therefore, in full consideration of the Planning System and Flood Risk Management Guidelines, the subject site complies with Box 4.1 Justification Test of the Guidelines and it is submitted that the subject lands should be appropriately zoned to accommodate development.

### 3.3 Sustainable Neighbourhoods & Sequential Development

The National Planning Framework (NPF) seeks to achieve more compact and sustainable growth through consolidating a greater share of future development within the existing built footprint of settlements, to include new homes, businesses and amenities. The NPF sets national targets for brownfield/infill housing development in cities (50%) to support the regeneration of existing urban areas. NPF compact growth objectives together with Town Centres First principles are focused on the reuse of previously developed buildings and land and building up 'infill' sites, especially those that are centrally located in settlements at all scales.

SPPR DPG 7 of the Draft Development Plan Guidelines states that,

*"Planning authorities shall adopt a sequential approach when zoning lands for development, whereby the most spatially centrally located development sites in settlements are prioritised for new development first, with more spatially peripherally located development sites being zoned subsequently".*

The subject site adjoins the city centre, is within a 15 minute walking distance of services and facilities in the city core, adjoins a proposed new school and neighbours an existing hospital. The land is accessible with adequate water services and facilities. The principle of developing this land has always been acceptable, with the land zoned for mixed use purposes in previous development plans.

Zoning this brownfield site for mixed use purposes will ensure that a portion of new development reflects the compact growth and town centres first agenda, which is also a key dynamic in addressing climate change, through reducing dependence on car-based transport, the extent of green-field land consumption and costly and inefficient infrastructure provision and use. In this instance, the development plan is provided with an opportunity to deliver a framework for development, which ensures a close correlation between facilitating residential and mixed uses on land with infrastructural capacity whilst also ensuring that a substantial element of future growth adjoining the city centre.

The case for mixed use zoning has already been established in the Draft Plan with 4 no. sites already identified in the environs of the city, well removed from the city core, as detailed in Figure 3.0.



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**Figure 3.0** Extent of Mixed Use Zoning in Draft Plan

It is confirmed that the subject land falls within Tier 1 land, which is suitable for development in the short term and during the life of the proposed Development Plan, at no cost to Exchequer, as detailed in Table 2.0.

Whilst the land has capacity for 50 no. additional units and which will need to be added to the core strategy, it should be noted that the land could be developed for a mix of residential and other uses. Accordingly, only a percentage of the estimated residential yield from the site land needs to be included in the core strategy table.

Site Capacity Audit	
Area of Site	1.01 hectares gross
Site in Built-Up Area	Within 15 minute walk-time of city centre
Service Status	Tier 1
Lighting	✓
Footpaths & Cycle Lanes	✓
Public Transport	●
Road Access	✓
Water	✓
Foul	✓
Surface Water	✓
Flood Risk	✗
Infill / Brownfield	✓
Proximity to Schools	✓
Assumed Residential Density	50 units per hectare <sup>1</sup>
Estimated Residential Yield from Site	50 units max
Planning History	Historical planning permission for industrial uses

**Table 2.0** Site Capacity Audit as per Draft Development Plan Guidelines (merged with structure proposed in Draft Plan).

<sup>1</sup> Minimum 50 units per hectare in proximity to bus corridor as per Design Standards for New Apartments

#### 4.0 MOTION TO AMEND THE DRAFT PLAN

It is hereby requested that the enterprise and employment landuse zoning afforded to land located at the junction of Upper Clare Street, Park Road and the Pa Healy Road as illustrated in Figure 1.0 is changed to mixed use zoning.

It will be necessary to insert a new 'Section 10.4.2.14 Pa Healy Road' into the Draft Plan in Chapter 10: Compact Growth and Revitalisation to ensure compliance with the existing plan structure. The text proposed is as follows:

##### Section 10.4.2.14 Pa Healy Road

The 1.01 hectares brownfield site is in a prominent location with road frontage on three sides. The site and adjoining land (former Dawn Dairies) require significant regeneration in a coordinated and holistic manner facilitating mixed uses and associated synergies whilst ensuring sustainable compact growth

##### Objective----- Pa Healy Road

It is an objective of the Council to:

- a) Facilitate creation of a mixed use / residential development
- b) Enhance the character of the area through urban design and placemaking, incorporating buildings of high quality design having regard to the sites prominent location surround by public road on three sides;
- c) Require provision of an integrated sustainable mobility network, with walking, cycling and public transport as the main components
- d) Ensure green infrastructure is a key component of the design and layout
- e) Provide a single coordinated access from Pa Healy Road to the site with provision for made for access to the adjoining Dawn Dairies site to the south west
- e) Promote a site-specific approach, reflecting emerging best practice, in addressing flood risk and prepare a Site Specific Flood Risk Assessment in accordance with the Planning System and Flood Risk Management Guidelines for Planning Authorities.

It will be necessary to amend Section 12.3 of the Draft Plan in respect of Land Use Zoning Objectives (additional text shown in red) as follows:

Objective: To provide for a mixture of residential and compatible commercial uses.

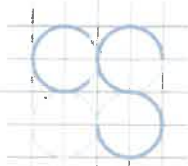
Purpose: To facilitate the use of land for a mix of uses, making provisions, where appropriate for 'primary' uses i.e. residential and combined with other compatible uses e.g. offices as 'secondary'. These secondary uses will be considered by the Local Authority, having regard to the particular character of the area. A diversity of uses for both day and evening is encouraged. These areas require high levels of accessibility, including pedestrian, cyclists and public transport (where feasible). Opportunity sites set out in Chapter 10: Compact Growth and Revitalisation, include Mixed Use zoned lands located at Towlerton, Parkway Valley, Thomond Park, and the Pa Healy Road which have been accounted for in the Core Strategy figures. In



In addition, the Draft Retail Strategy has identified capacity for additional retail floor space in Moyross, which could be accommodated on the Mixed Use lands at The Bays identified for employment uses only.

## Briefing Note – O'Mara Family Lands

- It is requested that the enterprise and employment land use zoning afforded to land in the Draft Plan located at the junction of Upper Clare Street, Park Road and the Pa Healy Road, measuring 1.01 hectares, is changed to mixed use zoning.
- The site is currently zoned for mixed use development in the existing City Development Plan, is brownfield in nature and requires regeneration.
- It is optimally located neighboring a permitted post primary school (Gaelcholaiste), O'.Briens Public Park, Limerick School of Art & Design, St. Johns Hospital and is within a 10-15 minute walk of the city centre core.
- A single joint access to the site has been permitted off the Pa Healy Road with the adjoining Gael Cholaiste as part of their permission on condition that no HGV traffic utilises the access road. The proposed Enterprise & Employment Use Zoning will result in HGV traffic and compromise delivery of this access road.
- The site is subject to coastal flooding and exhibits the exact same characteristics as the Dawn Dairy site which was granted planning permission for a school (P19/1252).
- Both a school and residential use fall into the same 'vulnerability category' as per the Flooding Guidelines and both sites require / required a Justification Test.
- If planning permission was recently granted for a school on adjoining lands with the exact same flooding characteristics, then there is no reason why residential use could not be considered appropriate on the subject site.
- Significant resources and financial investment have been spent to date in advancing residential development on the site under its current mixed use zoning.
- The site can provide similar flood mitigation measures as the adjoining permitted Gaelcholaiste.
- Cork City Council and An Bord Pleanála recently granted permission for a significant residential development adjacent to the River Lee which was also located in Flood Zone A as it was deemed to pass the Justification Test (ABP 309974-21).
- The Justification Test requires a site to be either within or adjoining the city core. The subject site adjoins the city core. The city centre zoning extends to a 1.5km distance in parts and the subject site is located within a similar catchment. For example, the subject site is situated the same distance from the centre of Limerick city as the city centre zoning that covers the Colbert Station lands.
- The case for mixed use zoning has already been established in the Draft Plan with 4 no. sites already identified in the environs of the city, well removed from the city core.
- The land falls within Tier 1 land, which is suitable for development in the short term and during the life of the proposed Development Plan, at no cost to Exchequer



CRONIN & SUTTON CONSULTING (part of the CS Consulting Group)  
19-22 Dame Street, Dublin 2, D02 E267, Ireland

T 353 1 5480863

E info@csconsulting.ie

W www.csconsulting.ie

**CS CONSULTING  
GROUP**  
DUBLIN - LONDON - LIMERICK

# **Flood Risk Assessment For Downes Family Site, Pa Healy Road, Limerick.**

**Client:** Downes Family

Job No. F012L

August 2021

**Limerick Office**

45 O'Connell Street  
Limerick, V94 XE18  
Ireland

T: 353 (0)61 594988  
E: info@csconsulting.ie  
W: www.csconsulting.ie

**London Office**

45 Beech Street  
London, EC2Y 8AD  
UK

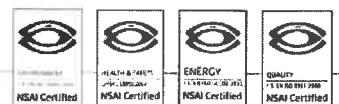
T: +44 (0) 207 070 3660  
E: info@csconsultinguk.com  
W: www.csconsultinguk.com

KP & Associates Consulting Engineers Ltd. T/A Cronin & Sutton Consulting

Directors: K. Cronin, D. Rehill, O. Sullivan, P. Sutton

Associate Directors: N. Barrett, R. Fitzmaurice, M. McEntee, L. McNamee Associates: C. Twomey, C. Barry

Registered Office: 1st Floor, 19-22 Dame Street, Dublin 2, D02 E267, Ireland | Company No. 505303



## Flood Risk Assessment

### For Downes Family Site, Pa Healy Road, Limerick.

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8.0	Conclusions	14

**Appendix A:** Fluvial Mapping

**Appendix B:** Coastal Mapping

**Appendix C:** Topographical Survey

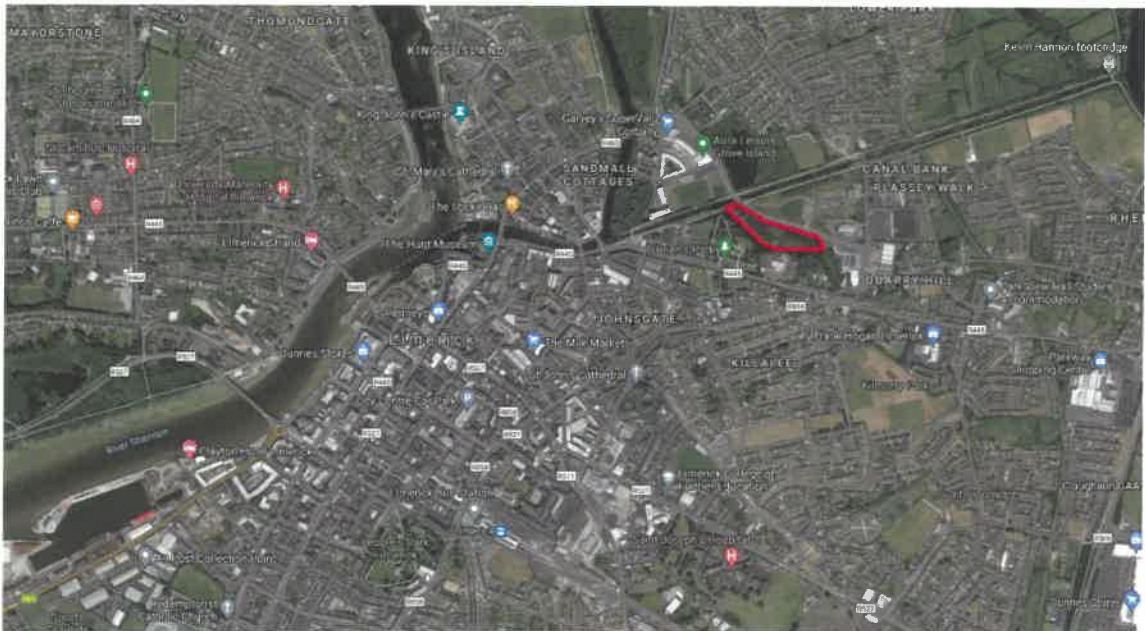
**Appendix D:** Notional Proposed Development Layout

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Job Ref:	Author	Reviewed By	Authorised	Issue Date	Rev No.
F012L	SC	GC	GC	August '21	1

## 1.0 INTRODUCTION

Cronin Sutton Cotter were appointed by the Downes Family to carry out an appropriate level of Flood Risk Assessment for the site of a proposed Mixed-Use development at Pa Healy Road in Limerick City. See below site location map Fig 1.



**Figure 1 – Current Aerial (Google Maps) - location of development site in red.**

In preparing this report Cronin Sutton Cotter Consulting Engineers have made reference to the following:

- Limerick City Development Plan 2010 – 2016,
- Office of Public Works, (OPW) via Floodinfo.ie.
- Ordnance Survey of Ireland, (OSI),
- The Department of the Environment, Community & local Government – flooding documents, notably, *The Planning System & Flood Risk Management: Guidelines for Planning Authorities & Technical Appendices.*

## 2.0 Fluvial & Coastal Mapping & Proposed Site

An extract from map no. S2526LIK\_EXFCD\_F1\_59 Fluvial Flooding Extent with site outline marked in red can be seen in Fig.2 below. Full map is attached within Appendix A.

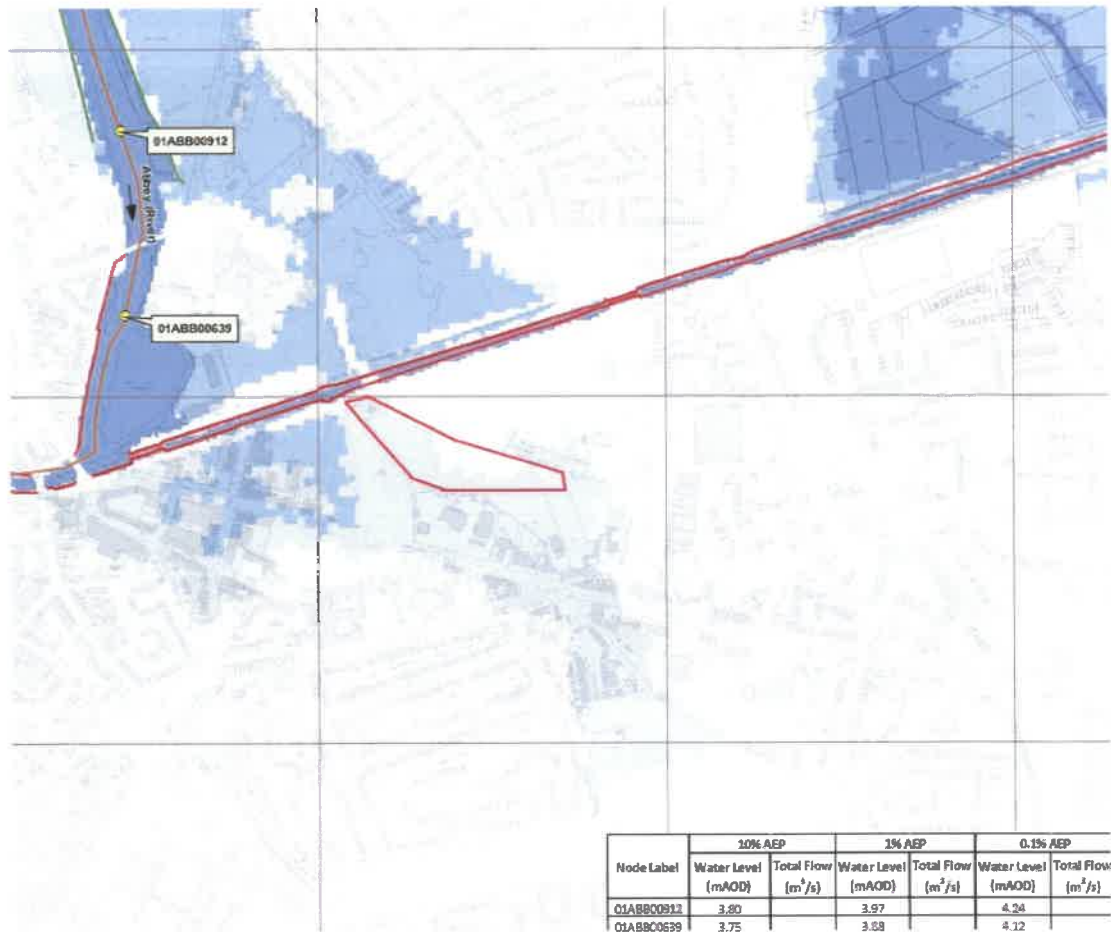


Figure 2 –Current CFRAM Fluvial Map with site marked on in red.

The map shows a large part of the site as being within the 0.1% AEP flood zone and that means that this part of the site has an 'Annual Exceedance Probability' of 1 in 1000 chance of being exceeded or an event occurring. In terms of predicted fluvial flood levels, the node most relevant to the site on the map is 01ABB00639 and the 0.1% AEP water level is 4.12m AOD.

The extract below is taken from the Coastal Map (S2526LIK\_EXCCD\_F1\_59) and indicates that there is a notable portion of the site liable to flood but is in an area being defended from coastal/tidal flooding, with a 'Standard of Protection' equivalent to 0.5% AEP, or 1 in 200-year event. See Fig. 3 below with site marked on in red. The full map can be found within Appendix B of this report.

In terms of predicted coastal/tidal flood levels, the node most relevant to the site on the map is 01ABB00639 and the 0.1% AEP water level is predicted to be 5.15m AOD.

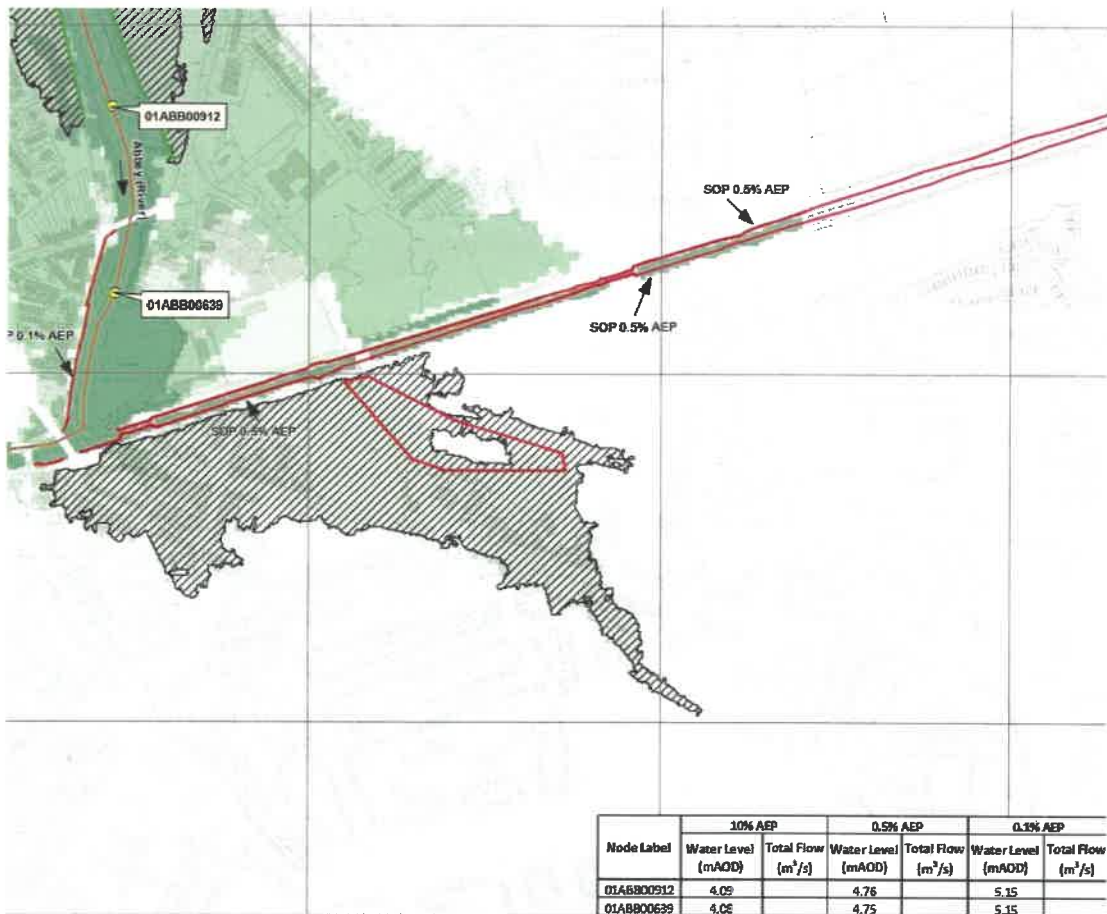
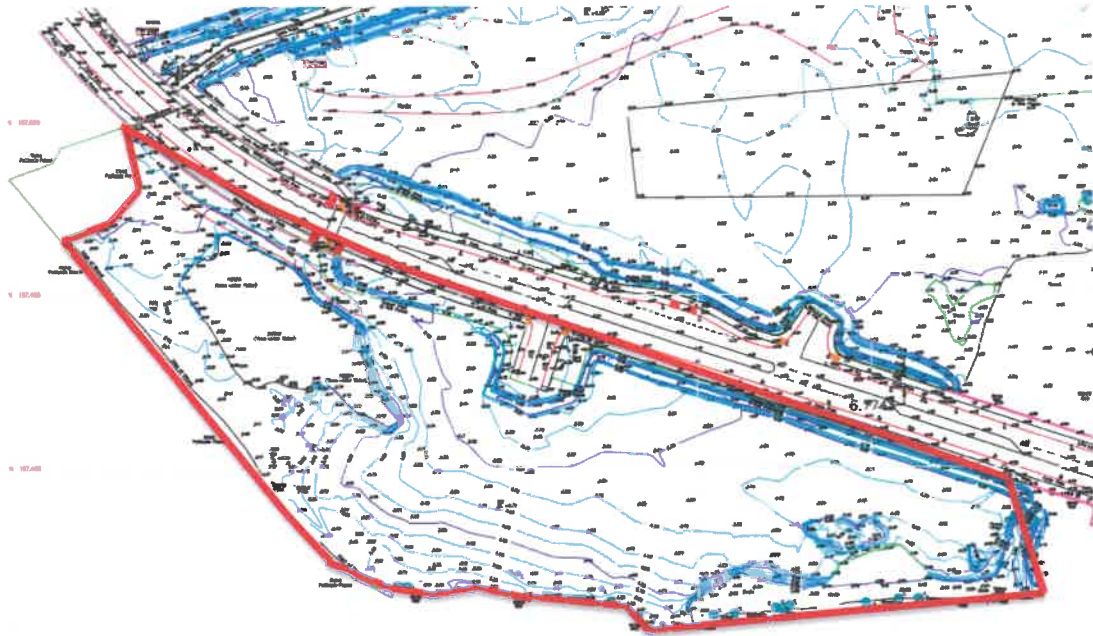


Figure 3 – Current CFRAM Coastal Map with site marked on in red.

### 3.0 SITE DESCRIPTION

The development site is as shown in Figure 4 below.



A topographical survey of the site is attached in Appendix C of this report. There are public footpath, cycle lane and roadway (Pa Healy Road) on the northern boundary, with third party lands on the eastern and southern boundaries, including the Clare Street Recreation Park. At the western boundary, there is a Local Authority pumping station, which is part of the Limerick Main Drainage infrastructure, and public walking amenities alongside the Park Canal, see photos below.

Along the southern boundary of the site, there is a 'Maintenance Right-of-Way' to facilitate any potential future works required to the Limerick Main Drainage scheme, formerly known as the Loggers Stream, which is now piped.

The western end of the site is at a low level, significantly below the level of the Pa Healy Road itself, see photos below. A large part of this area contains reed growth and standing water or ponding which is visible from the Pa Healy Road and can be seen on the topographical survey also. This area is adjacent to the Clare Street Recreation Park, which appears to be noted as wet land on the 1913 historic OSI mapping shown below the photos.

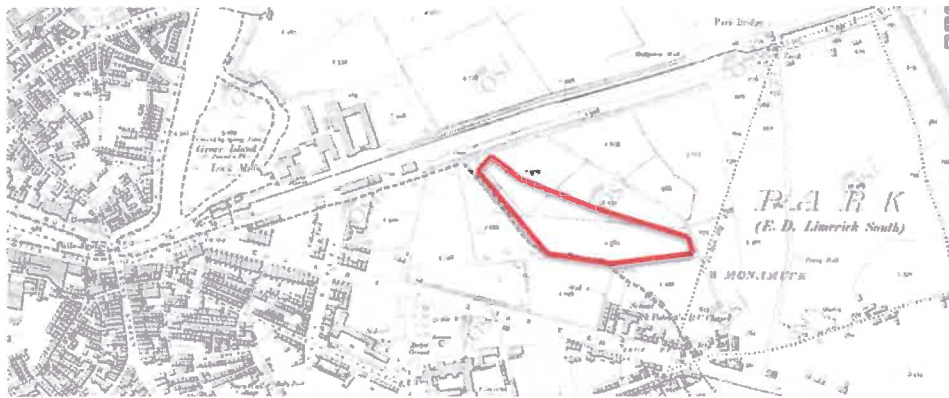




F012L – Downes Family Site, Pa Healy Road, Limerick.

At the existing site entrance and along Pa Healy Road, the topographical survey shows the site to have higher ground levels. This eastern end of the site is immediately adjacent to the site of the proposed Gaelscoil (Planning Reference 19/1252), which has received planning permission and construction is reportedly imminent.

The development of the area and the site is summarised in the historic mapping (OSI) below showing 1913, 2000 and 2012 respectively.



F012L – Downes Family Site, Pa Healy Road, Limerick.

#### 4.0 PROPOSED DEVELOPMENT

While a finalised site layout is not confirmed at this time, a notional proposed site layout is shown below. It is proposed that a large proportion of the site will be soft landscaping including all the west end of the site adjacent to the Clare Street Recreation Park, possibly incorporating a Storm Water Retention Pond.



The majority of this Mixed-Use development will be concentrated around the existing entrance to the site and along the road frontage of Pa Healy Road, essentially the highest level of the lands. Some development may take place towards the southern boundary to compliment the proposed buildings given permission as part of the Gaelscoil with planning reference 19/1252. A large portion of the east end of the development will include hard landscaping such as circulation road and car parking (non-vulnerable development) but with SUDS measures incorporated to minimise attenuation requirement and to minimise loss of floodplain (retain existing levels as far as is practical).

## 5.0 DEFINITION OF FLOOD RISK

There is an existing inherent risk of any flood event occurring during any given year. Typically, this likelihood of occurrence was traditionally expressed, for example, as a 1-in-100 chance or a 100-year storm event happening in any given year.

A less ambiguous expression of probability is the Annual Exceedance Probability (AEP), which may be defined as the probability of a flood event being exceeded in any given year. Therefore a 1-in-100-year event has a return period of 1% AEP flood event, similarly a 100% AEP can be expressed as a 1-in-1-year event.

5.1 *The Planning System and Flood Risk Management, Guidelines for Planning Authorities* set out the best practice standards for flood risk assessment in Ireland. These are summarised in Table 1.0 below (Table 8.1 from Guideline's document).

Flooding Source	Drainage	River	Tidal/Coastal
Residential	1% AEP	0.1% AEP	0.1% AEP
Commercial	1% AEP	1% AEP	0.5% AEP
Water-compatible (Docks, marinas)	-	>1% AEP	>0.5% AEP

**Table 1.0:** Summary of Level of Service – Flooding Source.

Under these guidelines a proposed development site has first to be assessed to determine the flood zone category it falls under.

5.2 It is a requirement of the Department of the Environment, Community & Local Government flooding guidelines, *The Planning System and Flood Risk Management, Guidelines for Planning Authorities*, that the predicted effects of climate change are incorporated into any proposed design.

Design Category	Predicted Impact of Climate Change
Drainage	10% Increase in rainfall
Fluvial (River flows)	20% Increase in flood flow

**Table 2.0** The predicted climate change variations.

5.3 The flooding guidelines categorise the risks associated with flooding into three areas, Zone A, B & C. This categorisation is indicated below.

- **Zone 'A'** – High Probability of Flooding. Where the annual exceedance probability of flooding from rivers and sea is highest (10% annually or 1 in 10 for river flooding and coastal flooding).
- **Zone 'B'** – Moderate Probability of Flooding. Where the annual exceedance probability of flooding from rivers and sea is moderate (1% annually or 1 in 100 and 0.5% annually or 1 in 200 for coastal flooding).
- **Zone 'C'** – Low Probability of Flooding. Where the annual exceedance probability of flooding from rivers and sea is moderate to low (0.1% annually or 1 in 1000 for both rivers and coastal flooding).

In accordance with the *Planning Systems and Flood Risk Management Guidelines for Planning Authorities*, **Mixed-Use (incorporating residential) developments are classified as 'highly vulnerable developments'**.

5.4 The flooding guidelines have developed an 'appropriateness' matrix for various developments and their potential risk factor.

As noted above, a Mixed-Use (incorporating residential) development is classified as 'highly vulnerable' and as the site is confirmed by CFRAM mapping to potentially flood, a justification test is required. See Section 7.0 for justification test for the proposed scheme.

---

## 6.0 POTENTIAL FLOOD RISKS & MITIGATION MEASURES

### 6.1 Fluvial Flooding

Fluvial flooding is the result of a river exceeding its capacity and excess water spilling out onto the adjacent floodplain. The subject site is located near the River Shannon and Park Canal.

Fluvial mapping shown in section 2.0 above shows a large portion of the site to be at a low risk (0.1% AEP) of flood water rising to 4.12mAOD. The existing levels on the site vary from 5.0mAOD at the existing site entrance and along the north-east boundary of the site (along Pa Healy Road), to between 3.0 and 3.5mAOD along the southern boundary and for the majority of the western end of the site.

### 6.2 Coastal/Tidal Flooding

Coastal flooding in this instance is the result of the river exceeding its capacity and excess water spilling out onto the adjacent floodplain, when influenced by the tidal movements at the coast/estuary. The subject site is located near the River Shannon and Park Canal.

Coastal/Tidal mapping shown in section 2.0 above shows a large portion of the site to be at a low risk (0.1% AEP) of flood water rising to 5.15mAOD, subject to the failure or over topping of the local flood defences which provide a standard of protection to 0.5% AEP. As noted above, the existing levels on the site vary.

### 6.3 Mitigation Measures

The majority of the existing site levels will be maintained as far as is practical, particularly all the western end of the site and along the southern boundary and these areas will consist of soft landscaping and non-vulnerable uses.

The majority of the mixed-use development will be constructed at the highest part of the site on the road frontage to Pa Healy Road. Finished floor levels of 5.3mAOD will be adopted, ie, 5.15mAOD plus 150mm for climate change,

similar to the recently permitted adjacent development of the Gaelscoil.

## 7.0 JUSTIFICATION TEST

- 7.1 In accordance with *The Planning system and Flood Risk Management issued by the Department of the Environment, Heritage and Local Government* a site should be classified accordingly.
- 7.2 The subject lands are deemed '*highly vulnerable*', and the site is confirmed to flood by the CFRAM mapping and so, as such, a justification test is required.
- 7.3 There are two parts to the justification test, (A) *Justification Test for Development Plans* and (B) *Justification Test for Development Management*. The Justification Test for Development Plans is intended to inform land-use zoning decisions in the preparation of a Development Plan.
- 7.4 The subject lands are zoned for mixed use development in the current Limerick City & Council Development Plan. CSC have carried out a type (A) *Justification Test for Development Plans*, see section 6.5 and a type (B) *Justification test for Development Management*, see section 6.6.
- 7.5 Justification Test for Development Plans

<b>Justification Test for Development Plans</b>	
<b>1.0 Urban settlement is targeted for growth.</b>	Yes: The subject site is located within Limerick City, which is targeted for growth and in need of housing and associated facilities.
<b>2.0 The zoning or designation of the lands for the particular use or development type is required to achieve proper planning and sustainable development of the urban settlement and, in particular:</b>	
i. <b>Essential to facilitate regeneration and / or expansion of the centre of the urban settlement.</b>	Yes: This site is in an established area of the city. Development in this area is a mixture of retail, commercial and residential. This site is considered a high profile, infill site, appropriate for a mixed-use development and for the expansion of the city.

**ii. Comprises significant previous development and / or underutilised lands.**

The River and Canal along this stretch primarily flows through the built-up established City of Limerick. The site has been underutilised for many years, particularly since the construction of the Pa Healy Road prior to 2010. Specific access to the site was developed as part of the Pa Healy Road construction. There is existing development to the east, south and west boundaries of the site.

**iii. Is within or adjoining the core of an established or designated urban settlement.**

Yes: The land forms part of an established, large urban settlement.

**iv. Will be essential in achieving compact and sustainable urban growth.**

Yes: See responses to (i), (ii) and (iii) above.

**v. There are no suitable alternative lands for the particular use or development type, in the areas at lower risk of flooding within or adjoining the core of the urban settlement.**

There are no alternative suitably zoned lands available for significant development with equivalent proximity to the city centre, recently constructed road infrastructure and Limerick Main Drainage underground services.

**3.0 A Flood risk assessment to an appropriate level of detail has been carried out.**

Yes.

**Conclusion: The subject site passes the Justification Test for Development Plans.**



## 7.6 Justification Test for Development Management

<b>Justification Test for Development Management</b>	
<b>1.0</b>	<p><b>The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative development plan, which has been adopted or varied taking account of these guidelines.</b></p> <p>The subject lands are zoned 'Mixed-Use', which includes Residential development.</p>
<b>2.0</b>	<p><b>The proposal has been subject to an appropriate flood risk that demonstrates:</b></p> <p><b>(i) <i>The development proposed will not increase flood risk elsewhere and, if practicable, will reduce overall flood risk;</i></b></p> <p>Yes, the lower levels of the site up to 4.12mAOD, will be allowed to flood in the event of fluvial flooding. In the event of coastal/tidal flooding as a result of a breach of the local flood defences (greater than a 1 in 200-year event), flood levels could rise to 5.15mAOD. Based on existing levels of the site and surrounding lands, there will be minimal loss of flood plain as a result of this development. While some areas of the site will change from soft landscape to hard landscape, SUDS measures will be incorporated to minimise any contribution to flood risk elsewhere, but overall flood risk will not be reduced.</p> <p><b>(ii) <i>The development proposal includes measures to minimise flood risk to people, property, the economy and the environment as far as reasonably possible;</i></b></p> <p>Yes, the ground floor residences proposed will have a finished floor level 5.3mAOD, 150mm above the highest flood level that could be reached in the event of a breach of the local flood defences.</p> <p><b>(iii) <i>The development proposed includes measures to ensure that residual risks to the area and/or development can be managed to an acceptable level as regards the adequacy of existing flood protection measures or the design, implementation and provisions for emergency services access;</i></b></p> <p>Yes, emergency services access around all the buildings will be maintained. SUDS measures will be incorporated to minimise the residual risk to the site from</p>

fluvial flooding. Finished floor levels of 5.3mAOD will provide adequate flood protection for buildings.

**(iv) The development proposed addresses the above in a manner that is also compatible with the achievement of wider planning objectives in relation to development of good urban design and vibrant and active streetscapes.**

Yes: the development will be in accordance with planning objectives and in accordance with development and flooding prevention guidelines.

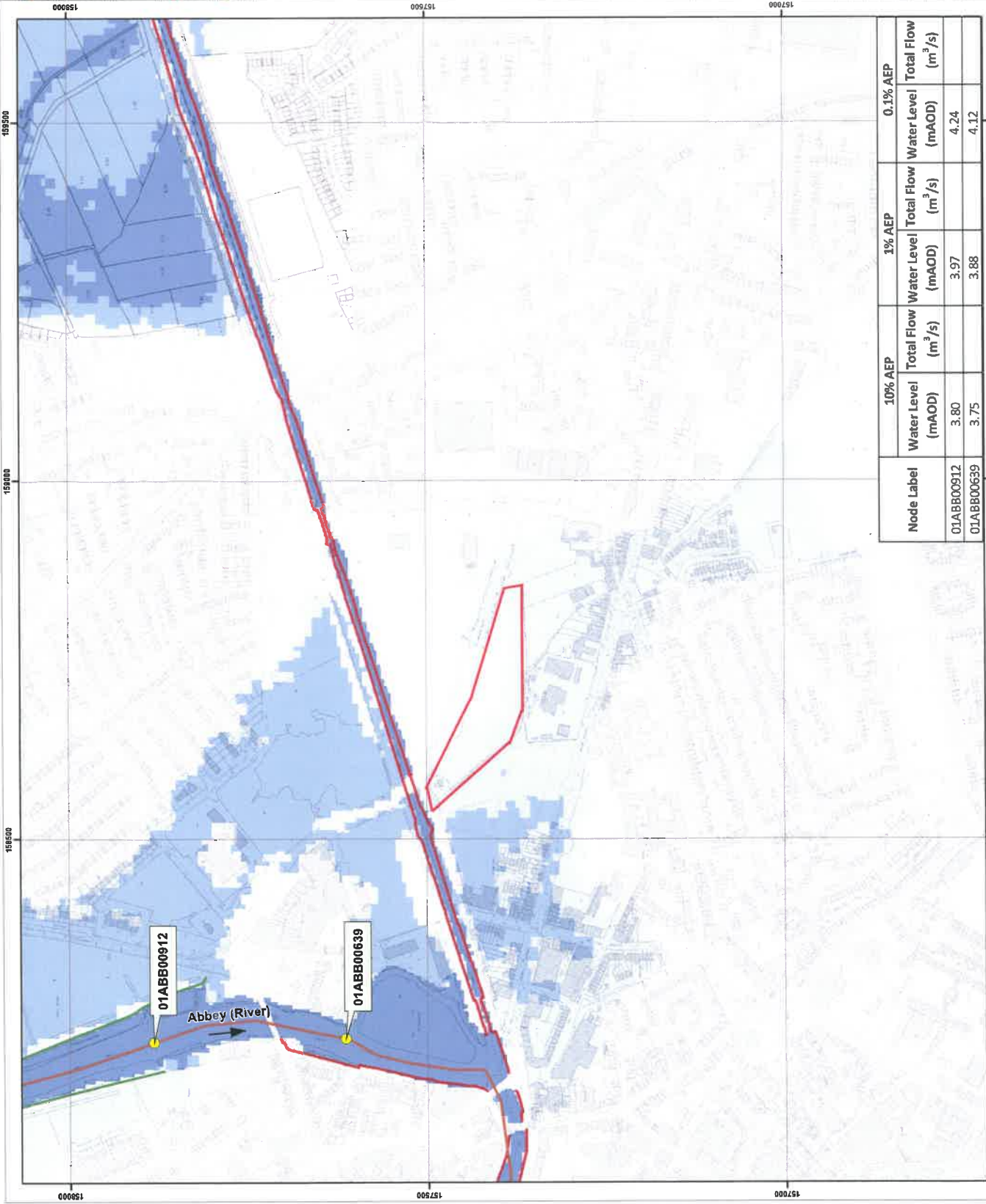
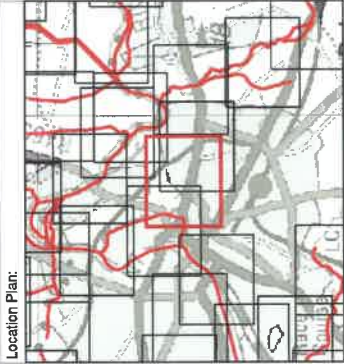
**Conclusion: The site passes the Justification Test for Development Management.**

## 8.0 Conclusions

- 8.1 CFRAM mapping indicates a large portion of the site may be subject to fluvial flooding and also a similar large portion of the site may be subject to coastal/tidal flooding in the event of a breach of the local flood defences. However, existing site levels suggest that fluvial flooding at 4.12mAOD will only affect the lower areas of the site to the west and the south.
- 8.2 As noted above, a mixed-use (incorporating residential) complex is classified as 'highly vulnerable' and as flooding is predicted to occur on the site, a Justification Test is required to be carried out. This is carried out in detail in section 7.0 above and in our opinion the site passes both parts of the Justification Test.
- 8.3 Mixed-Use/Residential development is proposed at ground level and a finished floor level of 5.3mAOD will be adopted, ie, 150mm above the highest flood level of 5.15mAOD in the event of a breach of the local flood defences. Existing ground levels will, in general, be maintained and utilised as surfaced car parking or soft landscape. A nett increase of hard surface will arise, but SUDS measures will be adopted to manage the resultant storm water accumulation.

## **Appendix A**

### Fluvial Mapping



**Legend:**

- Nodes (Yellow circle)
- Model Reach (Red line)
- AFA Boundary (Red outline)
- Flood Defence: Wall (Red line)
- Flood Defence: Embankment (Green line)
- Defended Area (Hatched box)
- 10% AEP Fluvial Flood Extent (Dark blue box)  
(1 in 10 chance in any given year)
- 1% AEP Fluvial Flood Extent (Medium blue box)  
(1 in 100 chance in any given year)
- 0.1% AEP Fluvial Flood Extent (Light blue box)  
(1 in 1000 chance in any given year)

**IMPORTANT USER NOTE:**  
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.



The Office of Public Works  
Jonathan Swift Street  
Trim  
Co. Meath  
C15 NX36

Merrion House  
Merrion Road  
Dublin 4  
D04 R2C5

Project: SHANNON CFRAM STUDY  
Map Type: EXTENT  
Source: FLUVIAL

Area: LIMERICK

Scenario:	EXISTING
Drawn by:	EH
Checked by:	KM
Reviewed by:	MC
Approved by:	PS
Date:	June 2016
Date:	June 2016
Date:	June 2016

Map No.: S2526LJK\_EXFOD\_F1\_59

Sheet: 59 of 65  
Map Scale: 1: 5000  
Plot Scale: 1:1 @ A3  
Revision: 0

Node Label	10% AEP		1% AEP		0.1% AEP	
	Water Level (mAOD)	Total Flow (m <sup>3</sup> /s)	Water Level (mAOD)	Total Flow (m <sup>3</sup> /s)	Water Level (mAOD)	Total Flow (m <sup>3</sup> /s)
01ABB00912	3.80		3.97		4.24	
01ABB00639	3.75		3.88		4.12	

## **Appendix B**

### Coastal Mapping


Location Plan:



Legend:

- Nodes
- Model Reach
- AFA Boundary
- Flood Defence: Wall
- Flood Defence: Embankment
- Defended Area
- 10% AEP Coastal Flood Extent (1 in 10 chance in any given year)
- 0.5% AEP Coastal Flood Extent (1 in 200 chance in any given year)
- 0.1% AEP Coastal Flood Extent (1 in 1000 chance in any given year)

**IMPORTANT USER NOTE:**  
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

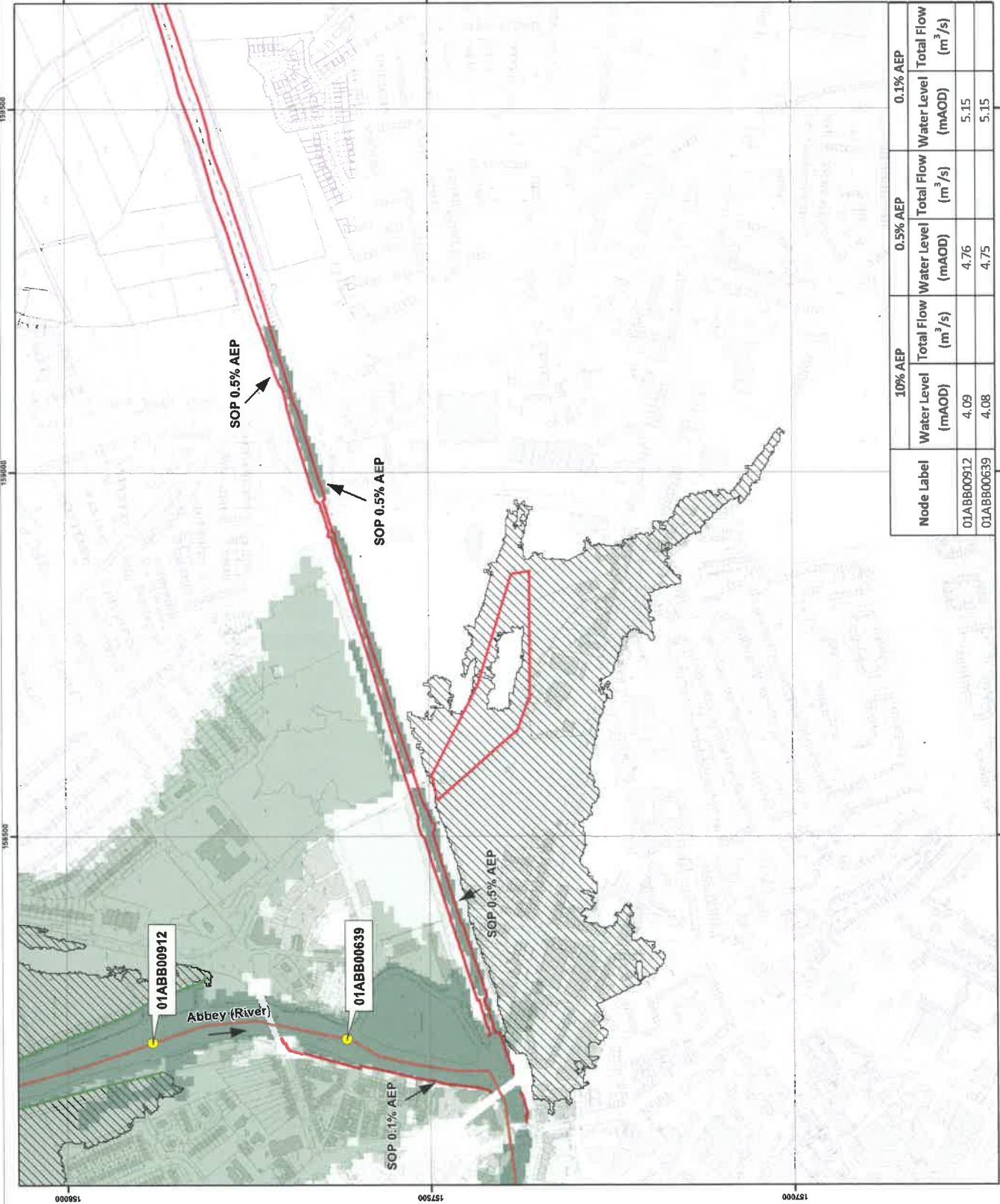


The Office of Public Works  
Jonathan Swift Street  
Trim  
Co. Meath  
C15 NX36



Merrion House  
Merrion Road  
Dublin 4  
D04 R2C5

Project:	SHANNON CFRRAM STUDY
Map Type:	EXTENT
Source:	COASTAL - TIDAL
Area:	LIMERICK
Scenario:	EXISTING
Drawn by:	EH
Checked by:	KM
Reviewed by:	MC
Approved by:	PS
Map No.:	S2528LIK_EXCCOD_F1_59
Sheet:	59 of 65
Map Scale:	1: 5000
Plot Scale:	1:1 @A3
Revis'n:	0

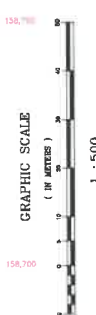
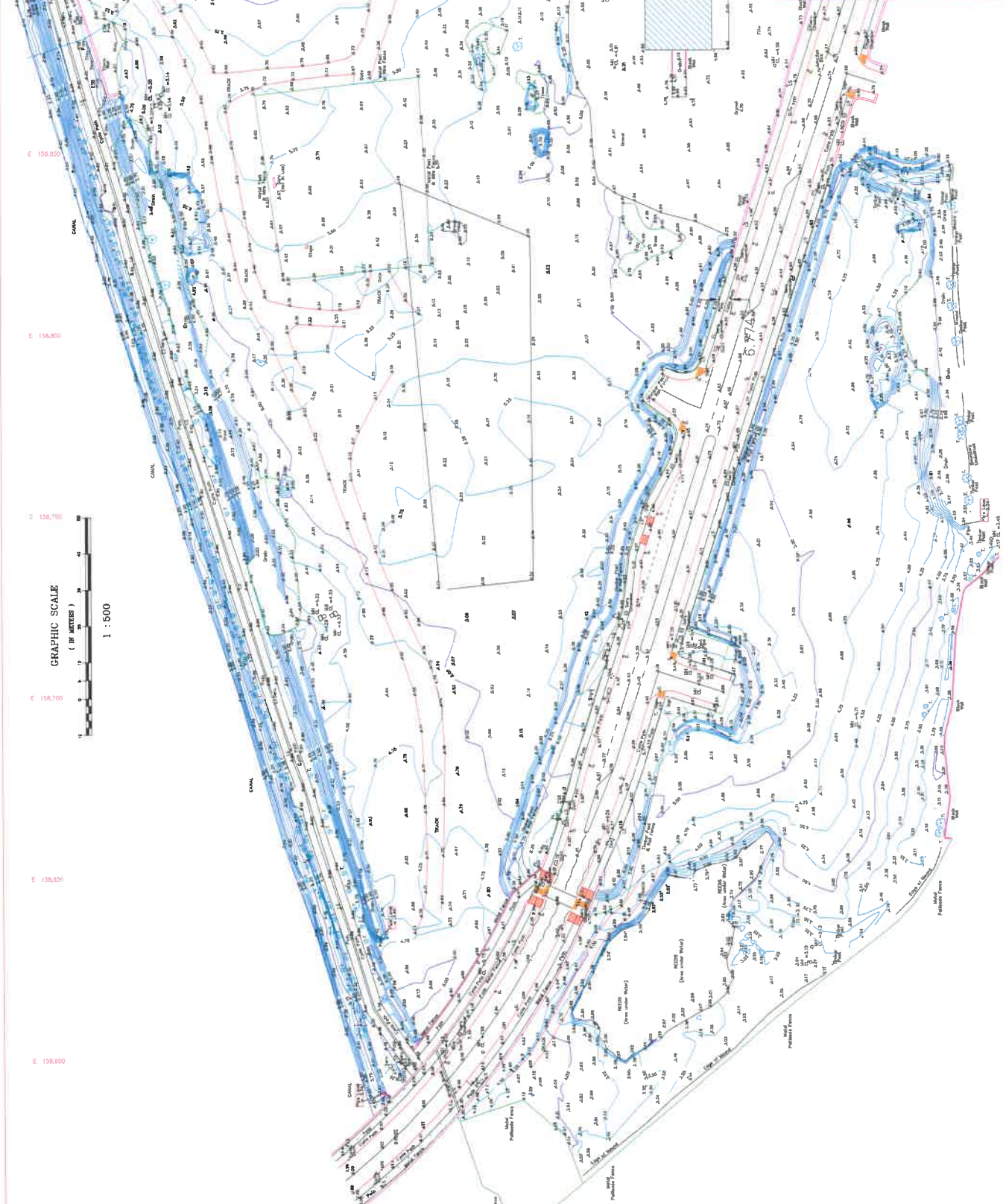


Node Label	10% AEP		0.5% AEP		0.1% AEP	
	Water Level (mAOD)	Total Flow (m <sup>3</sup> /s)	Water Level (mAOD)	Total Flow (m <sup>3</sup> /s)	Water Level (mAOD)	Total Flow (m <sup>3</sup> /s)
01ABB00912	4.09		4.76		5.15	
01ABB00639	4.08		4.75		5.15	

## **Appendix C**

### Topographical Survey

**NOTES:**  
 All levels are relative to Ordnance Datum  
 All contours are at 0.5m intervals  
 50m sq Grid relative to Irish National Grid  
 (IC 1975)  
 Contours are at .25m intervals  
 Part of site surveyed by Walsh Survey  
 Services and Surveygraph and were  
 signed back in 1980



N 158,500  
 N 157,500  
 N 156,500  
 N 155,500  
 N 154,500  
 N 153,500  
 N 152,500  
 N 151,500  
 N 150,500

**Client**

**ARUP**  
 Consulting Engineers  
 Harrogate Road, Upper Harrogate Road, Limerick, Ph. 051 212005

**Title**  
 Site Survey of Lands at  
 Park Road, Limerick.

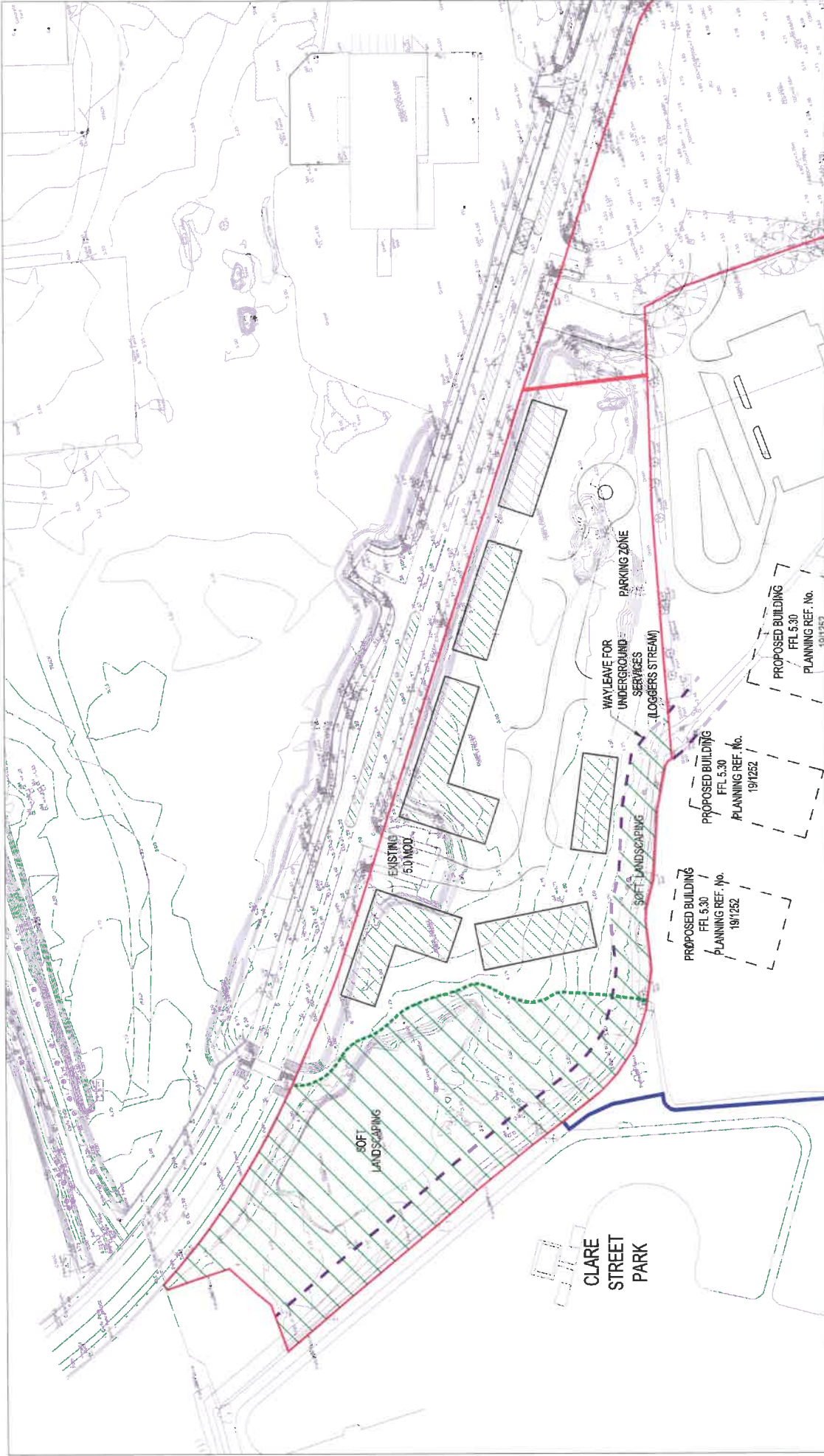
**Drawn:** C. G. Z. **Dwg. no.:** 08-105-01  
**Scale:** 1:500 **Date:** 04-01-03


**Control Surveys**  
 8 O'Connell Street, Limerick, Co. Limerick  
 T. 051 2028712 Email: control@control.ie



## **Appendix D**

### Notional Proposed Development Layout



<b>Downes Family</b> Flood Risk Assessment Pa Healy Road, Limerick		<b>Cronin Sutton Cotter</b> 45 O'Connell Street, Limerick, Co. Limerick T: +353 (0)81 594988 F: +353 (0)1 9011355 e: info@csconsulting.ie w: www.csconsulting.ie	
		 U.S. EN ISO 9001:2008 U.S. EN ISO 14001:2004 U.S. EN ISO 50001:2011 OHSAS 18001:2007	
<b>National Proposed Development Layout</b>		Title	
Date JULY 2021	Scale 1:1000	App'd By GC GC	Drawn By GC
Rev. No.		Date	
REVISION NOTE			
Revision notes table content			
<b>NOTES</b>			
1. For setting out refer to Architect's drawings. 2. This drawing to be read in conjunction with all other Architectural and Engineering drawings and all other relevant drawings and Specifications. 3. DO NOT SCALE THIS DRAWING. Use figured dimensions only. 4. No part of this document may be reproduced or transmitted in any form or stored in any retrieval system of any nature without the written permission as copyright holder except as agreed. 5. Ordnance Survey Ireland Licence Number EN 0074612			

**Downes Site, Pa Healy  
Road**

**LCC – C62 – 55**

Kieran O'Hanlon

Response to Chief Executives Report on Public Consultation  
and  
Motion to Change Landuse Using Zoning in the Draft Plan

On behalf of:

Downes Family – Land at Pa Healy Road

January 2022



**HRA | PLANNING**  
chartered town planning consultants

DEVELOPMENT PLANNING | ENVIRONMENTAL PLANNING | MASTERPLANNING

Limerick | Dublin | t: 061 435000 | f:061 405555 | e:info@hraplanning.ie | w:www.hraplanning.ie

Title:	22005 Draft Development Plan Motion
Project:	Response to CE Report & Motion to Change Zoning
Prepared by:	MH
Date:	January 2022
Issue:	Issue 1
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## **1.0 INTRODUCTION**

HRA PLANNING has been retained by the Downes Family to prepare a response to the Chief Executives Report on submissions received in respect of the Draft Limerick Development Plan 2022 – 2028 and to prepare a motion on behalf of Councillor Kieran O’Hanlon to secure a change in zoning from Education and Community Use to Mixed Use purposes.

Of the total 1.7 hectares currently zoned for education & community use, only 1.2 hectares are considered developable from a level and flooding perspective. It is therefore proposed to incorporate 0.5 hectares of low lying land at the western extremity of the site adjoining O’Briens public park as a natural recreational / wetland area.

A submission was made on behalf of the Downes family at Draft Plan stage, setting out the reasons why it was considered that the zoning afforded to the land should be changed from Education and Community Use to Mixed Use purposes. It is not the purpose of this submission to revisit the issues originally raised, but rather to concentrate on the core reasons why the planning authority does not consider mixed use zoning appropriate to the land as detailed in the Chief Executives Report, including:

- Flooding;
- Justification Test;
- Sequential Approach; and
- Sustainable Neighbourhoods

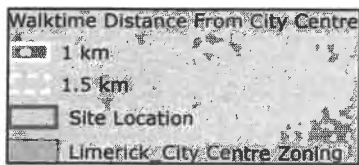
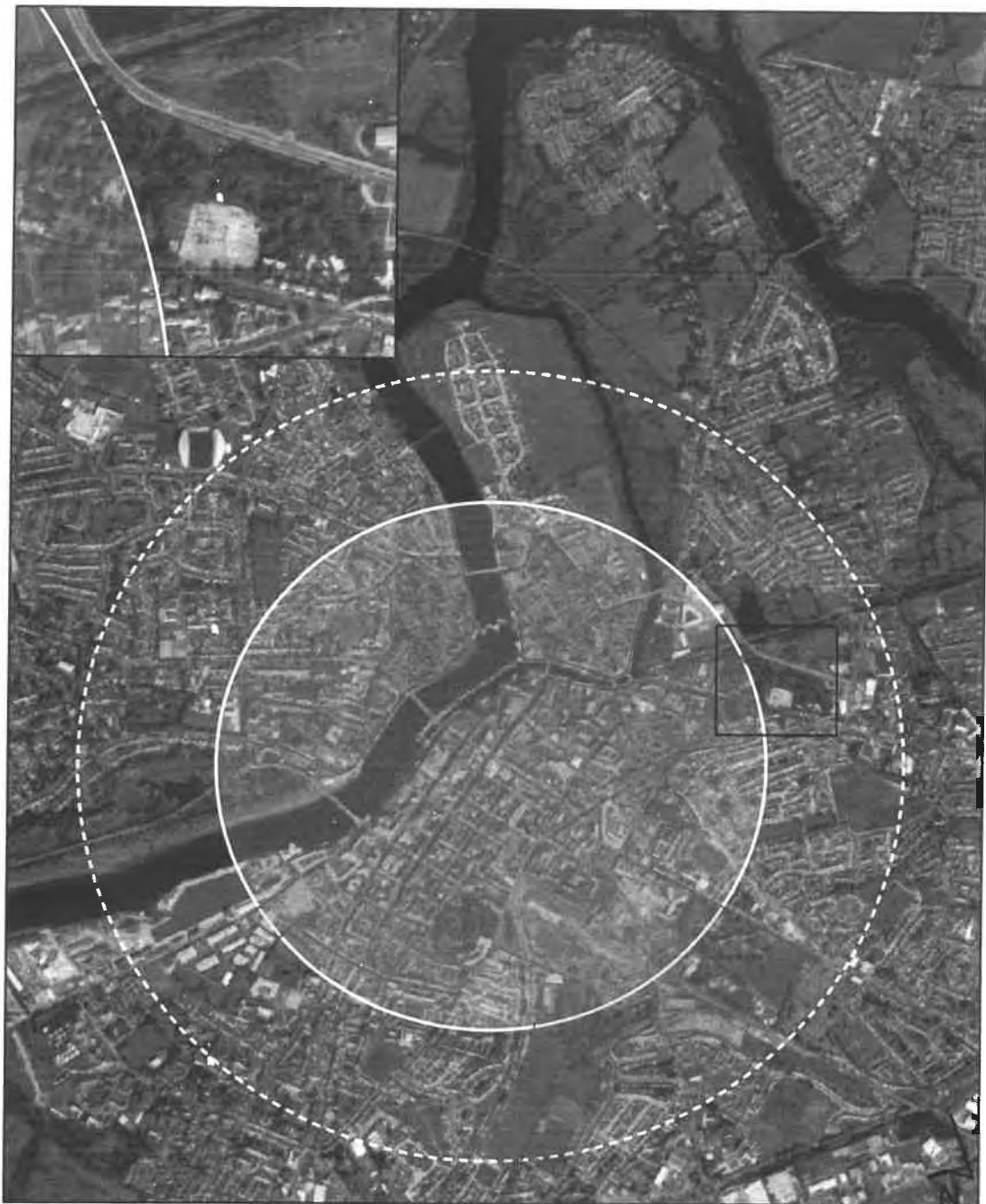
In advance, it is considered necessary to set out a number of pertinent points regarding the characteristics of the site, in particular its close connections to the city centre, immediately adjoining facilities and services.

## **2.0 BACKGROUND**

### **2.1 Site Context**

The circa 1.7 hectare site fronts onto the Pa Healy Road as illustrated in Figure 1.0, with a dedicated access provided into the site from the road. The land was part of an overall development site which was subdivided following construction of the Pa Healy Road. Phase I of a proposed residential development is being advanced on the northern side of the road via the Strategic Housing Development (SHD) process. The subject land comprises Phase II of the development proposal.

The site is fully serviced with a surface water and gravity foul sewer and a potable water supply. It benefits from public lighting, footpaths and a cycleway route and will adjoin a significant secondary school with capacity to accommodate 750 no. students.



**Figure 1.0** Site Location & Context in Proximity to City Core



The site is located within a 10 - 15 minute walk of Limerick city centre; a 10 minute walk from St. Johns Hospital; a 7 minute walk of O'Briens Public Park and the Limerick School of Art & Design; and a 25 minute walk from the University of Limerick. The site is also well serviced by existing bus routes, with 2 no. bus stops within a 4 minute walk of the site (See Figure 2.0 for bus stops in the area). The site is effectively serviced by the 323, 341, 323 X and 304A bus routes. The 304A Raheen – University bus route provides effective connectivity to both sides of the city (Raheen & Castletroy) every 20 minutes.

It is noted that the site will be situated immediately adjacent to the proposed Bus Connects Corridor on the Dublin Road, which will provide a 10 minute regular bus service as per the Limerick Shannon Metropolitan Area Transport Study (LSMATS).

## 2.2 Adjoining Gaelcholaiste

Significantly, planning permission was recently granted for a new 7.800sqm post primary (Gaelcholaiste) school on adjoining lands to the south of the site (old Dawn Dairies site – planning references P19/1252) and as detailed in Figure 2.0. The primary permitted access to the new school is off the Pa Healy Road, via a shared access with the adjoining Shannon Minerals site.

The subject lands are zoned for education and community purposes, presumably to facilitate future expansion of the recently permitted Gaelcholaiste. This assumption is confirmed in the Chief Executive's Report to Submissions made on the Draft Development Plan, whereby the Council states that the land is required to facilitate the future expansion of schools. However, Limerick Clare & Education Training Board (LCETB) has confirmed that the development of the new Gaelcholáiste Luimnigh has commenced on site and is due for completion in the second half of 2023. Accordingly, LCETB does not require to extend the school site through the purchase of additional lands (See email as detailed in Appendix 1). It is thus confirmed that this land is not required for education purposes.

## 2.3 Flooding

A Flood Risk Assessment (FRA) was prepared by CS Consulting Group in respect of the land and was submitted to the planning authority as part of the Draft Plan submission. The FRA acknowledges that the site is subject to coastal and fluvial flooding.

The western end of the site is at a low level, significantly below the level of the Pa Healy Road. A large part of this area contains reed growth and standing water or ponding which is visible from the Pa Healy Road. This area is adjacent to the Clare Street Recreation Park, which appears to be noted as wet land on the 1913 historic OSI mapping shown below the photos. It is proposed to maintain this area free from development and to incorporate it into the overall development of the land as a natural wetland / recreational area adjoining O'Briens Public Park.

It is noted that the eastern, developable area of the subject site exhibits the same flooding characteristics as the adjoining Dawn Dairies site on which a new school was granted planning permission (P19/1252). Within the Planning System and Flood Risk Management

Guidelines for Planning Authorities (the Flooding Guidelines), a school, similar to residential and other mixed use development is considered to be Highly Vulnerable Development. However, the Justification Test was undertaken in support of the school development proposal and was deemed acceptable by the planning authority subject to mitigation measures and management of residual risk. In this instance the school mitigated against flooding by proposing a finished floor level of 5.30mOD.

Similar to the recently permitted school, a mixed use development on the subject site can be comprehensively mitigated to ensure effective management of residual risks.





#### 2.4 Development Proposal

Development proposals for the site are currently at feasibility stage and includes live work units with office accommodation at ground floor level and residential use overhead fronting onto the Pa Healy Road, workshop units and a primary care centre with associated office space.

The proposed development and the design of finished ground levels will be responsive to the potential of flood risk. Similar, to the recently permitted school on the adjoining site, any proposed development on site will have a finished floor level of 5.30mOD which will provide protection against all flood events. Consistent with the Planning System and Flood Risk Management Guidelines for Planning Authorities (the Flooding Guidelines), and specifically the recommended approach set out in Section 5.16 of those guidelines, the proposed development seeks to mitigate and manage the potential for flood risk through the proposed design in order to further reduce such risk to an acceptable level.

A comprehensive emergency plan can be prepared to ensure that appropriate flood risk measures are adopted as part of the development proposal. These include patron awareness and education of flood risk scenarios and protocols and restrictions of use of the parking area in certain instances of flood risk to all residents and patrons of the development as part of operational management mechanisms prior to first and each occupation. This will be delivered by early warning advice and updates which will be sourced from Met Eireann and relayed to residents / occupiers through the development management. Given the designed finished floor levels, inundation of development will not be anticipated and accessibility in/out of the development will be maintained via Pa Healy Road similar to the access arrangements for the Gaelcholaiste which was permitted under planning permission P19/1252. Such access was deemed safe and appropriate from a flooding perspective when assessed as part of the school proposal and it is considered that such assessment and conclusions would be applicable to the subject site.



-  Site Location
-  School Site location
-  Bus Eireann Routes
-  Bus Eireann Stops



**Figure 2.0** Site In Context of Permitted New Post Primary School

### **3.0 THE CASE FOR MIXED USE ZONING**

As per Section 3.7 of the Flooding Guidelines, although there is a need for future development to avoid areas at risk of flooding, it is recognised in the Guidelines that the existing urban structure of the country contains many well established cities and urban centres, which will continue to be at risk of flooding. Accordingly, the flood risk management guidelines do facilitate development within areas of flood risk which contribute to compact sustainable growth of established urban city areas where the type and extent for flood risk has been established, where the potential flood risks can be mitigated, and, where the proposed development would not give rise to residual flood risk effect to the proposed development, or to surrounding people, environment or the economy. It is submitted that development on the subject site, similar to the permitted Gaelcholaiste, can comply with Section 4 of the Flooding Guidelines and therefore should be considered from a zoning perspective.

#### **3.1 Flooding & Planning Precedence**

Notwithstanding that Limerick City & County Council has established its own precedence in granting planning permission for the Gaelcholaiste on adjoining land, there is other similar precedence adopted by other Councils in Ireland and approved by An Bord Pleanála. Further to the flood risk management case set out above, the Downes Family submit that its interpretation of the Flood Risk Management Guidelines, is consistent with the interpretation and application of those guidelines also by both Cork City Council and by An Bord Pleanála (ABP) in their recent assessment of a planning application for student housing development presented to them.

In this regard, reference is made to a planning application submitted to Cork City Council and subsequently appealed by the first party to An Bord Pleanála for development consisting of the construction of a four-storey student accommodation building located in the Mardyke area of Cork City adjacent to the River Lee (Cork City Council ref: 21/39853 and An Bord Pleanála ref: ABP-309974-21).

In its assessment, the Board acknowledged that that site was identified as being the subject of both a 1% AEP fluvial flood risk and a 0.5% AEP tidal flood risk. The Board thus categorised the site as being with Flood zone A (under the Planning System and Flood Risk Management Guidelines) and the proposed residential use as being highly vulnerable development. Accordingly, the flood risk management Justification Test was applicable to that application. In its assessment of the Justification Test, the Board acknowledged that the site was suitably zoned for residential use, it acknowledged that proposed design levels were raised to exceed predicted worst case flood levels under the 1% AEP flood event scenario; that an emergency plan was proposed which included evacuation of occupants during worst case events, and it considered that the proposed building would represent good urban design, vibrancy and activity of the streetscape. On that basis, the Board stated that the proposed development passed the 'Justification Test' and that the proposed development would be consistent with The Planning System and Flood Risk Management Guidelines.

The applicant submits that there are parallels between that approved scheme and the proposed development. This includes the urban city location proximity to both the city and the university; the same potential coastal flood risk; the suitability of raising the design level and its tie-in with the urban streetscape. In that instance, the River Lee flood relief scheme is not in place, and there are no current urban protection measures other than the design and mitigation.

### 3.2 Flooding & the Justification Test

In order to achieve the aims and objectives and comply with the requirements of the Guidelines, the Local Authority's approach to the zoning of land is to avoid development in areas at risk, where possible and substitute less vulnerable uses, where avoidance is not possible. A precautionary approach has been adopted by the local authority in line with the Guidelines. Whilst this approach is noted and acceptable in principle, it is considered that the Local Authority also has a duty to promote compact growth and to facilitate residential development in proximity to the city core and adjoining services (schools) and facilities (public parks).

The Local Authority state in the Chief Executives Report that in considering the Justification Test the Draft Plan takes a City Centre first approach to the spatial development of Limerick City and Environs. It is stated that 'the core' is defined as the area zoned "City Centre". As detailed in Section 2(iii) of the Justification Test, the subject site must be either within or adjoining the core. As detailed in the Justification Test below (Table 1.0) and illustrated in Figure 1.0, the subject site adjoins the city centre zoned area. The Downes family thus submits, contrary to the opinion of the local authority, that the proposed development does in fact comply with the Justification Test, similar to the adjoining Gaelcholaiste development on adjoining lands recently granted planning

**Criteria to be Addressed**

The urban settlement is targeted for growth under the National Spatial Strategy, regional planning guidelines, statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.

**Planning Response**

Limerick has been identified in the National Planning Framework (NPF) as one of the five cities in the country which is the subject of a Metropolitan Area Strategic Plan. This emphasises the Metropolitan Area's national importance, for significant additional growth. This is echoed in the Regional Spatial and Economic Strategy for the Southern Region, which mentions that the Limerick Shannon Metropolitan area is "a key economic driver for the region and Ireland". Limerick has been identified for significant population growth in the NPF along with an objective that 50% of that future growth be located within the city and its suburbs. (NPO2a).

The City is located at a pivotal point on the Atlantic Economic Corridor. The NPF and RSES confirms that Limerick has the potential to generate and be the focus of significant employment and housing growth.

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

a. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement

The subject site is located in an area undergoing local redevelopment and regeneration, including provision of a new 750 student school on an old industrial site. This regeneration initiative cannot be considered in isolation and synergies between the school site and neighbouring land must be exploited to ensure sustainable compact growth and mixed use development. The provision of a new school in the area can be complimented by other compatible uses including residential and local commercial uses.

b. Comprises previously developed and/or under-utilised land.

The land is part of an overall landholding which was subdivided circa 10 years ago with the construction of a new link road. The link road was not only intended to more effectively distribute passing traffic away from the city centre, but was also intended to open up land for development, with dedicated access arrangements provided to service land to the north and south (subject land). This land is serviced by a recently constructed public road and remains under-utilised in its current form, in proximity to the city centre. Further, the juxtaposition of the site with high visibility frontage onto the Pa Healy road, reinforces the need for high quality development and regeneration of the site.

c. Is within or adjoining the core of an established or

The site adjoins the centre of the urban settlement (city core). As illustrated in Figure 1.0 the city centre zoning (blue) extends for a distance of 1.5km,

designated settlement. urban encompassing a 15 minute walktime. The subject site is located within the 10 and 15 minute walktime catchment and is situated the same distance from the centre of Limerick city as the city centre zoning that covers the Colbert Station lands The Pa Healy Road was originally constructed to open up land for development and to provide a connection between Rhebogoue and Corbally. Development on the subject land would facilitate such regeneration and development within walking distance of the city core.

d. Will be essential in achieving compact and sustainable urban growth. The site is fully serviceable, has both pedestrian and cycle links, is served by existing public transport and neighbours a proposed Bus Connects route. It is located within a 15 minute walk of the city core, adjoining city centre zoning. It adjoins a proposed new 750 student school, is located beside a public park, is within 10 minutes walking distance of an established hospital and within a 25 minute walk of the university. It is situated adjoining city centre zoned land.

e. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement. It is requested that the site is afforded a mixed use zoning capable of accommodating residential use. There are no other identified mixed use zoned sites in closer proximity to the city centre. Most of the mixed use and residential zoned lands in Limerick are located in the 'suburbs' at out of centre locations, substantially removed from the city centre. Development of the subject site would facilitate compact growth and provide for housing in an area of the city accommodating substantial existing and proposed new services including a new school.

A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment

**Table 1.0** Justification Test (Box 4.1 of Guidelines)

The Limerick City Development Plan 2010 – 2016 identified various strategically located urban centres and zoned land whose continued growth and development is/was encouraged in order to bring about compact and sustainable urban development and more balanced regional development. The subject site is one of the very few sites adjoining the city centre that remains undeveloped and which is capable of immediate development. Therefore, in full consideration of the Planning System and Flood Risk Management Guidelines, the subject site complies with Box 4.1 Justification Test of the Guidelines and it is submitted that the subject lands should be appropriately zoned to accommodate development.

### 3.3 Sustainable Neighbourhoods & Sequential Development

The National Planning Framework (NPF) seeks to achieve more compact and sustainable growth through consolidating a greater share of future development within the existing built footprint of settlements, to include new homes, businesses and amenities. The NPF sets national targets for brownfield/infill housing development in cities (50%) to support the regeneration of existing urban areas. NPF compact growth objectives together with Town Centres First principles are focused on the reuse of previously developed buildings and land and building up 'infill' sites, especially those that are centrally located in settlements at all scales.

SPPR DPG 7 of the Draft Development Plan Guidelines states that,

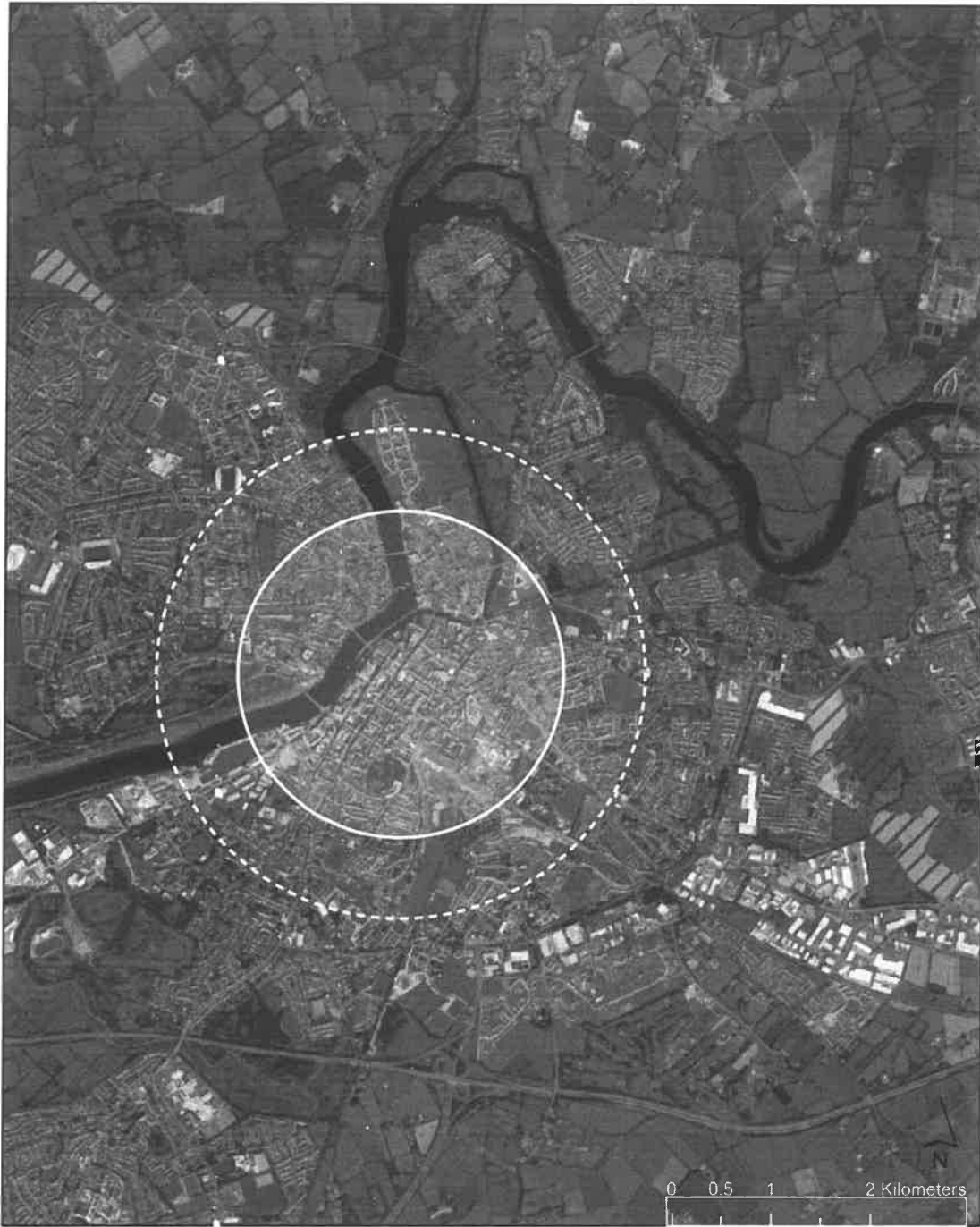
*"Planning authorities shall adopt a sequential approach when zoning lands for development, whereby the most spatially centrally located development sites in settlements are prioritised for new development first, with more spatially peripherally located development sites being zoned subsequently".*

The subject site adjoins the city centre, is within a 15 minute walking distance of services and facilities in the city core, adjoins a proposed new school and neighbours an existing hospital. The land is accessible with adequate water services and facilities. The principle of developing this land has always been acceptable, with the land zoned for mixed use purposes in previous development plans.

Zoning this land for mixed use purposes will ensure that a portion of new development reflects the compact growth and town centres first agenda, which is also a key dynamic in addressing climate change, through reducing dependence on car-based transport, the extent of green-field land consumption and costly and inefficient infrastructure provision and use. In this instance, the development plan is provided with an opportunity to deliver a framework for development, which ensures a close correlation between facilitating residential and mixed uses on land with infrastructural capacity whilst also ensuring that a substantial element of future growth adjoining the city centre.

The case for mixed use zoning has already been established in the Draft Plan with 4 no. sites already identified in the environs of the city, well removed from the city core, as detailed in Figure 2.0.





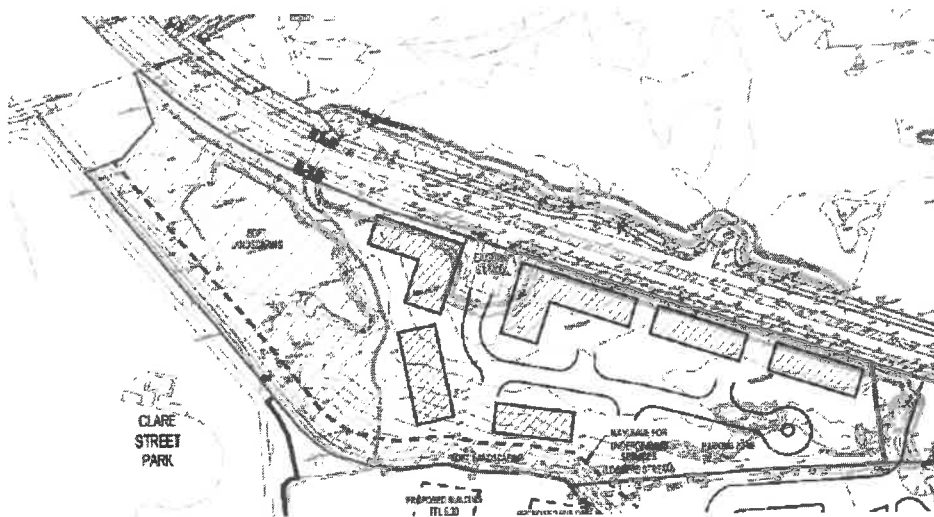
**Figure 3.0** Extent of Mixed Use Zoning in Draft Plan

It is confirmed that the subject land falls within Tier 1 land, which is suitable for development in the short term and during the life of the proposed Development Plan, at no cost to Exchequer, as detailed in Table 2.0.

Whilst the land has capacity for 50 no. additional units and which will need to be added to the core strategy, it should be noted that the land could be developed for a mix of residential and other uses, including a substantial area dedicated to open space / recreational use as detailed in Figure 4.0. Accordingly, only a percentage of the estimated residential yield from the site land needs to be included in the core strategy table.

Site Capacity Audit		
Area of Site		1.7 hectares gross – 1.2 hectare net
Site in Built-Up Area		Within 15 minute walk-time of city centre
Service Status		Tier 1
	Lighting	✓
	Footpaths & Cycle Lanes	✓
	Public Transport	●
	Road Access	✓
	Water	✓
	Foul	✓
	Surface Water	✓
	Flood Risk	✗
	Infill / Brownfield	✓
	Proximity to Schools	✓
Assumed Residential Density		50 units per hectare <sup>1</sup>
Estimated Residential Yield from Site		50 units max
Planning History		Historical planning permission for industrial uses

**Table 2.0** Site Capacity Audit as per Draft Development Plan Guidelines (merged with structure proposed in Draft Plan).



**Figure 4.0** Area of Land Hatched Green to be Developed as Public Recreation Area

<sup>1</sup> Minimum 50 units per hectare in proximity to bus corridor as per Design Standards for New Apartments

#### **4.0 MOTION TO AMEND THE DRAFT PLAN**

It is hereby requested that the education & employment landuse zoning afforded to land located on the southern side of the Pa Healy Road as illustrated in Figure 1.0 is changed to mixed use zoning.

It will be necessary to insert a new 'Section 10.4.2.14 Pa Healy Road' into the Draft Plan in Chapter 10: Compact Growth and Revitalisation to ensure compliance with the existing plan structure. The text proposed is as follows:

##### **Section 10.4.2.14 Pa Healy Road**

The 1.7 hectares site is in a prominent location with road frontage onto the Pa Healy Road. The site and adjoining land (former Dawn Dairies) require significant regeneration. in a coordinated and holistic manner, facilitating mixed uses and associated synergies whilst ensuring sustainable compact growth.

##### **Objective ---- Pa Healy Road**

It is an objective of the Council to:

- a) Require the preparation of a masterplan for the land which utilises the low-lying land to the west for recreational purposes and facilitates a mixed-use / residential development to the west with vehicular access off the existing permitted entrance which was constructed as part of the link road (Pa Healy Road);
- b) Enhance the character of the area through urban design and placemaking, incorporating buildings of high-quality design having regard to the sites prominent location on the Pa Healy Road;
- c) Require provision of an integrated sustainable mobility network, with walking, cycling and public transport as the main components;  
Facilitate connectivity between the lowlying land to the west and the adjoining O'Briens public park to the south;
- d) Ensure green infrastructure is a key component of the design and layout;
- e) Promote a site-specific approach, reflecting emerging best practice, in addressing flood risk and prepare a Site Specific Flood Risk Assessment in accordance with the Planning System and Flood Risk Management Guidelines for Planning Authorities.

It will be necessary to amend Section 12.3 of the Draft Plan in respect of Land Use Zoning Objectives (additional text shown in red) as follows:

**Objective:** To provide for a mixture of residential and compatible commercial uses.

**Purpose:** To facilitate the use of land for a mix of uses, making provisions, where appropriate for 'primary' uses i.e. residential and combined with other compatible uses e.g. offices as 'secondary'. These secondary uses will be considered by the Local Authority, having regard to the particular character of the area. A diversity of uses for both day and evening is encouraged. These areas require high levels of accessibility, including pedestrian, cyclists and public transport (where feasible). Opportunity sites set out in Chapter 10: Compact Growth and Revitalisation, include

Mixed Use zoned lands located at Towlerton, Parkway Valley, Thomond Park, and the Pa Healy Road which have been accounted for in the Core Strategy figures. In addition, the Draft Retail Strategy has identified capacity for additional retail floor space in Moyross, which could be accommodated on the Mixed Use lands at The Bays identified for employment uses only.

## Appendix 1.0

### Email from LCETB Confirming Additional Education & Community Zoned Land is Not Required


----- Forwarded message -----

From: **Eamon Murphy** <[eamon.murphy@lcetb.ie](mailto:eamon.murphy@lcetb.ie)>

Date: Fri, Jan 21, 2022 at 3:20 PM

Subject: Re: Clare Street

To: [fmcmanagementservicesltd@gmail.com](mailto:fmcmanagementservicesltd@gmail.com) <[fmcmanagementservicesltd@gmail.com](mailto:fmcmanagementservicesltd@gmail.com)>

 This e-mail was sent from a sender outside of your organisation. Please do not click links or open attachments unless you recognise the source of this e-mail and know that the content is safe.

Hi Frank,

Further to our recent discussions, the development of the new Gaelcholáiste Luimnigh has commenced on site and is due for completion in the second half of 2023. In this regard, Limerick and Clare ETB does not require to extend the school site through the purchase of additional lands.

**Best regards,**

**Eamon.**

**Caipitil agus Soláthair**

Capital & Procurement

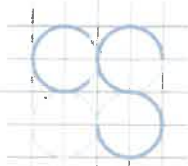
**Bord Oideachais agus Oiliúna Luimnigh agus an Chláir**

Limerick and Clare Education and Training Board (LCETB)



## Briefing Note – Downes Family Lands

- It is requested that the education & community landuse zoning afforded to land located on the southern side of the Pa Healy Road in the Draft Plan, is changed to mixed use zoning.
- Although zoned for education & community use, Limerick Clare Education Training Board has confirmed in writing that they do not require additional land for the adjoining permitted Gaelcholaiste.
- Of the total 1.7 hectares zoned for education & community use in the Draft Plan only 1.2 hectares are considered developable from a level and flooding perspective. Accordingly, 0.5 hectares of low lying land at the western extremity of the site adjoining O'Briens pubic park as a natural recreational / wetland area.
- The land is optimally located neighboring a permitted post primary school (Gaelcholaiste), O'.Briens Public Park, Limerick School of Art & Design, St. Johns Hospital and is within a 10-15 minute walk of the city centre core.
- The site is subject to flooding and exhibits the exact same characteristics as the Dawn Dairy site which was granted planning permission for a school (P19/1252).
- Both a school and residential use fall into the same 'vulnerability category' as per the Flooding Guidelines and both sites require / required a Justification Test.
- If planning permission was recently granted for a school on adjoining lands with the exact same flooding characteristics, then there is no reason why residential / mixed use could not be considered appropriate on the subject site.
- Significant resources and financial investment have been spent to date in advancing feasibility studies for mixed use development on the site under its current mixed use zoning, including live work units with office accommodation at ground floor level and residential use overhead fronting onto the Pa Healy Road, workshop units and a primary care centre with associated office space.
- The site can provide similar flood mitigation measures as the adjoining permitted Gaelcholaiste.
- Cork City Council and An Bord Pleanála recently granted permission for a significant residential development adjacent to the River Lee which was also located in Flood Zone A as it was deemed to pass the Justification Test (ABP 309974-21).
- The Justification Test requires a site to be either within or adjoining the city core. The subject site adjoins the city core. The city centre zoning extends to a 1.5km distance in parts and the subject site is located within a similar catchment. For example, the subject site is situated the same distance from the centre of Limerick city as the city centre zoning that covers the Colbert Station lands.
- The case for mixed use zoning has already been established in the Draft Plan with 4 no. sites already identified in the environs of the city, well removed from the city core.
- The land falls within Tier 1 land, which is suitable for development in the short term and during the life of the proposed Development Plan, at no cost to Exchequer



CRONIN & SUTTON CONSULTING (part of the CS Consulting Group)  
19-22 Dame Street, Dublin 2, D02 E267, Ireland

T 353 1 5480863

E info@csconsulting.ie

W www.csconsulting.ie

**CS CONSULTING  
GROUP**  
DUBLIN - LONDON - LIMERICK

# **Flood Risk Assessment For Downes Family Site, Pa Healy Road, Limerick.**

**Client:** Downes Family

Job No. F012L

August 2021

**Limerick Office**

45 O'Connell Street  
Limerick, V94 XE18  
Ireland

T: 353 (0)61 594988  
E: info@csconsulting.ie  
W: www.csconsulting.ie

**London Office**

45 Beech Street  
London, EC2Y 8AD  
UK

T: +44 (0) 207 070 3660  
E: info@csconsultinguk.com  
W: www.csconsultinguk.com

KP & Associates Consulting Engineers Ltd. T/A Cronin & Sutton Consulting

Directors: K. Cronin, D. Rehill, O. Sullivan, P. Sutton

Associate Directors: N. Barrett, R. Fitzmaurice, M. McEntee, L. McNamee Associates: C. Twomey, C. Barry

Registered Office: 1st Floor, 19-22 Dame Street, Dublin 2, D02 E267, Ireland | Company No. 505303



## Flood Risk Assessment

### For Downes Family Site, Pa Healy Road, Limerick.

#### CONTENTS:

1.0	Introduction	1
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6.0	Potential Flood Risk & Mitigation Measures	10
7.0	Justification Test	11
8.0	Conclusions	14

**Appendix A:** Fluvial Mapping

**Appendix B:** Coastal Mapping

**Appendix C:** Topographical Survey

**Appendix D:** Notional Proposed Development Layout

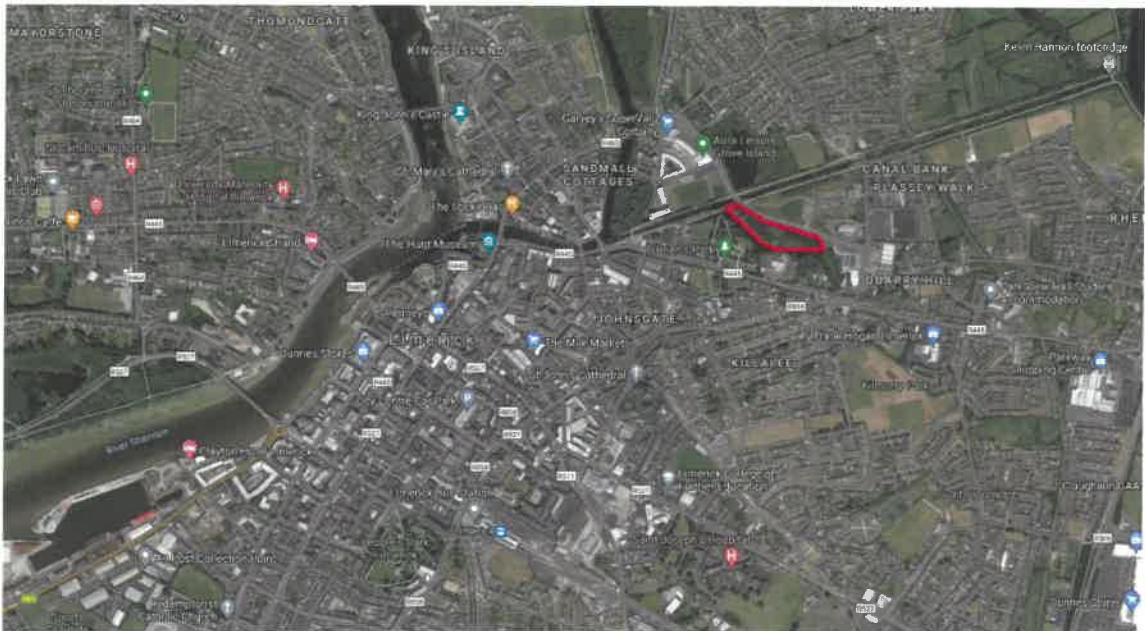
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Job Ref:	Author	Reviewed By	Authorised	Issue Date	Rev No.
F012L	SC	GC	GC	August '21	1



## 1.0 INTRODUCTION

Cronin Sutton Cotter were appointed by the Downes Family to carry out an appropriate level of Flood Risk Assessment for the site of a proposed Mixed-Use development at Pa Healy Road in Limerick City. See below site location map Fig 1.



**Figure 1 – Current Aerial (Google Maps) - location of development site in red.**

In preparing this report Cronin Sutton Cotter Consulting Engineers have made reference to the following:

- Limerick City Development Plan 2010 – 2016,
- Office of Public Works, (OPW) via Floodinfo.ie.
- Ordnance Survey of Ireland, (OSI),
- The Department of the Environment, Community & local Government – flooding documents, notably, *The Planning System & Flood Risk Management: Guidelines for Planning Authorities & Technical Appendices.*

## 2.0 Fluvial & Coastal Mapping & Proposed Site

An extract from map no. S2526LIK\_EXFCD\_F1\_59 Fluvial Flooding Extent with site outline marked in red can be seen in Fig.2 below. Full map is attached within Appendix A.

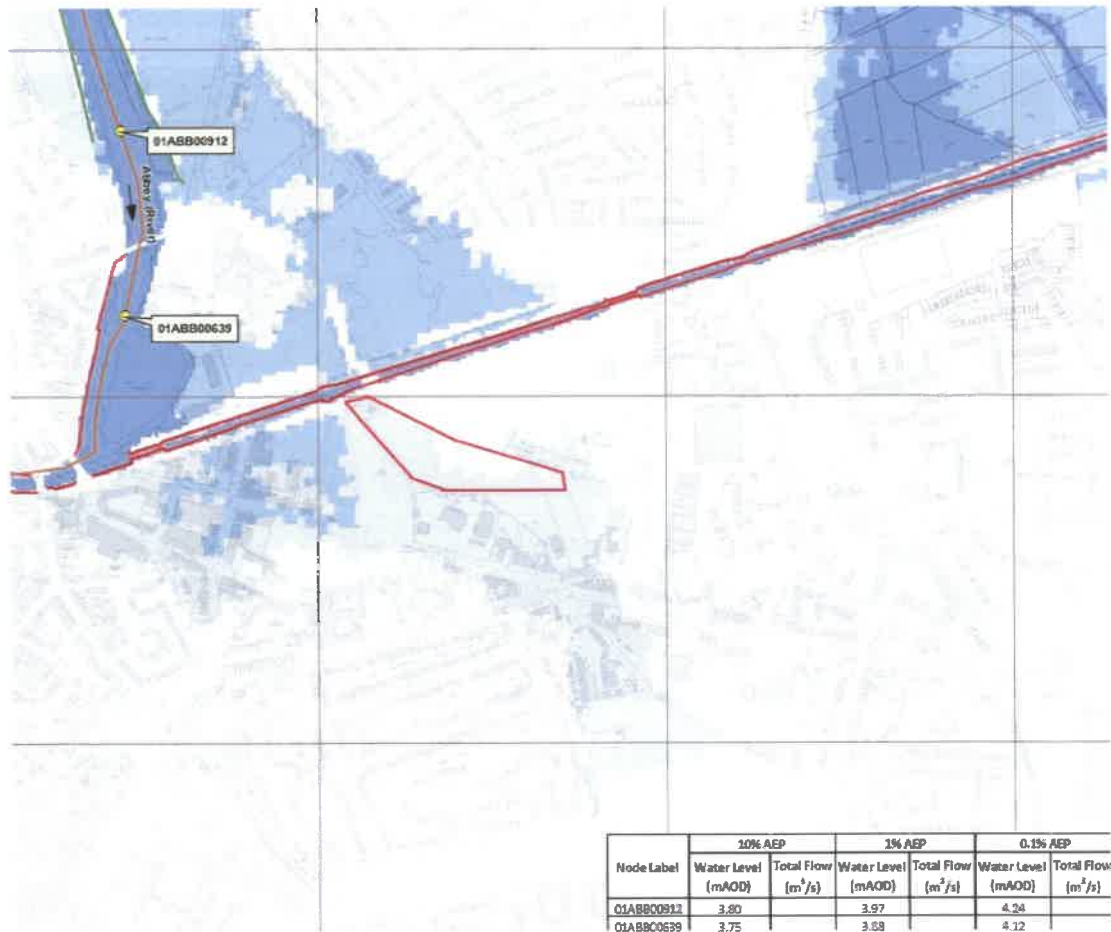


Figure 2 –Current CFRAM Fluvial Map with site marked on in red.

The map shows a large part of the site as being within the 0.1% AEP flood zone and that means that this part of the site has an 'Annual Exceedance Probability' of 1 in 1000 chance of being exceeded or an event occurring. In terms of predicted fluvial flood levels, the node most relevant to the site on the map is 01ABB00639 and the 0.1% AEP water level is 4.12m AOD.

The extract below is taken from the Coastal Map (S2526LIK\_EXCCD\_F1\_59) and indicates that there is a notable portion of the site liable to flood but is in an area being defended from coastal/tidal flooding, with a 'Standard of Protection' equivalent to 0.5% AEP, or 1 in 200-year event. See Fig. 3 below with site marked on in red. The full map can be found within Appendix B of this report.

In terms of predicted coastal/tidal flood levels, the node most relevant to the site on the map is 01ABB00639 and the 0.1% AEP water level is predicted to be 5.15m AOD.

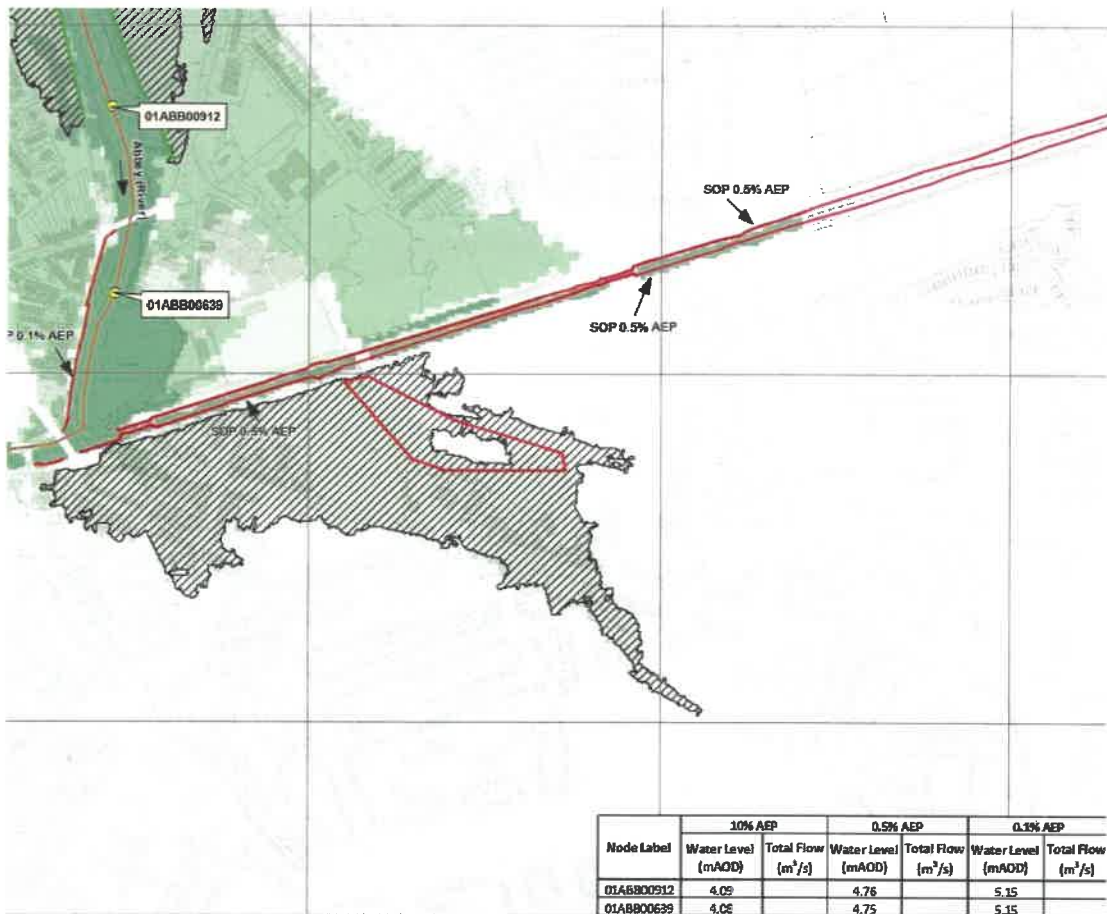
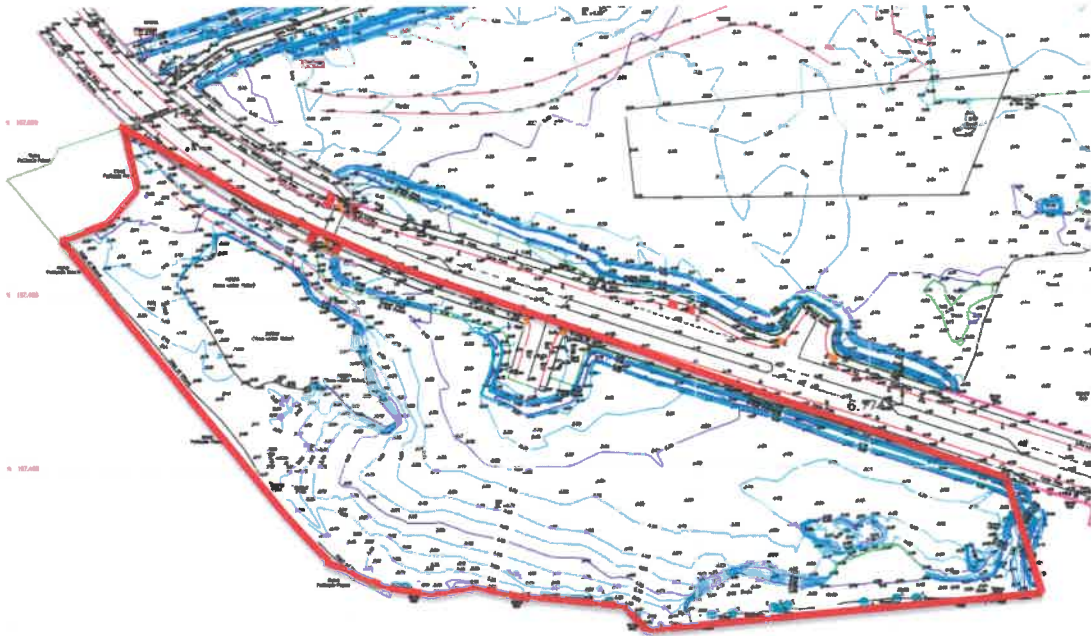


Figure 3 – Current CFRAM Coastal Map with site marked on in red.

### 3.0 SITE DESCRIPTION

The development site is as shown in Figure 4 below.



A topographical survey of the site is attached in Appendix C of this report. There are public footpath, cycle lane and roadway (Pa Healy Road) on the northern boundary, with third party lands on the eastern and southern boundaries, including the Clare Street Recreation Park. At the western boundary, there is a Local Authority pumping station, which is part of the Limerick Main Drainage infrastructure, and public walking amenities alongside the Park Canal, see photos below.

Along the southern boundary of the site, there is a 'Maintenance Right-of-Way' to facilitate any potential future works required to the Limerick Main Drainage scheme, formerly known as the Loggers Stream, which is now piped.

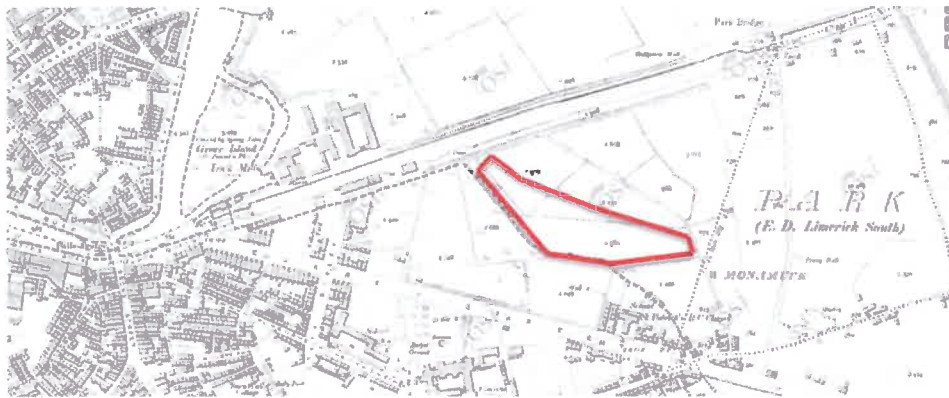
The western end of the site is at a low level, significantly below the level of the Pa Healy Road itself, see photos below. A large part of this area contains reed growth and standing water or ponding which is visible from the Pa Healy Road and can be seen on the topographical survey also. This area is adjacent to the Clare Street Recreation Park, which appears to be noted as wet land on the 1913 historic OSI mapping shown below the photos.



F012L – Downes Family Site, Pa Healy Road, Limerick.

At the existing site entrance and along Pa Healy Road, the topographical survey shows the site to have higher ground levels. This eastern end of the site is immediately adjacent to the site of the proposed Gaelscoil (Planning Reference 19/1252), which has received planning permission and construction is reportedly imminent.

The development of the area and the site is summarised in the historic mapping (OSI) below showing 1913, 2000 and 2012 respectively.



F012L – Downes Family Site, Pa Healy Road, Limerick.

#### 4.0 PROPOSED DEVELOPMENT

While a finalised site layout is not confirmed at this time, a notional proposed site layout is shown below. It is proposed that a large proportion of the site will be soft landscaping including all the west end of the site adjacent to the Clare Street Recreation Park, possibly incorporating a Storm Water Retention Pond.



The majority of this Mixed-Use development will be concentrated around the existing entrance to the site and along the road frontage of Pa Healy Road, essentially the highest level of the lands. Some development may take place towards the southern boundary to compliment the proposed buildings given permission as part of the Gaelscoil with planning reference 19/1252. A large portion of the east end of the development will include hard landscaping such as circulation road and car parking (non-vulnerable development) but with SUDS measures incorporated to minimise attenuation requirement and to minimise loss of floodplain (retain existing levels as far as is practical).

## 5.0 DEFINITION OF FLOOD RISK

There is an existing inherent risk of any flood event occurring during any given year. Typically, this likelihood of occurrence was traditionally expressed, for example, as a 1-in-100 chance or a 100-year storm event happening in any given year.

A less ambiguous expression of probability is the Annual Exceedance Probability (AEP), which may be defined as the probability of a flood event being exceeded in any given year. Therefore a 1-in-100-year event has a return period of 1% AEP flood event, similarly a 100% AEP can be expressed as a 1-in-1-year event.

5.1 *The Planning System and Flood Risk Management, Guidelines for Planning Authorities* set out the best practice standards for flood risk assessment in Ireland. These are summarised in Table 1.0 below (Table 8.1 from Guideline's document).

Flooding Source	Drainage	River	Tidal/Coastal
Residential	1% AEP	0.1% AEP	0.1% AEP
Commercial	1% AEP	1% AEP	0.5% AEP
Water-compatible (Docks, marinas)	-	>1% AEP	>0.5% AEP

**Table 1.0:** Summary of Level of Service – Flooding Source.

Under these guidelines a proposed development site has first to be assessed to determine the flood zone category it falls under.

5.2 It is a requirement of the Department of the Environment, Community & Local Government flooding guidelines, *The Planning System and Flood Risk Management, Guidelines for Planning Authorities*, that the predicted effects of climate change are incorporated into any proposed design.



Design Category	Predicted Impact of Climate Change
Drainage	10% Increase in rainfall
Fluvial (River flows)	20% Increase in flood flow

**Table 2.0** The predicted climate change variations.

5.3 The flooding guidelines categorise the risks associated with flooding into three areas, Zone A, B & C. This categorisation is indicated below.

- **Zone 'A'** – High Probability of Flooding. Where the annual exceedance probability of flooding from rivers and sea is highest (10% annually or 1 in 10 for river flooding and coastal flooding).
- **Zone 'B'** – Moderate Probability of Flooding. Where the annual exceedance probability of flooding from rivers and sea is moderate (1% annually or 1 in 100 and 0.5% annually or 1 in 200 for coastal flooding).
- **Zone 'C'** – Low Probability of Flooding. Where the annual exceedance probability of flooding from rivers and sea is moderate to low (0.1% annually or 1 in 1000 for both rivers and coastal flooding).

In accordance with the *Planning Systems and Flood Risk Management Guidelines for Planning Authorities*, **Mixed-Use (incorporating residential) developments are classified as 'highly vulnerable developments'**.

5.4 The flooding guidelines have developed an 'appropriateness' matrix for various developments and their potential risk factor.

As noted above, a Mixed-Use (incorporating residential) development is classified as 'highly vulnerable' and as the site is confirmed by CFRAM mapping to potentially flood, a justification test is required. See Section 7.0 for justification test for the proposed scheme.

---

## 6.0 POTENTIAL FLOOD RISKS & MITIGATION MEASURES

### 6.1 Fluvial Flooding

Fluvial flooding is the result of a river exceeding its capacity and excess water spilling out onto the adjacent floodplain. The subject site is located near the River Shannon and Park Canal.

Fluvial mapping shown in section 2.0 above shows a large portion of the site to be at a low risk (0.1% AEP) of flood water rising to 4.12mAOD. The existing levels on the site vary from 5.0mAOD at the existing site entrance and along the north-east boundary of the site (along Pa Healy Road), to between 3.0 and 3.5mAOD along the southern boundary and for the majority of the western end of the site.

### 6.2 Coastal/Tidal Flooding

Coastal flooding in this instance is the result of the river exceeding its capacity and excess water spilling out onto the adjacent floodplain, when influenced by the tidal movements at the coast/estuary. The subject site is located near the River Shannon and Park Canal.

Coastal/Tidal mapping shown in section 2.0 above shows a large portion of the site to be at a low risk (0.1% AEP) of flood water rising to 5.15mAOD, subject to the failure or over topping of the local flood defences which provide a standard of protection to 0.5% AEP. As noted above, the existing levels on the site vary.

### 6.3 Mitigation Measures

The majority of the existing site levels will be maintained as far as is practical, particularly all the western end of the site and along the southern boundary and these areas will consist of soft landscaping and non-vulnerable uses.

The majority of the mixed-use development will be constructed at the highest part of the site on the road frontage to Pa Healy Road. Finished floor levels of 5.3mAOD will be adopted, ie, 5.15mAOD plus 150mm for climate change,

similar to the recently permitted adjacent development of the Gaelscoil.

## 7.0 JUSTIFICATION TEST

- 7.1 In accordance with *The Planning system and Flood Risk Management issued by the Department of the Environment, Heritage and Local Government* a site should be classified accordingly.
- 7.2 The subject lands are deemed '*highly vulnerable*', and the site is confirmed to flood by the CFRAM mapping and so, as such, a justification test is required.
- 7.3 There are two parts to the justification test, (A) *Justification Test for Development Plans* and (B) *Justification Test for Development Management*. The Justification Test for Development Plans is intended to inform land-use zoning decisions in the preparation of a Development Plan.
- 7.4 The subject lands are zoned for mixed use development in the current Limerick City & Council Development Plan. CSC have carried out a type (A) *Justification Test for Development Plans*, see section 6.5 and a type (B) *Justification test for Development Management*, see section 6.6.
- 7.5 Justification Test for Development Plans

<b>Justification Test for Development Plans</b>	
<b>1.0 Urban settlement is targeted for growth.</b>	Yes: The subject site is located within Limerick City, which is targeted for growth and in need of housing and associated facilities.
<b>2.0 The zoning or designation of the lands for the particular use or development type is required to achieve proper planning and sustainable development of the urban settlement and, in particular:</b>	
i. <b>Essential to facilitate regeneration and / or expansion of the centre of the urban settlement.</b>	Yes: This site is in an established area of the city. Development in this area is a mixture of retail, commercial and residential. This site is considered a high profile, infill site, appropriate for a mixed-use development and for the expansion of the city.

**ii. Comprises significant previous development and / or underutilised lands.**

The River and Canal along this stretch primarily flows through the built-up established City of Limerick. The site has been underutilised for many years, particularly since the construction of the Pa Healy Road prior to 2010. Specific access to the site was developed as part of the Pa Healy Road construction. There is existing development to the east, south and west boundaries of the site.

**iii. Is within or adjoining the core of an established or designated urban settlement.**

Yes: The land forms part of an established, large urban settlement.

**iv. Will be essential in achieving compact and sustainable urban growth.**

Yes: See responses to (i), (ii) and (iii) above.

**v. There are no suitable alternative lands for the particular use or development type, in the areas at lower risk of flooding within or adjoining the core of the urban settlement.**

There are no alternative suitably zoned lands available for significant development with equivalent proximity to the city centre, recently constructed road infrastructure and Limerick Main Drainage underground services.

**3.0 A Flood risk assessment to an appropriate level of detail has been carried out.**

Yes.

**Conclusion: The subject site passes the Justification Test for Development Plans.**

## 7.6 Justification Test for Development Management

<b>Justification Test for Development Management</b>	
<b>1.0</b>	<p><b>The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative development plan, which has been adopted or varied taking account of these guidelines.</b></p> <p>The subject lands are zoned 'Mixed-Use', which includes Residential development.</p>
<b>2.0</b>	<p><b>The proposal has been subject to an appropriate flood risk that demonstrates:</b></p> <p><b>(i) <i>The development proposed will not increase flood risk elsewhere and, if practicable, will reduce overall flood risk;</i></b></p> <p>Yes, the lower levels of the site up to 4.12mAOD, will be allowed to flood in the event of fluvial flooding. In the event of coastal/tidal flooding as a result of a breach of the local flood defences (greater than a 1 in 200-year event), flood levels could rise to 5.15mAOD. Based on existing levels of the site and surrounding lands, there will be minimal loss of flood plain as a result of this development. While some areas of the site will change from soft landscape to hard landscape, SUDS measures will be incorporated to minimise any contribution to flood risk elsewhere, but overall flood risk will not be reduced.</p> <p><b>(ii) <i>The development proposal includes measures to minimise flood risk to people, property, the economy and the environment as far as reasonably possible;</i></b></p> <p>Yes, the ground floor residences proposed will have a finished floor level 5.3mAOD, 150mm above the highest flood level that could be reached in the event of a breach of the local flood defences.</p> <p><b>(iii) <i>The development proposed includes measures to ensure that residual risks to the area and/or development can be managed to an acceptable level as regards the adequacy of existing flood protection measures or the design, implementation and provisions for emergency services access;</i></b></p> <p>Yes, emergency services access around all the buildings will be maintained. SUDS measures will be incorporated to minimise the residual risk to the site from</p>

fluvial flooding. Finished floor levels of 5.3mAOD will provide adequate flood protection for buildings.

**(iv) The development proposed addresses the above in a manner that is also compatible with the achievement of wider planning objectives in relation to development of good urban design and vibrant and active streetscapes.**

Yes: the development will be in accordance with planning objectives and in accordance with development and flooding prevention guidelines.

**Conclusion: The site passes the Justification Test for Development Management.**

## 8.0 Conclusions

- 8.1 CFRAM mapping indicates a large portion of the site may be subject to fluvial flooding and also a similar large portion of the site may be subject to coastal/tidal flooding in the event of a breach of the local flood defences. However, existing site levels suggest that fluvial flooding at 4.12mAOD will only affect the lower areas of the site to the west and the south.
- 8.2 As noted above, a mixed-use (incorporating residential) complex is classified as 'highly vulnerable' and as flooding is predicted to occur on the site, a Justification Test is required to be carried out. This is carried out in detail in section 7.0 above and in our opinion the site passes both parts of the Justification Test.
- 8.3 Mixed-Use/Residential development is proposed at ground level and a finished floor level of 5.3mAOD will be adopted, ie, 150mm above the highest flood level of 5.15mAOD in the event of a breach of the local flood defences. Existing ground levels will, in general, be maintained and utilised as surfaced car parking or soft landscape. A nett increase of hard surface will arise, but SUDS measures will be adopted to manage the resultant storm water accumulation.

## **Appendix A**

### Fluvial Mapping





## **Appendix B**

### Coastal Mapping

Location Plan:




**Legend:**

- Nodes
- Model Reach
- AFA Boundary
- Flood Defence: Wall
- Flood Defence: Embankment
- Defended Area
- 10% AEP Coastal Flood Extent  
(1 in 10 chance in any given year)
- 0.5% AEP Coastal Flood Extent  
(1 in 200 chance in any given year)
- 0.1% AEP Coastal Flood Extent  
(1 in 1000 chance in any given year)

**IMPORTANT USER NOTE:**  
THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

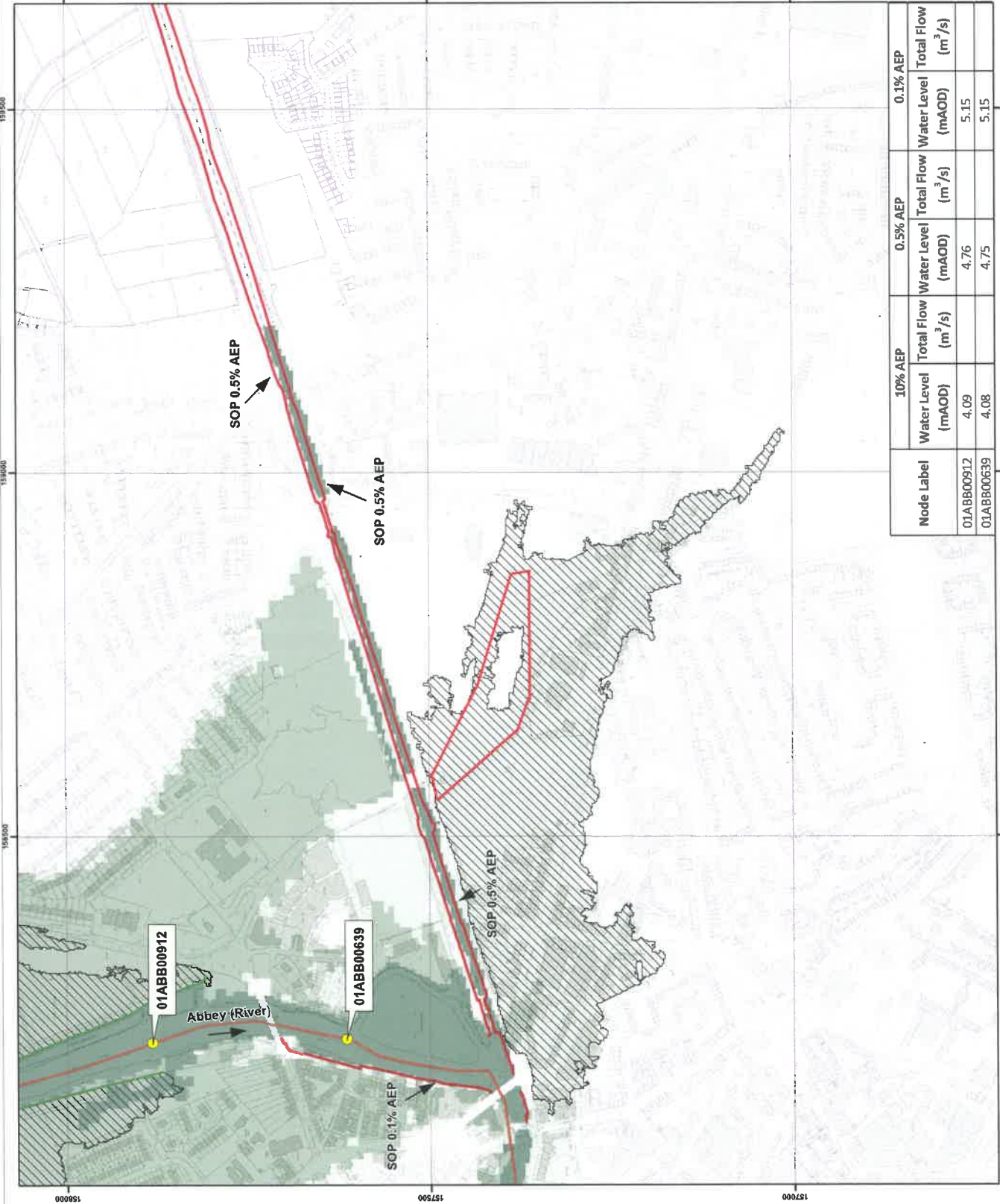


The Office of Public Works  
Jonathan Swift Street  
Trim  
Co. Meath  
C15 NX36



Merrion House  
Merrion Road  
Dublin 4  
D04 R2C5

Project:	SHANNON CFRRAM STUDY
Map Type:	EXTENT
Source:	COASTAL - TIDAL
Area:	LIMERICK
Scenario:	EXISTING
Drawn by:	EH
Checked by:	KM
Reviewed by:	MC
Approved by:	PS
Map No.:	S2528LIK_EXCCOD_F1_59
Sheet:	59 of 65
Map Scale:	1: 5000
Plot Scale:	1:1 @A3
Revis'n:	0

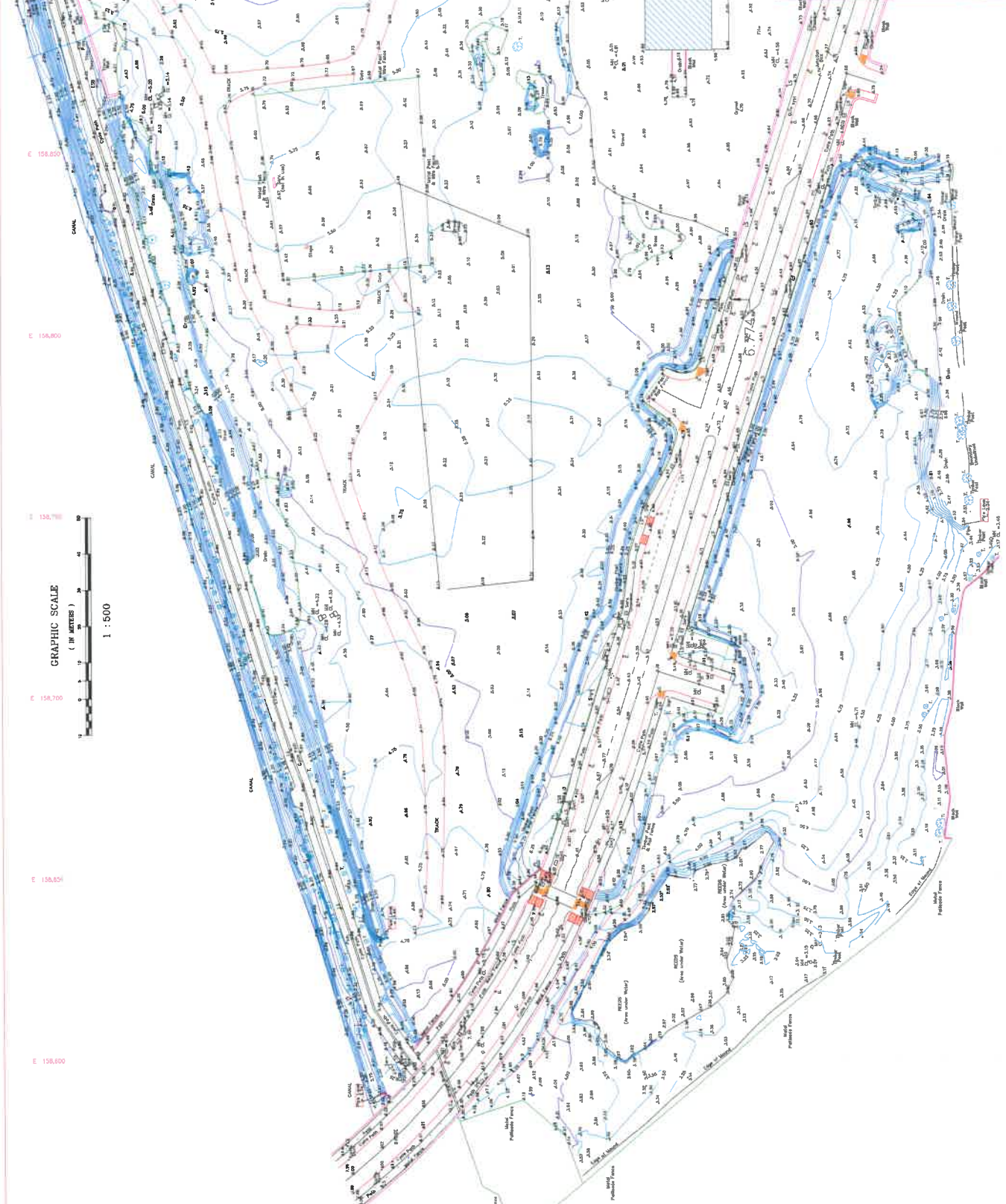


Node Label	10% AEP		0.5% AEP		0.1% AEP	
	Water Level (mAOD)	Total Flow (m <sup>3</sup> /s)	Water Level (mAOD)	Total Flow (m <sup>3</sup> /s)	Water Level (mAOD)	Total Flow (m <sup>3</sup> /s)
01ABB00912	4.09		4.76		5.15	
01ABB00639	4.08		4.75		5.15	

## Appendix C


### Topographical Survey

**NOTES:**  
 All levels are relative to Ordnance Datum  
 All contours are at 0.5m intervals  
 50m sq Grid relative to Irish National Grid  
 (IC 1975)  
 Contours are at .25m intervals  
 Part of site surveyed by Walsh Survey  
 Services and Surveygraph and were  
 signed back in 1980s



GRAPHIC SCALE  
 ( IN METRES )  
 1 : 500

N 158,500  
 N 157,500  
 N 156,500  
 N 155,500  
 N 154,500  
 N 153,500  
 N 152,500  
 N 151,500  
 N 150,500

Client	ARUP Consulting Engineers Horseshoe Lane, Upper Wexford Road, Limerick, Co. 08 121005
Title	Site Survey of Lands at Park Road, Limerick.
Drawn: C. G. Z.	Drawn no: 08-105-01
Scale: 1:500	Date: 04-01-03
 <b>Control Surveys</b> 8 O'Connell Street, Limerick, Co. Clare T: 087 2289712 Email: control@control.ie	

## Appendix D

### Notional Proposed Development Layout



**Ballykeeffe, Mungret**

**LCC – C62 – 206**

HRA PLANNING  
Chartered Town Planning Consultants

Submission on  
**Draft Limerick Development Plan 2022 - 2028**

On behalf of:  
Mr. Michael Gabbett



**HRA | PLANNING**  
chartered town planning consultants

DEVELOPMENT PLANNING | ENVIRONMENTAL PLANNING | MASTERPLANNING

Limerick | Dublin | t: 061 435000 | e:info@hraplanning.ie | w:www.hraplanning.ie





Title:	21062 Development Plan Submission	
Project:		
Prepared by:	 	
Signed:	Gary Rowan MIPI MRTPI Director	Approved by: Mary Hughes MIPI (Director)
Date:	September 2021	
Issue:	Issue01final	
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## 1.0 INTRODUCTION & PURPOSE OF SUBMISSION

HRA PLANNING Chartered Town Planning Consultants has been retained by Mr. Michael Gabbett, Ballykeefe, C. Limerick (**‘the property owner’**) to prepare the following submission to Limerick City and County Council in respect of the Draft Limerick Development Plan 2022-2028.

This submission relates to 4 plots of land in the Mungret area of the ‘Southern Environs’ suburb of Limerick City and metropolitan area as illustrated in Figure 1 and 2 enclosed at the end.

The property owner respectfully requests that the proposed landuse zoning provisions of the draft Limerick Development Plan (**‘the Draft Plan’**) are reviewed and subsequently amended to reflect the site circumstances and opportunities of the subject lands vis-à-vis their strategic location, and, having regard to the commitment by the property owner heretofore, in facilitating the compulsory acquisition and subsequent dissection of his property for the construction of strategic national roads through its property.

The property owner respectfully submits that the proposed agricultural landuse zoning applied to portions of the subject site, are inappropriate to this location, and represents an underutilisation of serviced land within the Limerick City Metropolitan area which is planned for growth, and would contrary to the approach in the National Planning guidelines, which seeks to achieve efficiencies in the use of serviced land within cities and urban areas designated for growth.

This submission sets out the material planning reasons why the subject lands should be zoned for **‘enterprise and employment’** corresponding to that use which has been applied on some parts of the subject property in the draft plan.

This submission is accompanied by a site-specific flood risk assessment report<sup>1</sup>, and the conclusions drawn in that assessment which have informed some aspects of this submission.

## 2.0 BACKGROUND

### 2.1 Site Location and Context

The subject property comprises a number of separate plots located between the village of Mungret and the (junction 2) intersection on/off ramps between the N18 / N69 national roads and the ‘Dock Road’ which serve as the Limerick city bypass within the western environs of the city area. The location of each plot of land is illustrated in Figure 1 and comprises Plot A (5.57ha), Plot B (4.25ha), Plot C (5.57ha) and Plot D (10.22ha).

Plot A is situated on the N69 generally opposite the Irish Cement factory. Plots B-D are situated immediately adjacent to the previously mentioned intersection and whilst subdivided by the N18 National road, they are connected to, and accessible via the Ballykeefe Boreen from the Dock Road.

---

<sup>1</sup> Flood Risk Assessment prepares by PUNCH Consulting Engineers

Figure 1 illustrates the location of each plot, and illustrates also, the extent to which the construction of the Limerick N18 bypass route has subdivided the overall landholding.

Plots B-D are currently undeveloped and of improved agricultural greenfield character.

The Dock Road (R510) accommodates several commercial and industrial landuse activities including the Blackberry Business Park situated immediately adjacent to the north of the subject lands and which accesses the Dock Road by the upgraded Ballykeefe Boreen road. The majority of the Dock Road frontage, as it extends westward from the city centre up to the N18 intersection, is developed with residual and rear lands identified for similar urban development.

Plots B-D represent an unrivalled location, positioned at a pivotal gateway intersection between the National transportation network, and the edge of city. This location offers immediate accessibility to routes to/from the city, to Ennis/Galway to the north, Dublin to the east, and to designated 'Tier 1' port installation The Shannon Foynes Port Company which has operational facilities at Foynes via the N69 and on the Dock Road.

## 2.2 Draft Landuse Zoning Provisions

The Draft Plan allocates a number of different zoning objectives to the subject plots. Plots B and C comprise of both 'enterprise and employment' and 'Agriculture' land use zoning objectives. Plot D is comprised predominantly of 'agriculture' and 'semi-natural open space' with a very small portion of 'enterprise and employment'. The 'semi-natural open space' on Plot D extends back for a distance of in excess of 100m from the edge of the Ballinacurra Creek.

The purpose and extent of these zoning objectives, as they apply to the subject plots of land, and their purpose within the wider city environs, and to this strategic location are unclear.

## 3.0 GROUNDS OF SUBMISSION

The grounds for submission are based on the following material considerations:

### 3.1 Inappropriateness of draft zoning objectives: '**Agriculture**' and '**Semi-Natural Open Space**'

#### 3.1.1 *Inappropriateness of draft 'Agriculture' zoning objectives: and 'Semi-Natural Open Space'*

The preparation of the Draft Plan results in the coming together, for the first time under one plan, the combined spatial development and landuse zoning objectives for the Limerick city urban area, and the Southern Environs which previously, were set out under the Limerick City Development Plan 2010 As amended and varied), and, the Southern Environs Local Area Plan 2021-2027.

In the morphing together of these two Plans, the collective spatial development objectives and landuse zoning provisions has resulted in a mosaic of development and non-development landuse zoning objectives which extend between the Dock Road and the village of Mungret and adjacent to a strategic intersection where access to and from the city centre meets the Limerick Southern ring-road and the national road network which extends to other major urban centres and regions.

In effect, this mosaic approach to this agriculture land zoning is likely to create instances where 'enterprise and employment' will occur on backlands, behind 'agriculture' zoned land, and functionally appear piecemeal, disjointed and require greater road construction and extended provision of services to reach those 'development' areas.

Examining these differing zoning objectives in a wider metropolitan city context, presents a scenario of potential under-utilisation of serviced land located at a critical gateway access point to the urban city centre and at a location with immediate access to strategic national road network.

In considering the function and suitability of 'agriculture' zoning to this location, reference is made in the first instance to the zoning objectives set out in the draft plan Chapter 12 (Landuse Zoning Strategy) which state that the Objective of the 'Agriculture' zoning objective is to;

*"To protect and improve rural amenity and provide for the development of agricultural uses".*

The purpose of the zoning is stated;

*"To protect rural amenity and agricultural lands from urban sprawl and ribbon development and provide a clear demarcation to the adjoining built up areas".*

In the first instance, the property owner seeks to confirm that the agricultural use of the property, in the manner prescribed and provided for in the landuse zoning objective, is neither feasibility nor practical. The agricultural landholding has been eroded from its original 69 hectares in its operational prime to circa 16 hectares for a variety of reasons including, land take for public road building, the consequent effects of severance by road construction, and residual effects of a mosaic of different landuse zoning types in the last local area plan including 'enterprise and employment'. Thus, in the first instance, the landholder can confirm that there is no necessity to protect and/or provide for agricultural use of the subject lands for 'agriculture' use because it is commercially unviable to do so.

Secondly, the use of an 'Agriculture' zoning objective for the purpose of protecting rural amenity, to prevent urban sprawl or to provide a clear demarcation between built up areas is incongruous to the preferential and the optimal sequential use of serviced urban land at this location. The Limerick Southern Ring Road has to an extent, been a controlling feature in preventing 'urban sprawl' and making a distinction in urban areas between the Dock Road City core area to the east, and the suburban centre of Mungret to the west. Furthermore, the provision of sporadic agricultural zoning, around a major gateway to a metropolitan city area, which is planned for significant settlement growth in Limerick is, is somewhat counterintuitive to sustainable integrated landuse and transport planning, and National and Regional spatial development objectives, when in fact other urban uses may well be appropriate on the site and developed sufficiently responsive to flood risk management requirements (discussed later).

Figure 3 and 4 illustrates the spatial location of the property within the context of strategic road network and illustrates that the potential opportunities of its immediate accessibility to the national roads network.

In effect, the proposed piecemeal nature of the agriculture zoning, provides no feasibility for agriculture use or for the purpose of controlling settlement sprawl and thus, is considered an inappropriate landuse allocation to the subject property.

### 3.1.2 *Inappropriateness of draft 'Semi-Natural Open Space' zoning objectives*

The 'semi-natural open space' designated within Plot D appears to be without logical justification other than its position adjacent to the Ballinacurra Creek. The extent of that zoning encroaches for a significant distance from the Ballinacurra Creek, into Plot D for a distance of circa 100m following and follows an arbitrary line of an internal field boundary.

The stated objective and purpose of this zoning objective (as stated in Chapter 12 of the draft plan) is to prohibit development in order to maintain the integrity of Natura 2000 sites and flood plains for wildlife habitat flora and fauna and floodwater storage. Furthermore, it is noted that Objective SCSi O18 (Protection of lands zoned for public open space) which states that It is an objective of the Council to:...."(b) *Protect semi-natural open space areas from inappropriate development in the interest of recreational enjoyment, community health and well-being, flood protection and biodiversity*".

The consideration of 'flood protection' is considered in detail, under separate section later in this submission. That aside, the property owner submits that there is no current or planned openspace, recreational enjoyment, or community health function of Plot D that requires 'protection' by way of allocation of 'semi-natural open space zoning as provided for in Objective SCSi O18. Secondly, the property owner is not aware of any scientific evidence that demonstrates how this allocation of 'semi-natural open space' is necessary, from a landuse planning perspective, to protect biodiversity as provided for in Objective SCSi O18. Furthermore, the property owner is not aware of any scientific evidence which confirms a necessity to sterilize in excess of 100m of land extending back from the creek for the purpose of prohibiting development in order to maintain the integrity of the SAC specifically, for the purpose of protecting a specific habitat type, a specific feature, or habitat of feature which is of conservation value and protected under the EU Habitats Directive.

The consequential effect of this zoning is that it sterilises a significant portion of Plot D from potentially suitable development uses that might be consistent with National, Regional and Local planning policy, and, which might have no effect to the ecological amenity of the Ballinacurra Creek or the SAC.

The provisions of 'Part XAB' of the Planning and Development Act 2000 (as amended) provides the statutory test ('appropriate assessment') for ensuring that the integrity of the SAC designation is maintained. With that statutory provision in place (which is transposed into specific policy objectives contained in the draft Plan), and, without any scientific evidence to the contrary, the applicant submits that there is no necessity for the draft Plan to apply the 'semi-natural open space' landuse zoning objective in such an extensive manner in Plot D for the purpose of protecting the SAC.

The property owner is mindful that the local authority can rely on the full provisions of the Part XAB 'appropriate assessment' mechanism and the provisions of the EU Habitats Directive for the purpose of protecting designated Natura 2000 sites, irrespective to whatever land use zoning applies.

That said, and mindful of the principles of biodiversity, the property owner submits that any such amenity buffer from the Ballinacurra Creek (if it is the Council's intention to provide an amenity buffer), could be practically and reasonably applied to a distance back from the creek of circa 20m. This could be applied by way of modified semi-natural open space landuse zoning objective restricted to that extent, or, otherwise, delivered as part of any urban development landuse activity by way of express development management policy objective without necessarily requiring to sterilize a large swath without apparent reason.

### 3.2 Suitability of Location for 'Enterprise and Employment Uses'

The suitability of the subject sites for urban landuse activities has been confirmed by virtue of the existing 'enterprise and employment' landuse zoning objectives which have been applied to portions of those lands by the Planning Authority.

The site is sufficiently serviced by existing road infrastructure with direct accessibility from Ballinacurra Boreen / Dock road and is situated adjacent to the Dock Road and the significant area of commercial and enterprise activities that occur there, to justify the principle of 'enterprise and employment' use of the subject site.

### 3.3 Suitability of Infrastructure to support enterprise and employment use

Plot A has direct access from the N69 road. Plots B-D have direct access from the Dock Road, via the Ballykeefe Boreen. The Ballykeefe Boreen has been upgraded in recent years and this has included road widening extending for some 520m in form the Dock Road including the a 'flyover' bridge over the N18 and specific road junction access points on both sides of that flyover bridge which provides dedicated future access points into the subject lands. The intersection of the Dock Road and the Ballykeefe Boreen includes a (circa) 30m splayed 'T-junction' offering clear lines of sight to oncoming traffic travelling in both directions.

The road width from the Dock Road is generally in the order of 8m in width. Whilst a narrower section does occur between 215m and 335m back from the Dock Road, that section is within the property owner's ownership and any infrastructural deficiency at that point can be addressed through the detailed development management process.

### 3.4 Strategic Objectives Supporting Urban Employment Growth

Strategic and local Planning for urban and employment growth is set within the context of the National Planning Framework ('NPF'), and the Southern Regional Spatial and Economic Strategy ('RSES').

and the draft plan. The following observations are considered pertinent in the context of recognises the relevance and importance of the subject site and its location.

*The National Planning Framework*

Section 4.4 of the NPF ('Planning for Urban Employment Growth') recommends that locations for expansion of existing enterprises should be dependent on the availability of different types of infrastructure including for example, **communications, power, water, roads ports and airports**. (emphasis added).

*The Southern Regional Spatial Economic Strategy ('RSES')*

The RSES acknowledges that the Limerick Shannon Metropolitan Area with its high capacity transport corridors is a global gateway with a number of dynamic relations including: international connectivity through the Ports and Airport, its connections to the Dublin, Galway, Cork and Waterford metropolitan areas, connection to Key Towns in the Mid-West and its relationship to surrounding towns, villages and rural areas.

The RSES advocates the compact sustainable growth and the development of brownfield and infill lands to achieve growth targets and Integrated transport and landuse – the target growth along high quality public transport corridors. The RSES **Limerick Shannon MASP Policy Objective 9** promotes greater collaboration between the metropolitan areas of Galway and Limerick Shannon and the Key Town of Ennis (GESL) Economic Network to drive economic growth and innovation on a sub-regional basis. This potential network is underpinned by the presence of public transport and motorway infrastructure that connects the two cities on the West coast of Ireland and promotes the effective development and excellent inter-regional transport connections.

*Draft Limerick Development Plan*

Section 2.2 of the draft Development Plan reinforces the strategy recognition (contained in the NPF) that Limerick City region as a key asset, that will play a major role in both driving and accommodating a significant proportion of the proposed national population growth and will act as an effective complement to the economic strength of Dublin, and, that future growth will be based on leveraging national, regional and international connectivity, higher education capacity and quality of life to secure strategic investment. In tandem, regional population projections for the Plan period suggest an additional population of circa 49,200<sup>2</sup>, two-thirds of which is planned with the Limerick City and environs area which includes **Mungret** (as well as Annacotty).

The 'Core Strategy' contained in the Draft Plan, expressly states that the Limerick City Metropolitan Area, including Mungret and Annacotty is designated for significant growth under the National Planning (NPF) and Regional Planning (RSES) spatial development objectives. Section 2.6 of the Core Strategy recognises also, the obligation on planning authorities to ensure sufficiency of land identified at suitable locations for employment purposes and suggests that the such zoning should have regard to the Draft Limerick Shannon Metropolitan Area Transport Strategy (LSMATS) and the availability of infrastructure. Draft development plan objectives which support economic development are set out in Chapter 4 and which include inter-alia;

---

<sup>2</sup> Draft Development Plan, Chapter 2 'Core Strategy' Table 2.1 and Table 2.2



**Objective ECON O13 Strategic Employment Locations City and Environs**

*It is an objective of the Council to:*

*a) Promote, facilitate and enable a diverse range of employment opportunities by facilitating appropriate development, improvement and expansion of enterprise and industry on appropriately zoned lands, accessible by public and sustainable modes of transport,*

**Objective ECON O19 Clustering and Innovation**

*It is an objective of the Council to encourage and facilitate the sustainable development and clustering of knowledge-based and high tech industries/businesses at appropriate locations in Limerick*

**Objective ECON O24 Data Centres**

*It is an objective of the Council to:*

*a) Facilitate the development of Data Centres on lands appropriately zoned for such purposes, subject to normal planning, development and environmental controls and the assessment of the potential impact on such development on adjacent land uses.*

*b) Promote co-location of data centres with renewable energy sources at appropriate locations subject to proper planning and sustainable development considerations.*

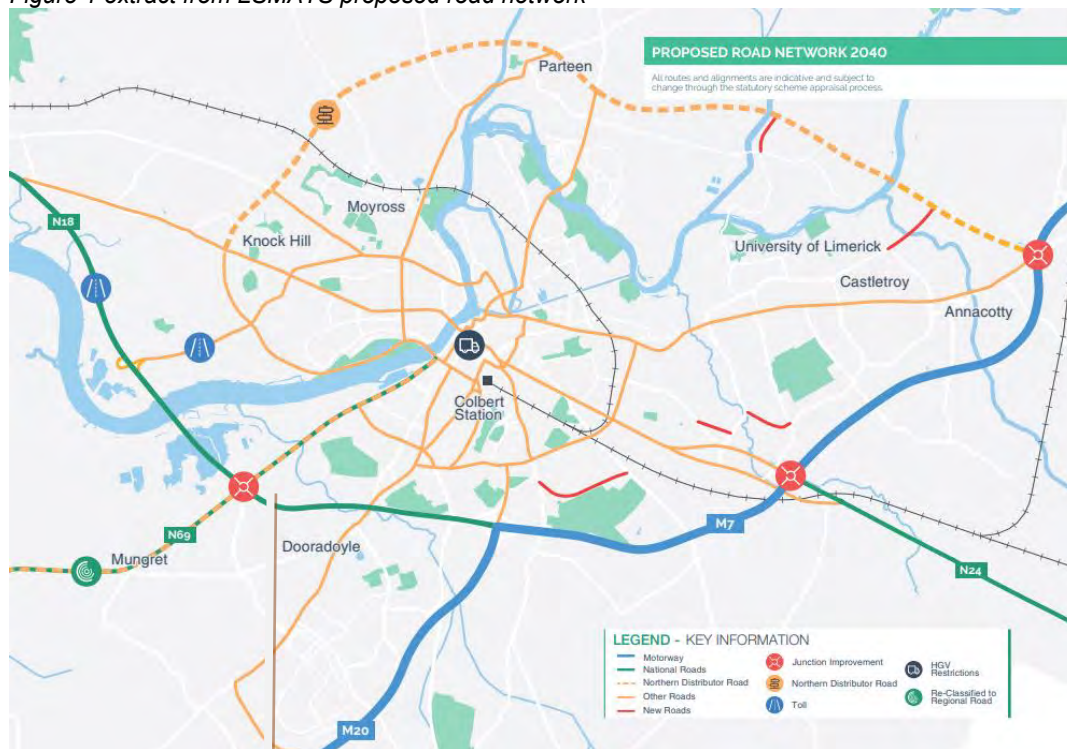
**Objective ECON O35 Limerick Food Strategy**

*It is an objective of the Council to support Limerick's food and drink producers in accordance with the aims/goals established under the Food Strategy for Limerick 2016–2018 and any update thereto.*

*Limerick Shannon Metropolitan Area Transport Strategy ('LSMATS')*

The LSMATS states that “the M7/N18 Limerick City Bypass is of key strategic important to the Strategy as it provides strategic linkage between the M7 Dublin, N24 Waterford, N/M20 Cork, N21 Tralee, N69 Port of Foynes, N18 Galway and N19 Shannon. Further to that, the LSMATS confirms that the mainline carriageway of the M7/N18 operates within capacity throughout the day, however, there is recognition of localised congestion on the grade separated junctions with this road, which includes the Dock Road Interchange. The LSMATS provides for improvements to this junction (in the immediate short-term) to ensure that this localised junction congestion does not impact on the strategic function of the M7/N18 road. The LSMATS illustrates (As per the extract below), how connected the subject site is by public road and public transport to and within the Limerick Metropolitan urban area as well as future objectives to enhance that urban mobility.

Figure 1 extract from LSMATS proposed road network



Subject lands

### Policy Summary

The spatial development objectives for the Limerick City Metropolitan area therefore need to identify and allocate appropriate locations and landuse types within the urban area which can contribute to the most efficient and effective use of serviced urban land for this planned period of urban growth and development.

It is clear from collective consideration of national, regional and local planning policy objectives, that connectivity between Limerick and other large urban centres and transport nodes is critically important for the economic development of the region and the metropolitan city area. The subject plots are situated on a decisive gateway position between the city and the surrounding urban and rural hinterland, and existing transport corridor between Limerick and other major urban centres.

Whilst a portion of the subject site has been identified for 'enterprise and employment' landuse, it is considered that the pivotal position of the subject site on the southern edge of the city environment, with accessibility to the inter-regional transport network and other transport modes (air and sea), and which has been identified for infrastructural upgrade, supports greater optimisation of land use at this location to support economic development in the manner envisaged in policy objectives ECON O13, ECON O19, ECON O24, and ECON O35 for example. The location on the periphery of the city centre with access to strategic and interregional network and transport nodes is an obvious location for enterprise and urban landuse which would benefit from high levels of accessibility and connectivity.

### 3.5 Flood Risk is not an impediment to provision of development of the Property

Mindful that the subject property, particularly Plots B, C and D appear to be situated within areas of potential flood risk (floodzones A and B), a detailed Site-Specific Flood Risk Assessment (SSFRA) has been undertaken by Punch Consulting in order to assess potential flood risk to each plot and a copy enclosed with this submission. Each plot has been assessed for flood risk in accordance with 'The Planning System and Flood Risk Management Guidelines – DoEHLG-2009'.

Taking into account the hydrological and urban circumstances, the SSFRA establishes that part of the plots are located within Flood Zone C when flood defences are taken into consideration but, are within Floodzone A in an undefended scenario due to coastal flood risk. The extent of that predicted Floodzone A appears to match the 'Agriculture' and 'semi-natural openspace landuse zonings as they applies to each plot. Whilst this is the current situation, it must be noted also that Limerick City and County Council has appointed RPS Consulting Engineers to work on the Limerick City and Environs Flood Relief Scheme (FRS). Although the delivery of this project is unlikely to be completed in the short term, the completed FRS will offer more reliable flood defence for the site in the future.

The SSFRA suggests that, given the low probability of flooding on the Flood Zone A as it occurs to the subject plots, it is highly likely that less vulnerable uses such as 'Enterprise and Employment' could be justified subject to justification test carried out in accordance with Flood Risk Management Guidelines for Planning Authorities<sup>3</sup> (**'the flood risk guidelines'**). The FRA suggests that the residual risk of flooding thereafter (after consideration of the justification test) can be addressed by flood mitigation measures appropriate to each site and landuse circumstance.

In the context of 'the flood risk guidelines', the property owner is mindful that the explanation of the 'Principles and Key Mechanisms' to flood risk management as set out in those guidelines, sets out various "*less vulnerable development*" uses which might be appropriate landuse activities within areas at flood risk, subject to tests and/or best practice flood protection and prevention measures. This includes *inter-alia*; buildings used for retail, leisure, warehousing, commercial, industrial and non-residential institutions; waste treatment, processing, and local transport infrastructure as expressly identified in the flood risk management guidelines.

There is nothing in the flood risk management guidelines which directs that that the only suitable landuse, within areas at potential risk to flood, must be non-development – agriculture, or semi-natural open-space or other amenity function. The less vulnerable uses referenced above from the flood risk guidelines, are commensurate with uses permissible under 'enterprise and employment' in the draft Limerick Plan.

In this regard, it is pertinent to refer to section 3.7 of the flood risk guidelines which states:

*"it is recognised that the existing urban structure of the country contains many well established cities and urban centres, which will continue to be at risk of flooding. At the same time such centres may also have been targeted for growth in the National Spatial Strategy, regional planning guidelines and the various city and county development plans taking account of historical patterns of development and their national and strategic value"*

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<sup>3</sup> Published by the Department of Environment Heritage and Local Government, 2009

In accordance with the flood risk management guidelines, landuse objectives which would support 'less vulnerable'<sup>4</sup> development activity, can be provided within areas defined as 'Floodzone A' subject to a Development Management justification test.

In this instance, the Plan-making Justification Test (Box 4.1) is the relevant test to be used at the plan preparation and adoption stage where it is intended to zone or otherwise designate land which is at moderate or high risk of flooding. Table 1 below details why zoning must be considered on the subject lands and demonstrates why zoning of the site for 'enterprise and employment' use would be in compliance with the Justification Test and the Planning System and Flood Risk Management Guidelines.

### 3.6 Flood Risk (Development Management) Justification Test

Table 1	
<b>'Box 4.1' Justification Test Criteria to be addressed</b>	<b>Response</b>
<p><b>1. The urban settlement is targeted for growth under the National Spatial Strategy, regional planning guidelines, statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</b></p>	<p><i>Limerick has been identified in the National Planning Framework (NPF) as one of the five cities in the country which is the subject of a Metropolitan Area Strategic Plan. This emphasises the Metropolitan Area's national importance, for significant additional growth. This is echoed in the Regional Spatial and Economic Strategy for the Southern Region, which mentions that the Limerick Shannon Metropolitan area is "a key economic driver for the region and Ireland". Limerick has been identified for significant population growth in the NPF along with an objective that 50% of that future growth be located within the city and its suburbs. (NPO2a).</i></p> <p><i>Limerick City is located at a pivotal point on the Atlantic Economic Corridor. The NPF and RSES confirms that Limerick has the potential to generate and be the focus of significant employment and housing growth.</i></p>
<p><b>2. The zoning or designation of the lands for the particular use or development type is required to achieve the proper planning and sustainable development of the urban settlement and, in particular:</b></p>	
<p><b>a Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement</b></p>	<p><i>Zoning of the subject would assist achieving proper planning and sustainable development of the metropolitan city centre given that the intended function of the lands – to facilitate 'enterprise and employment' at a pivotal location adjacent to the city centre, at a strategic intersection with the national road and transportation corridors will assist in consolidating urban expansion within the defined urban city core supporting economic growth and employment for the metropolitan area.</i></p>
<p><b>b. Comprises significant previously developed and/or under-utilised</b></p>	<p><i>The land is greenfield in nature and is significantly underutilised in that capacity. Given its strategic gateway position with</i></p>

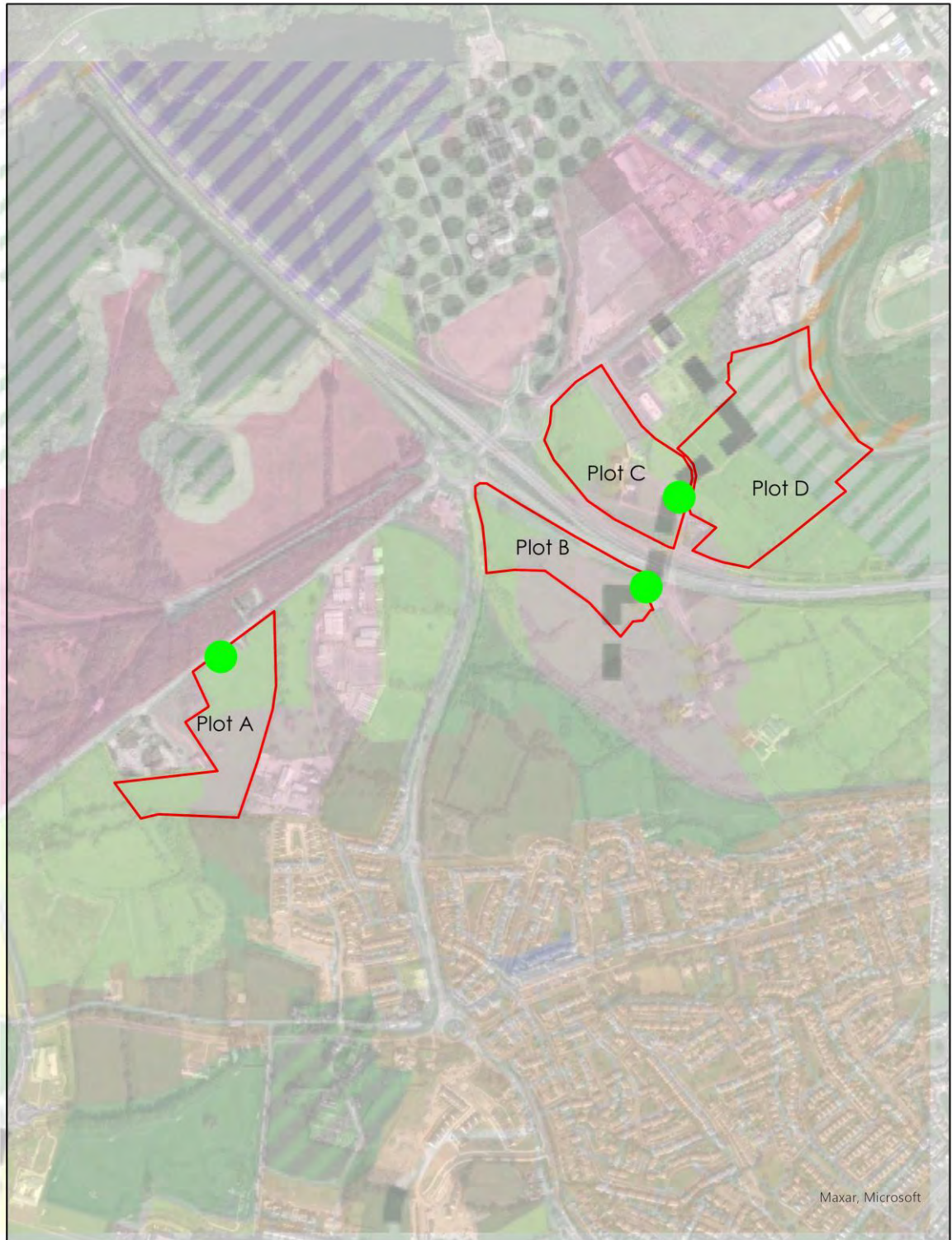
<sup>4</sup> 'Less vulnerable' in the context of flood risk management

<p><b>land.</b></p>	<p><i>immediate access to both the city centre and the transport corridor accessing the western seaboard, and other major intra urban cities, zoning of the subject site for enterprise and employment would contribute to effective utilisation of serviced urban land within the settlement.</i></p>
<p><b>c. Is within or adjoining the core of an established or designated urban settlement.</b></p>	<p><i>The subject site is located adjacent to the core Limerick city metropolitan area – a settlement designated for growth.</i></p>
<p><b>d. Will be essential in achieving compact and sustainable urban growth.</b></p>	<p><i>Use of the subject site for the purpose of enterprise and employment uses can contribute to compact and sustainable growth by consolidating such uses within the built envelope of the existing city urban area and create synergies and opportunities with uses which are less suited to core centre locations, but which still need access to the city centre (which is in close proximity) and access to the national transport corridors extending north to Clare/Galway, south to Cork, East to Dublin and southwest to Kerry.</i></p>
<p><b>e. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement</b></p>	<p><i>There is no other alternative site at lower risk to flooding which present an equal or better degree of location, accessibility and proximity to the city core, situated at the western gateway location and adjacent to the strategic transport corridors. Whilst the property owner's lands do have some aspects of enterprise and employment land use zoning objectives designated to them in the draft plan, they are of insufficient size and of isolated formation to warrant investment in development of those or to be marketable for such uses. It is only the collective consideration of the lands at this location which become commercially viable, and the development of areas which are at risk to flooding will still be required to undergo a development management 'justification test' pending consideration of site specific considerations, and development specific uses and development arrangements.</i></p>
<p><b>A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere. N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment</b></p>	<p><i>Not only has a SFRA been carried out as part of the SEA, but so too has a SSFRA which examines the specific characteristics of each plot of land and which confirms that site specific and development specific flood risk measures can be considered at detailed development management stage to ensure that development will not cause unacceptable adverse impacts elsewhere.</i></p>

Therefore, in principle, and subject to compliance with a managed approach to flood risk as set out in the aforementioned guidelines, there is sufficient justification to support the zoning of all of the subject properties for 'enterprise and employment' in accordance with the flood risk management guidelines, and that the potential flood risk, does not dismiss the principle of suitable development uses.

#### 4.0 CONCLUSION

For the material reasons stated herein, including; the suitability of the subject sites and supporting infrastructure; National, Regional and local planning objectives which support settlement and employment growth in the Limerick City Metropolitan Area; having regard to the strategic gateway and highly accessible location; and the ability of the proposed enterprise and employment use to comply with the flood risk management guidelines, the property owner respectfully requests that the land use zoning objective in the Development Plan is amended to provide for 'enterprise and employment' land uses.



● Existing Access Points



Figure 1 Site Location with zoning (and existing access points)





-  Site Locations
-  Special Areas of Conservation (SAC)



Figure 2 Sites within SAC context

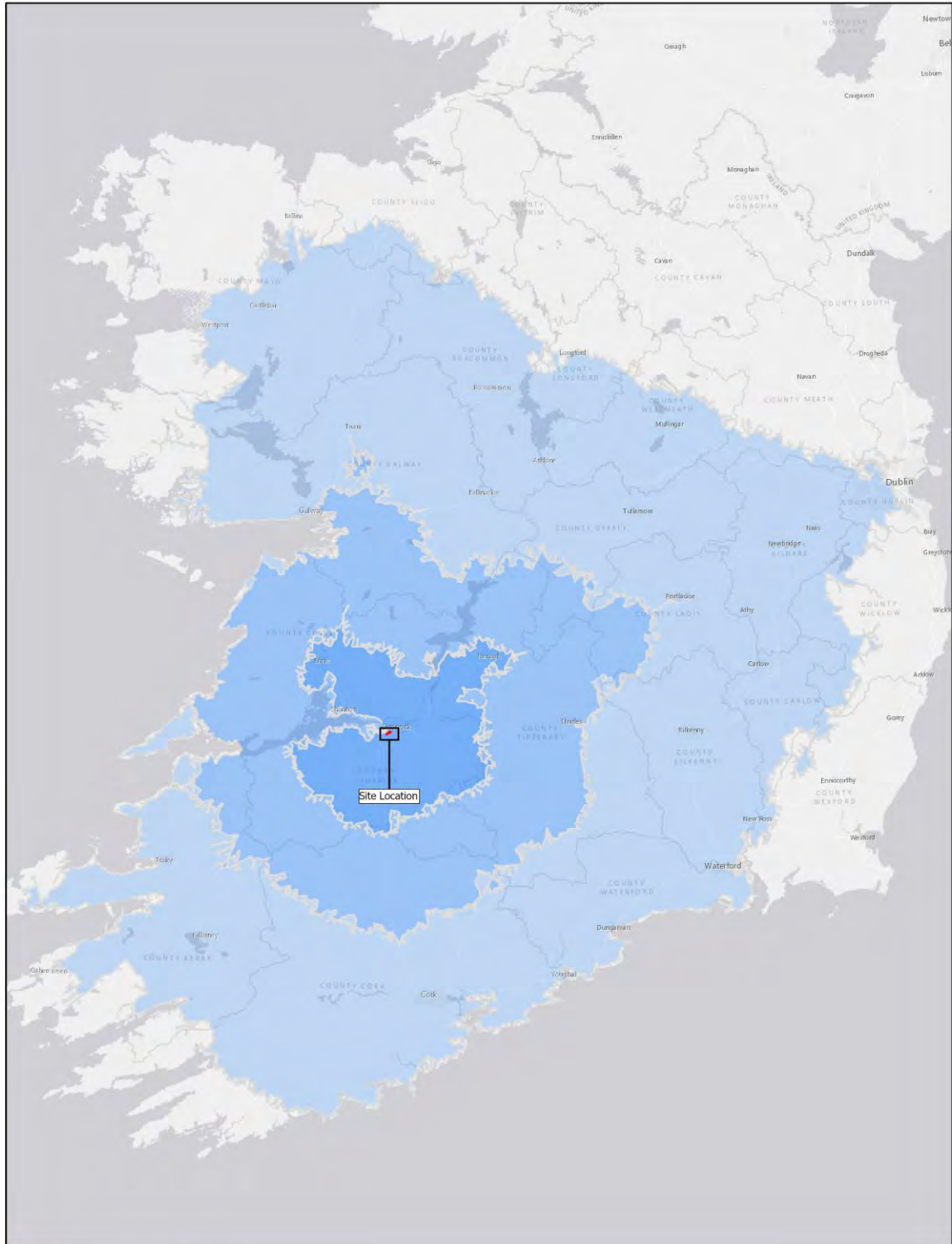




-  Site Boundaries
-  National Road
-  Dual Carriageway
-  Motorway



Figure 3 Strategic location on the local and national road network and edge of Metropolitan City area



- Site Boundaries
- 30 Minute Drivetime from Sites
- 60 Minute Drivetime from Sites
- 120 Minute Drivetime from Sites



Figure 4 National Catchment proximity from the subject site by drivetime

Appendix: Flood Risk Assessment

**Michael Gabbett Sites, Dock Road,  
Limerick**

**Site Specific Flood Risk Assessment  
211262-PUNCH-XX-XX-RP-C-001**

**September 2021**

## Document Control

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S3	P01	Final Issue	3 September 2021	T. O'Connell	D. Egan	J. Tiernan

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## **Executive Summary**

PUNCH Consulting Engineers carried out a Site-Specific Flood Risk Assessment in accordance with “*The Planning System & Flood Risk Management Guidelines*” published by the Department of the Environment, Heritage and Local Government in November 2009 for three sites located on the Dock Road.

The sites have all recently had portions of their lands rezoned in the Draft Limerick Development Plan as a result of the Flood Zone A designation in the Draft Strategic Flood Risk Assessment carried out by JBA Consulting on behalf of Limerick City and County Council. The sites zoning has changed from ‘Enterprise and Employment’ or ‘Industrial’ to new designations of ‘Agriculture’.

Various potential sources of flooding specific to each site were assessed and relevant mapping and online portals were visited in order to define the flood risk at the site. The site was visited by PUNCH Consulting Engineers which verified the findings of the desktop study.

It was determined that all three sites are currently protected by existing flood defences on the River Shannon and Ballinacurra Creek to a varying degree and the actual flood risk to the site is currently low due to the protection that these flood defences currently offer.

However, the FRMG advise that flood zones ignore the presence of defences. Therefore, it must be concluded that each site has an area designated Flood Zone A for coastal flooding as per the JBA mapping presented in the Draft SFRA.

If these flood defences could be accounted for, parts of the sites could be classified as Flood Zone C and Flood Zone B but the residual risk of flooding would still need to be accounted for.

Potential development options are discussed in the report based on the relevant flood zoning designation. Given the defended Flood Zone A areas noted on part of each site, development other than ‘water compatible use’ will be subject to a Justification Test in accordance with The Planning System and Flood Risk Management Guidelines dependent.

Given the low probability of flooding on the defended Flood Zone A designated site areas, it is highly likely that a ‘less vulnerable use’ such as ‘Enterprise and Employment’ could be justified. The sites are all well serviced in regard drainage and access requirements and would therefore benefit from a ‘less vulnerable’ use zoning. Further planning advice is required for the Planning Justification (Box 4-1).

As part of each site is located in a defended flood zone, the residual risk of flooding must be addressed. Potential flood mitigation measures appropriate for the sites were discussed and based on an appropriate site development proposal they can be explored further.

Appropriately zoned development on the defended Flood Zone A portions of the site can be delivered at low risk of flooding and not increase the risk of flooding to adjacent or nearby areas through the implementation of standard flood mitigation measures and specifically engineered development flood mitigation measures.



## 1 Introduction

### 1.1 Background

PUNCH Consulting Engineers were appointed by Mr Michael Gabbett to carry out a Site-Specific Flood Risk Assessment for a number of sites in the vicinity of the Dock Road, Limerick.

The assessment is carried out in full compliance with the requirements of “The Planning System & Flood Risk Management Guidelines” published by the Department of the Environment, Heritage and Local Government in November 2009.

### 1.2 Existing Site

The site locations are shown in Figure 1-1 below. The land is generally low-lying flat land.

Site 1: The site is a greenfield site located furthest from the city is approximately 5.9 hectares and is bound by the N69 to the north with Mungret Civic Amenity Centre and Dog Shelter to the northwest. The OPW Arterial Drainage Maintenance office is located outside the southeast corner of the site.

Site 2: This site is a greenfield site located to the east of the Dock Road East and West Roundabouts and is divided by the N18. The portion of the site to the south of the N18 is 3.9 hectares with no existing buildings or structures located within the site boundary. The portion to the north is 5.65 hectares with a farm and dwelling located centrally on the site.

Site 3: This site appears to be used for agriculture at present. It is located closest to the city and is bounded by Ballinacurra Creek to the northeast and N18 to the south. The site is approximately 11.9 hectares with Riverside Park and Blackberry Business Park to the west. The land is generally flat.



Figure 1-1: Location of the Proposed development (site boundary indicated in red)

## 2 Relevant Guidance

### 2.1 The Planning System and Flood Risk Management Guidelines

In September 2008, “The Planning System and Flood Risk Management” Guidelines were published by the Department of the Environment, Heritage and Local Government in Draft Format. In November 2009, the adopted version of the document was published.

The Flood Risk Management Guidelines give guidance on flood risk and development. The guidelines recommend a precautionary approach when considering flood risk management in the planning system. The core principle of the guidelines is to adopt a flood risk sequential approach to managing flood risk and to avoid development in areas that are at risk. The sequential approach is based on the identification of flood zones for river and coastal flooding. The guidelines include definitions of Flood Zones A, B and C, as noted in Table 2-1 below. It should be noted that these do not take into account the presence of flood defences, as there remain risks of overtopping and breach of the defences.

Table 2-1: Flood Zone Designation

Flood Zone	Type of Flooding	Annual Exceedance Probability (AEP)
Flood Zone A	Coastal	Less than a 1:200 (0.5% AEP) year event
	Fluvial	Less than a 1:100 (1% AEP) year event
Flood Zone B	Coastal	Greater than a 1:200 (0.5% AEP) and less than a 1:1000 (0.1% AEP) year event
	Fluvial	Greater than a 1:100 (1% AEP) and less than a 1:1000 (0.1% AEP) year event
Flood Zone C	Coastal	Greater than a 1:1000 (0.1% AEP) year event
	Fluvial	Greater than a 1:1000 (0.1% AEP) year event

Once a flood zone has been identified, the guidelines set out the different types of development appropriate to each zone. Exceptions to the restriction of development due to potential flood risks are provided for through the use of the **Justification Test**, where the planning need and the sustainable management of flood risk to an acceptable level must be demonstrated. This recognises that there will be a need for future development in existing towns and urban centres that lie within flood risk zones, and that the avoidance of all future development in these areas would be unsustainable.

A three staged approach to undertaking an FRA is recommended:

**Stage 1: Flood Risk Identification** - Identification of any issues relating to the site that will require further investigation through a Flood Risk Assessment;

**Stage 2: Initial Flood Risk Assessment** - Involves establishment of the sources of flooding, the extent of the flood risk, potential impacts of the development and possible mitigation measures;

**Stage 3: Detailed Flood Risk Assessment** - Assess flood risk issues in sufficient detail to provide quantitative appraisal of potential flood risk of the development, impacts of the flooding elsewhere and the effectiveness of any proposed mitigation measures.

This report addresses the requirements for Stage 2.

## 2.2 Local Area Plan

The proposed site is covered by the Southern Environs Local Area Plan 2011-2017 which states the following with regards to flood risk:

### **Objective IN 5: Flood risk assessment**

*It is an objective of the Council to require a comprehensive flood risk assessment for proposals in zoned areas at risk of flooding or areas adjoining same. The effects up and down stream shall be considered as should the cumulative effects of these developments. Flood risk assessment shall be carried out to the appropriate level of detail to demonstrate that flood risk to and from the development can and will be adequately managed. Such assessment will have to be guided by the contents of the The Planning Systems and Flood Risk Management (November 2009) guidelines and any subsequent guidance on the topic. Where development is permitted in areas subject to flooding, flood mitigation requirements will be required by the Council in terms of design, both internal and external and in layout and in the provision of appropriate Sustainable Urban Drainage Infrastructure (SUDS).*

### **Objective IN 6: Flood risk and the Shannon CFRAM report**

*It is an objective of the Council to be guided by the measures proposed by the forthcoming Shannon CFRAM report.*

## 2.3 DRAFT LCCC Development Plan

The Draft Limerick Development Plan dated 2022 to 2028 is now available and states the following regarding flood risk:

### **Policy CAF P5: Managing Flood Risk**

*It is a policy of the Council to protect Flood Zone A and Flood Zone B from inappropriate development and direct developments/land uses into the appropriate lands, in accordance with 'The Planning System and Flood Risk Management Guidelines for Planning Authorities 2009' (or any superseding document) and the guidance contained in Development Management Standards. Where a development/land use is proposed that is inappropriate within the Flood Zone, then the development proposal will need to be accompanied by a Development Management Justification Test and site specific Flood Risk Assessment in accordance with the criteria set out under 'The Planning System and Flood Risk Management Guidelines for Planning Authorities 2009' and Circular PL2/2014 (as updated/ superseded). In Flood Zone C, the developer should satisfy themselves that the probability of flooding is appropriate to the development being proposed and should consider the implications of climate change.*

### **Objective CAF O20: Flood Risk Assessments**

*It is an objective of the Council to require a Site-specific Flood Risk Assessment (FRA) for all planning applications in areas at risk of flooding (coastal/tidal, fluvial, pluvial or groundwater), where deemed necessary. The detail of these Site-specific FRAs (or commensurate assessments of flood risk for minor developments) will depend on the level of risk and scale of development. A detailed Site-specific FRA should quantify the risks, the effects of selected mitigation and the management of any residual risks. The assessments shall consider and provide information on the implications of climate change with regard to flood risk in relevant locations.*

### **Objective CAF O22: Cooperation with Other Agencies**

*It is an objective of the Council to work with other bodies and organisations, as appropriate, to help protect critical infrastructure, including water and wastewater, within Limerick, from risk of flooding. Any subsequent plans shall consider, as appropriate any new and/or emerging data, including, when*

available, any relevant information contained in the CFRAM Flood Risk Management Plans and as recommended in the SFRA for the Draft Plan.

**Objective CAF O23: Flood Relief Schemes**

*It is an objective of the Council to support and facilitate the development of Flood Relief Schemes as identified in the CFRAM 10 Year Investment Programme.*

**Objective CAF O24: Minor Flood and Mitigation Works and Coastal Protections Schemes**

*It is an objective of the Council to support and facilitate the Office of Public Works Minor Flood and Mitigation Works and Coastal Protections Schemes.*

**Objective CAF O25: Strategic Flood Risk Assessment**

*It is an objective of the Council to have regard to the recommendations set out in the Draft Strategic Flood Risk Assessment prepared to support the Draft Plan.*

## **2.4 Land Zoning**

The proposed sites are currently zoned in the Southern Environs Local Area Plan 2011-2017. See extract below in Figure 2-1 from Map 1A of the Southern Environs Local Area Plan 2011-2017.

Site 1 is predominantly 'Industrial' with the north eastern corner zoned as 'Enterprise and Employment'. The location of the new link road is proposed to run diagonally through the site, from the southern boundary to the eastern. There is also a road proposed to connect the existing N69 to the proposed link road which runs from the northern point of the site to the eastern.

Site 2 is fully zoned as 'Enterprise and Employment' with the proposed link road running along and adjacent to the southern and southeastern site boundaries.

Approximately two thirds of Site 3 is also zoned as 'Enterprise and Employment'. The remaining third on the eastern end of the site is zoned as 'Semi-natural Open Space', taking into account that Ballinacurra Creek is running along the eastern border.

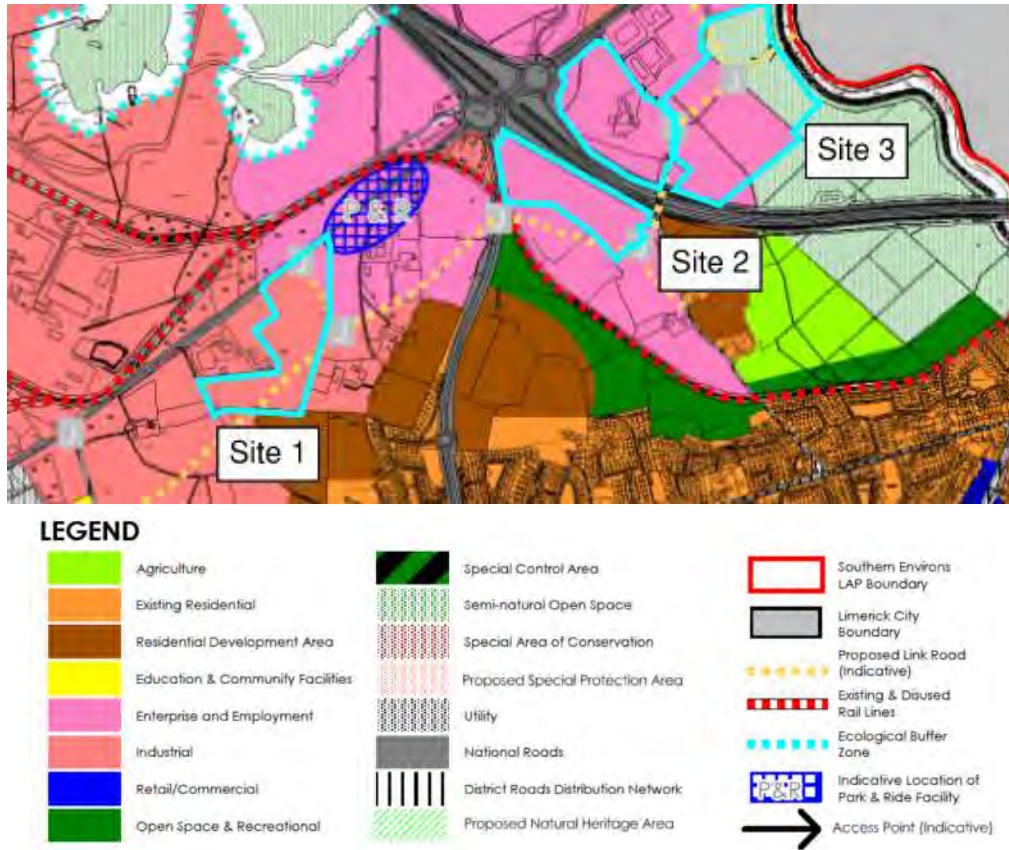


Figure 2-1: Southern Environs Zoning Map - Southern Environs Local Area Plan 2011-2017

The Draft Limerick Development Plan dated 2022-2028 is proposing to change the zoning of these sites to a mix of ‘Enterprise and Employment’ and ‘Agriculture’ with the area adjacent to Ballinacurra Creek remaining as ‘Semi-natural Open Space’.

Approximately 50% of Site 1 is zoned as ‘Enterprise and Employment’ with the most northern and western areas zoned for ‘Agriculture’. Unlike the existing Development Plan for the area, there is no proposed link road within the site boundary.

Similar to Site 1 above, approximately 50% of Site 2 is zoned as ‘Enterprise and Employment’ with the remaining site zoned for ‘Agriculture’. There is also an ‘Existing Residential’ zone shown in the middle of the site to the east of the N18. The proposed link road is shown along the southern boundary of the site.

Only a small section of the southwestern corner of Site 3 remains zoned for ‘Enterprise and Employment’ with the remainder changing to ‘Agriculture’ in the draft Limerick Development Plan. The eastern area of the site, adjacent to Ballinacurra Creek, is to remain zoned as ‘Semi-natural Open Space’.

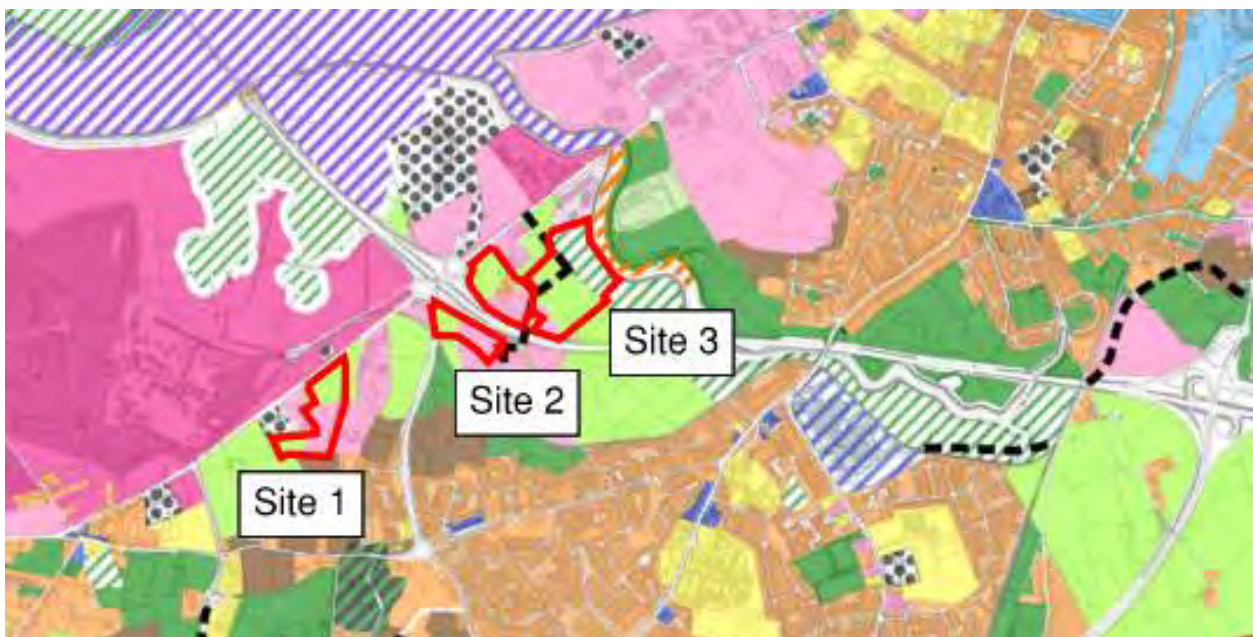


Figure 2-2: Extract from Land Use Zoning Map - Draft Limerick Development Plan 2022-2028

## **2.5 Flood Risk Management Plan**

The OPW publish Flood Risk Management Plans detailing the feasible range of flood risk management measures proposed for their respective river basins. The Flood Risk Management Plan for the Shannon Estuary South River Basin was published by the OPW in 19/02/2018 and is valid for the period 2018-2021. The plan lists current flood management measures in place and potentially viable Flood Relief Works.

### 3 Flood Risk Identification

#### 3.1 Existing Hydrogeological Environment

The existing hydrological environment is characterised primarily by the presence of the Shannon Estuary which is located approximately 1.2km north of the Dock Road.

Sites 1 & 2 are located approximately 500m south of Bunlicky Lake.

Running adjacent to the eastern boundary of Site 3 is Ballinacurra Creek which flows from southeast to northwest.

The hydrological environment around the site is shown in Figure 3-1 below.



Figure 3-1: Hydrological Environment around the site

All three sites are located within the lands benefitted by the Shannon Embankments South Scheme. The land is also located within the OPW Ballynaclogh Arterial Drainage Scheme which drains into the Shannon Estuary. Refer to Figure 3-12 below.



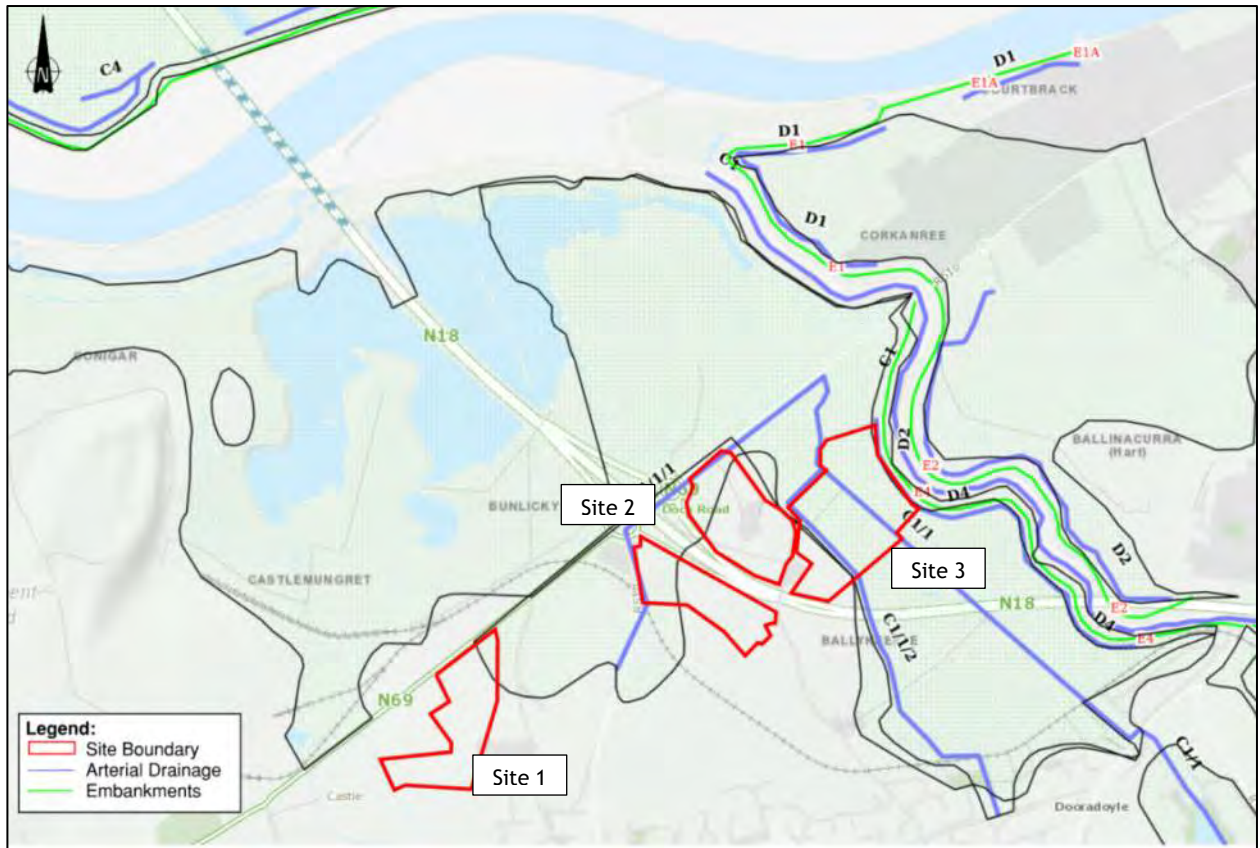


Figure 3-2: Extract from OPW Arterial Drainage Mapping

### 3.2 Topographical Survey

Topographical surveys of the sites and their environs were reviewed as well as available online contour mapping for each site. The information showed that Sites 1 & the western side of Site 2 are generally higher to the south and fall towards the N69. Site 3 and the eastern section of Site 2 are generally higher on the western side near the N18 and both fall eastwards.

### 3.3 Site Walkover

PUNCH Consulting Engineers visited the site on the 25<sup>th</sup> of August 2021 to assess the conditions and key features of the site, to establish any potential sources of flooding and to identify the likely routes of flood waters. Appendix A contains a selection of key images taken during the site visits.

The following was established from the site visit. Site 2 is split between 2 sections either side of the motorway. The comments below are therefore split into Site to east and west respectively for clarity:

- a) Site 1
  - i. Site 1 is currently accessed from the south side of the N69.
  - ii. The site is existing farmland and was recently cut for silage.
  - iii. The site is subdivided into a number of fields separated by electric fencing
  - iv. There is an existing ruined house located in the middle of the site. The house is abandoned and in a state of significant disrepair.
  - v. There was a spot of wet ground observed in the south-west corner. The ground in this area was wet with water visible in spots.
  - vi. The majority of the site was dry with good ground conditions
  - vii. The site is highest in the south with levels falling from south to north across the site
- b) Site 2 West
  - i. Site 2 West is currently accessed from a small local road to the south. The access is gated.
  - ii. The site is farmland and is used for grazing livestock.
  - iii. There is an existing drain along the southern portion of the western boundary of the site. This appears to tie in with the OPW channel noted in Section 3.1 above.
  - iv. Ground conditions on site were observed to be dry at the time of the visit
  - v. Levels on the site are highest to the south and fall away from south to north across the site.
- c) Site 2 East
  - i. There is an existing farmyard and residential property in the middle of the site with the rest of the site is farmland.
  - ii. There is an existing drainage ditch along the southern boundary of the site. The ditch was dry at the time of the visit. Ditch depth approximately 1.5m.
  - iii. Ground conditions were dry at the time of the visit.
  - iv. There are 3 no access points to the site. from the existing road to the south which lead to the farmland and farmyard respectively and a 3<sup>rd</sup> entrance from the road to the east which accesses the existing property.
  - v. The site is generally flat on the northern portion of the site with falls from the southeast towards the northwest.
- d) Site 3
  - i. The site is generally flat with a fall from the existing road to the west before levelling off across the rest of the site.
  - ii. The site is accessed from the existing road to the west.
  - iii. The site is currently used for grazing animals
  - iv. There are 3 no drainage ditches crossing the site as shown in Section 3.1. Two of the ditches cross the site from south to north and the third flows from south to north along the eastern boundary of the site.
  - v. The 3 ditches are crossed by existing culverted crossings
  - vi. All channels were observed to be approximately 2.1m deep.
  - vii. There are existing flood embankments just outside the eastern boundary of the site along Ballinacurra Creek.

### 3.4 Site Geology

The geology of the sites were reviewed using data from the Geological Survey of Ireland (available at [www.gsi.ie](http://www.gsi.ie)). The soil type at the location of the proposed development is identified as predominately marine/ estuarine sediments and deep well drained mineral (mainly basic) as seen in Figure 3-3.

Site 1 is predominately deep well drained mineral with some areas of marine/ estuarine, mineral poorly drained, peat and shallow well drained mineral.

Site 2 is composed of marine/ estuarine with some areas of mineral poorly drained, deep well drained mineral and shallow well drained mineral.

Site 3 is mainly marine/ estuarine with some areas of made ground, mineral poorly drained and deep well drained mineral.

The surrounding areas comprise mainly of deep well drained mineral (mainly basic), marine/ estuarine and made ground.

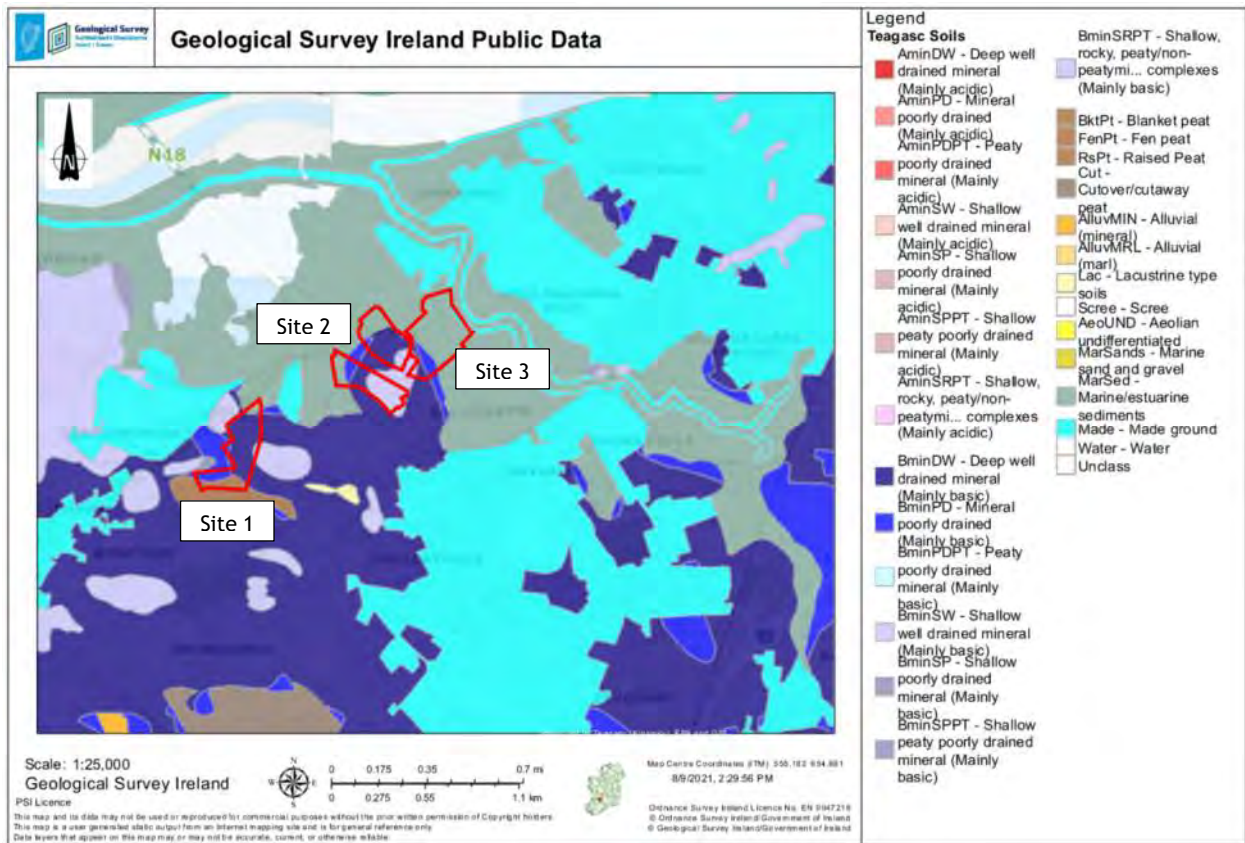


Figure 3-3: Geology of the surrounding area (source: Geological Survey of Ireland ([www.gsi.ie](http://www.gsi.ie)))

### 3.5 Groundwater Flooding

A review of the groundwater mapping shows that there is no groundwater flooding risk in this area.

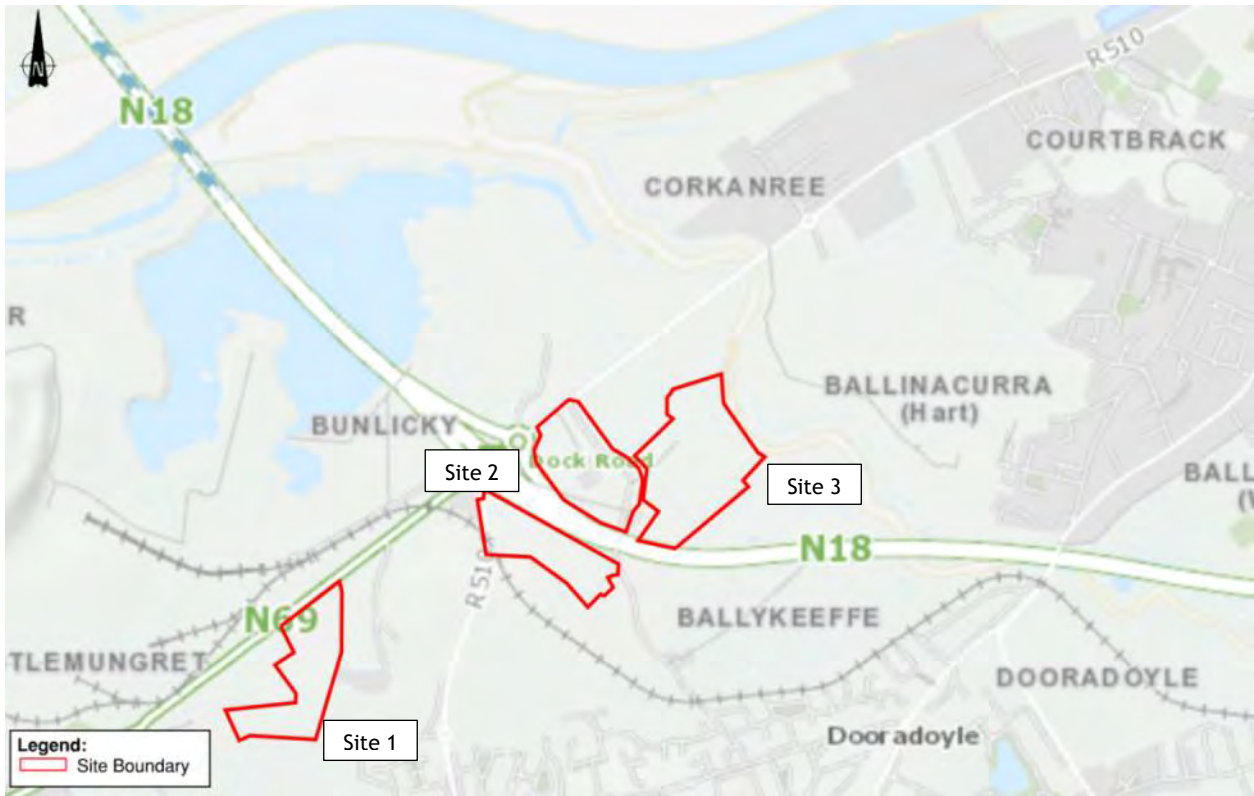


Figure 3-4: Groundwater Flooding Mapping

<https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=848f83c85799436b808652f9c735b1c>  
C

### 3.6 Review of Historic Mapping

A review of the OSI Historical maps<sup>1</sup> was carried out. Figure 3-5 shows an extract from the 25-inch historic map for the site. None of the sites are not indicated as “liable to flood” in the available historic OSI maps.

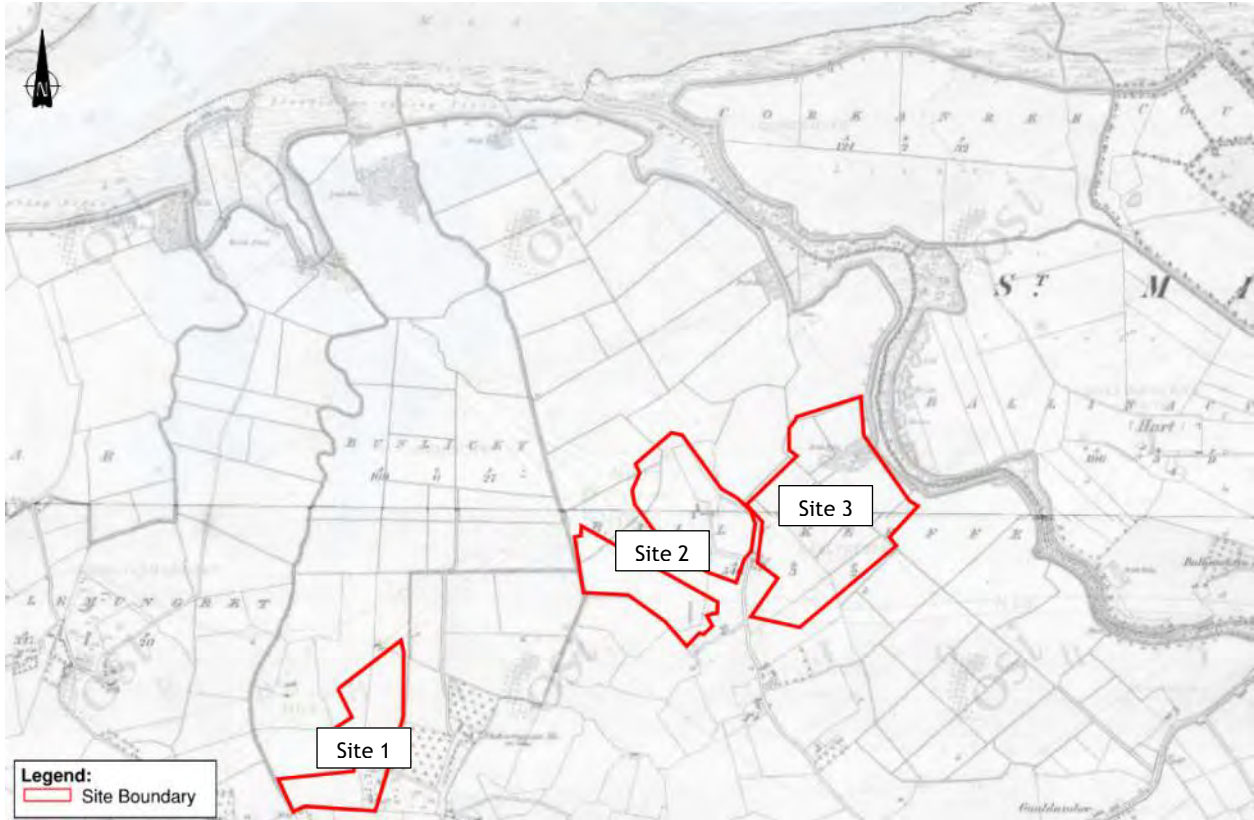


Figure 3-5: Extract from OSI historical 25-inch map

<sup>1</sup> Maps available: <http://map.geohive.ie/mapviewer.html>

### 3.7 History of Flooding

The Office of Public Works (OPW) Flood Hazard Mapping website holds a record of historic flood events. A review of the database indicated that there have been historical instances of flooding on Site 3 which is bounded by the Ballinacurra Creek, as shown in Figure 3-6 **Error! Reference source not found.**, see Appendix B for full report. Please note that this is not a guaranteed record of all flood events.

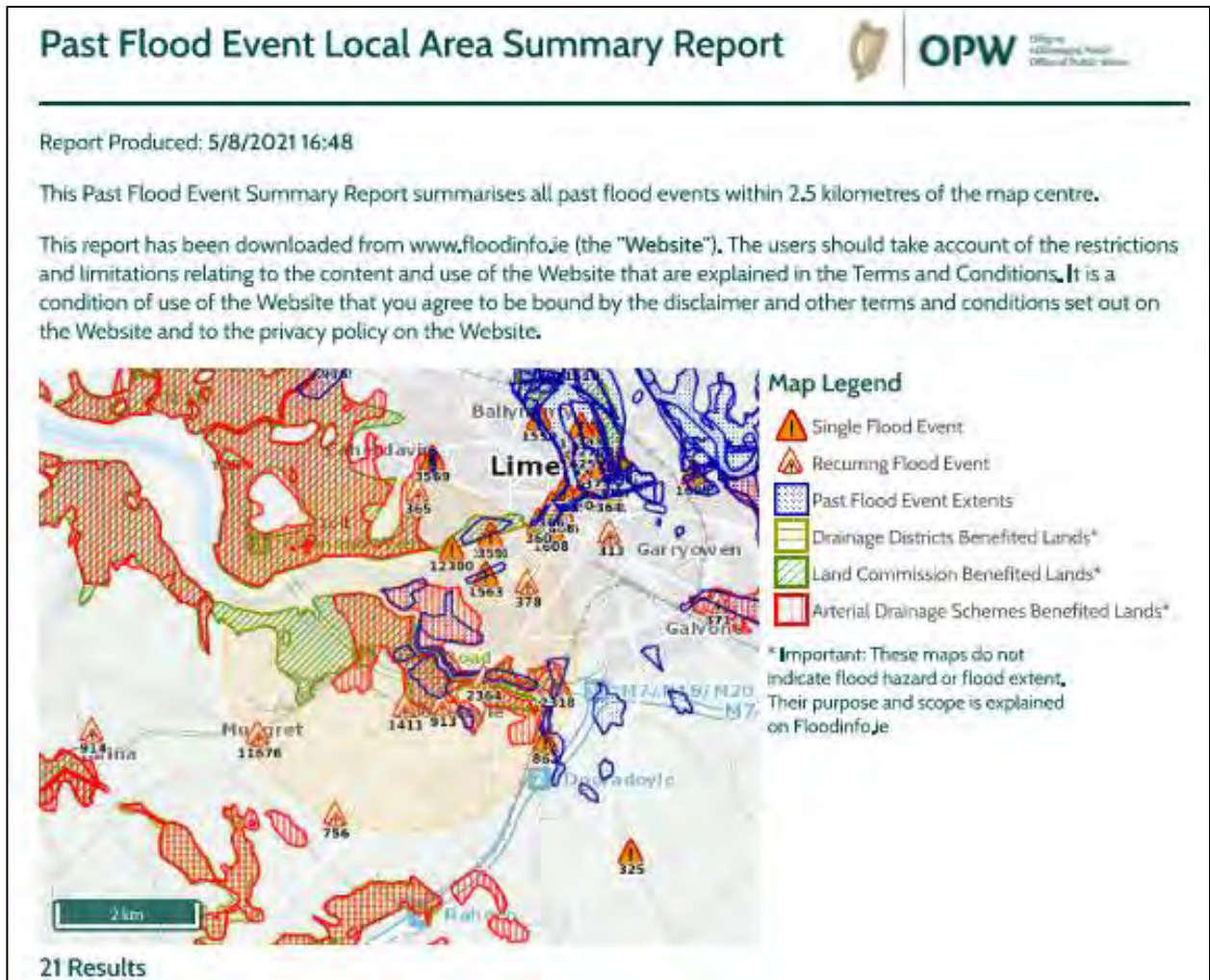


Figure 3-6: Extract from OPW Floodmaps Database Report (see Appendix B for full report)  
<http://www.floodmaps.ie/index.aspx?ReturnUrl=%2fView%2fDefault.aspx>

There is only a single flooding occurrence recorded on the proposed sites relating specifically to Site 3as outlined below:

#### Raheen Dooradoyle, Limerick February 1990:

Flooding to some extent or other has been a fairly regular event in certain area of the catchment for a number of years. In early February 1990, following a period of extreme rainfall and high tides, widespread flooding occurred in the catchment. See Figure 3-7 below for areas affected by the event.



Figure 3-7: Flooding experienced in 1990

### 3.8 Preliminary Flood Risk Assessment Mapping

The Catchment Flood Risk Assessment and Management Study (CFRAMS) is a national programme which to date has produced both a series of Preliminary Flood Risk Assessments (PFRA) which cover the entire country, as well as more detailed flood maps in certain catchments across the country.

Prior to the publication of the detailed CFRAMS flood mapping, a series of Preliminary Flood Risk Assessment (PFRA) maps were published. The PFRA flood zones are shown in Figure 3-3 below.

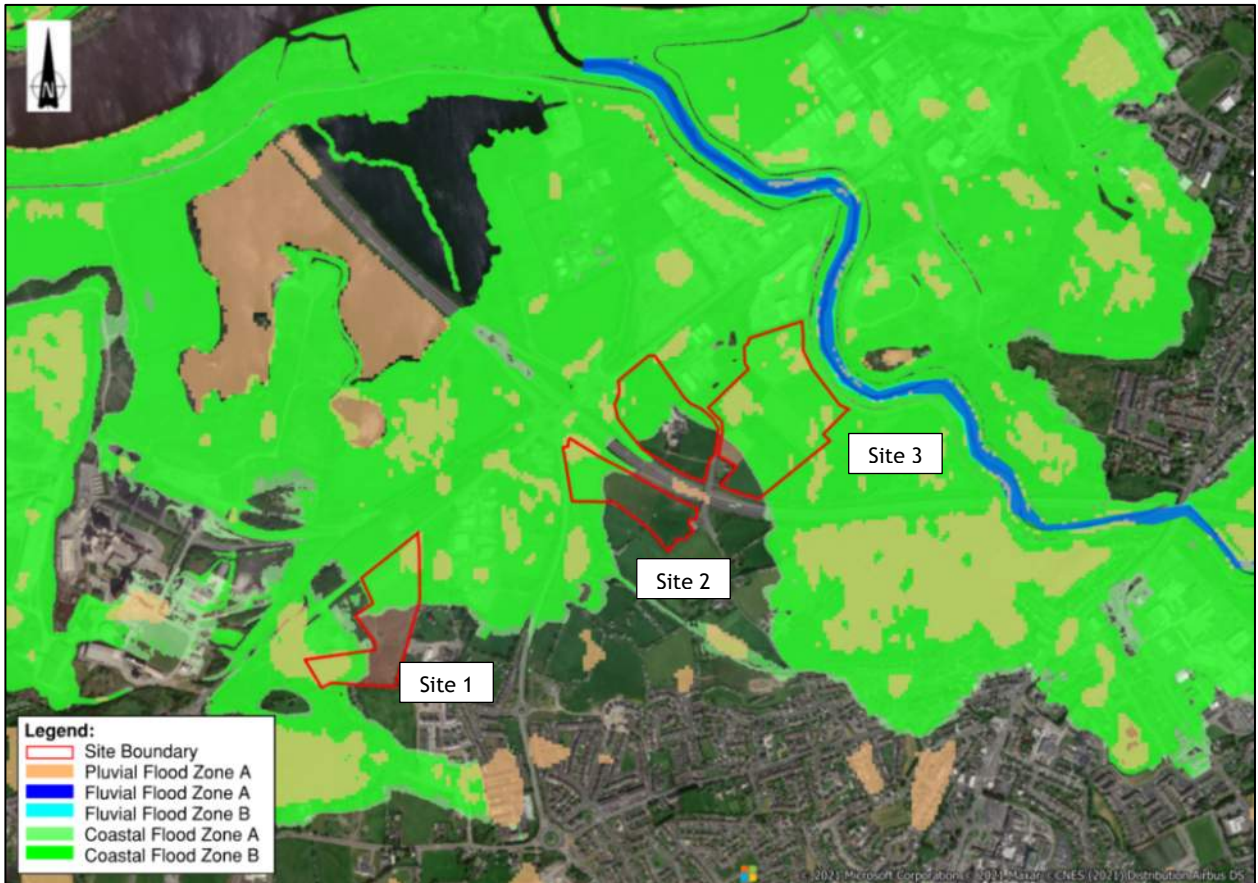


Figure 3-3: PFRA flood zone map indicating extents of preliminary flood zones

The PFRA mapping shown above indicates the sites are each partially located in Preliminary Coastal & Pluvial Flood Zone A.

It is noted that the PFRA modelling is a high-level study which uses a coarse ground to represent the topography of the country and does not take existing flood defences into account. As such PFRA fluvial, pluvial and coastal flood extents are to be utilised as an initial assessment only.



### 3.9 CFRAMS Mapping

As part of the CFRAMS programme, mapping is available online for public viewing, and the local area has been assessed as part of the Shannon CFRAMS. The OPW has published detailed flood hazard mapping for the area based on results from the CFRAMS. This includes flood extent and flood depth mapping for a number of return periods for fluvial and coastal flood events. The CFRAMS assessment in this area is based on hydraulic modelling of the River Shannon and its tributaries.

Figure 3-4 below is an extract from the relevant Shannon CFRAMS fluvial flood map and Figure 3-5 overleaf is an extract from the relevant Shannon CFRAMS coastal flood map for the area surrounding the proposed development site. Full CFRAMS maps for the area are included in Appendix C of this report.

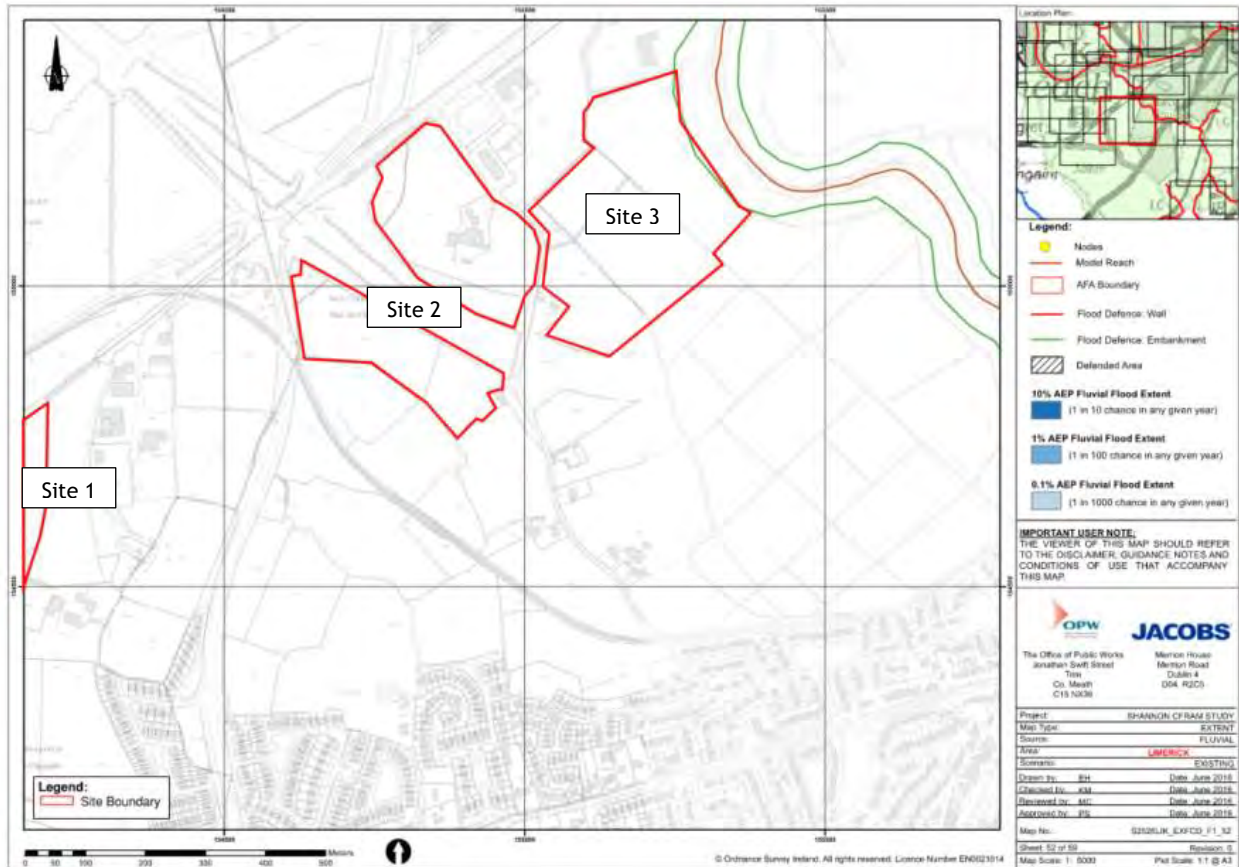


Figure 3-4: Extract from the CFRAMS fluvial map for the area (site indicated in red)

<sup>1</sup> Maps available: <http://www.floodinfo.ie/map/floodmaps/?X=6919597,223688143&Y=-959644.9352880842&Z=15>

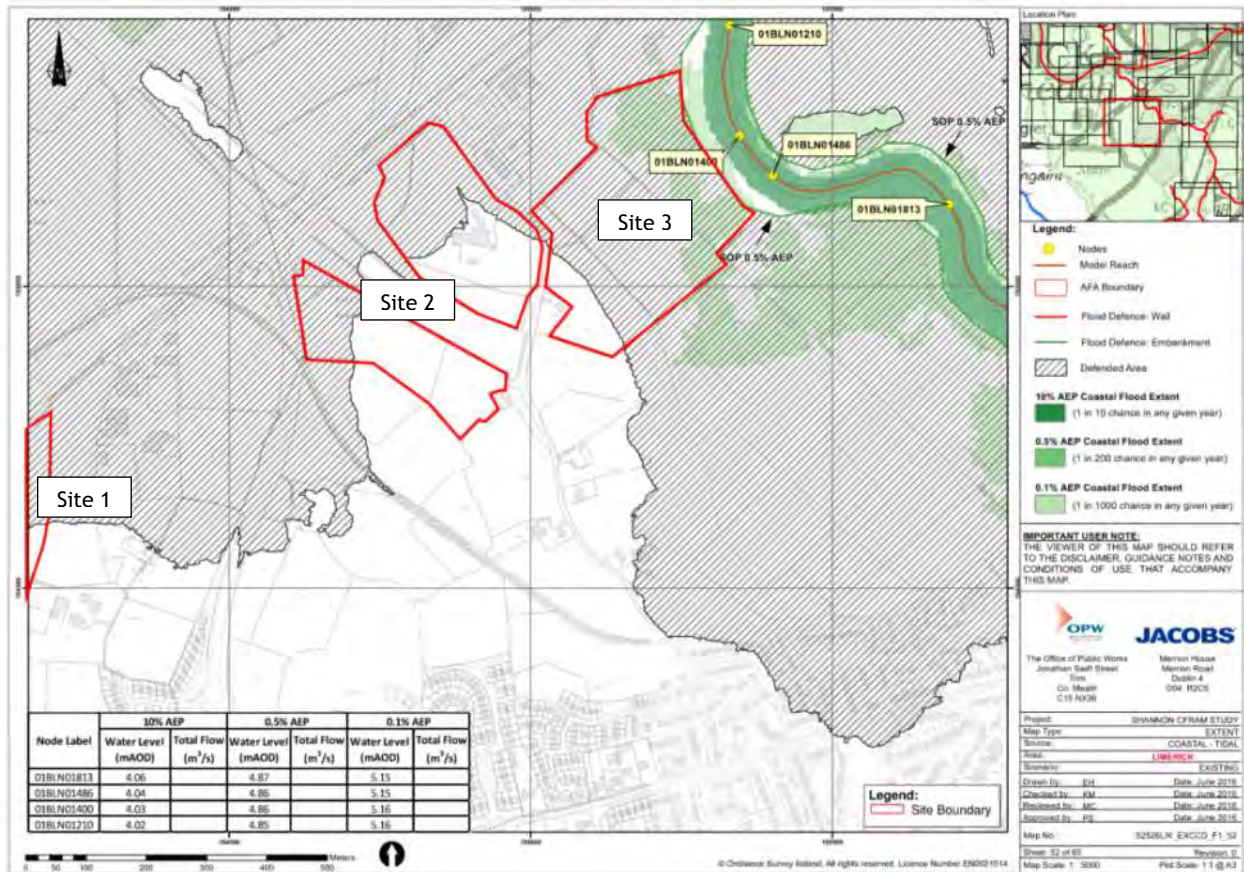


Figure 3-5: Extract from the CFRAMS coastal map for the area (site indicated in red)

The CFRAM mapping indicates that there is a 0.1% AEP Coastal Flood Extent partially noted on Site 3 (green hatch) and that each of the sites is partially noted as located in a ‘Defended Area’.

LCCC has advised that the 0.1% AEP Coastal Flood Extent shown is the predicted flood level at the site during a breach of the flood defences when fully functional.

The closest node to the site notes flood levels in the Ballinacurra Creek as per Table 3-1 below. This level ignores the presence of flood defences altogether and also corresponds to the extent of the Defended Area noted on the mapping.

Table 3-1: CFRAM Coastal Predicted Flood Levels in Ballinacurra Creek in Vicinity of Site

Node	0.5% AEP (mAOD)	0.1% AEP (mAOD)
01BLN01400	4.86	5.16

### 3.10 Existing Flood Defences

The CFRAM maps shown in Figure 3-49 and Figure 3-5 identify a flood defence embankment located on the eastern boundary of Site 3. There are flood defence embankments located along both banks of Ballinacurra Creek in the vicinity of the site. These defences are noted as providing a standard of protection of 0.5% AEP. Flood mapping presented in the CFRAMS study ignores the presence of flood defences.

### 3.11 Breach Analysis

As part of the CFRAM Study, a breach analysis was carried out to assess the potential flood extents in the event of a breach failure as part of the Preliminary Options Report for the Unit of Management (UoM) 25 and 26 (2016). In May 2018 the OPW released the Flood Risk Management Plan for the Shannon Upper & Lower, River Basin 25/26. A number of locations on the tidal reaches of the Shannon and the Ballinacurra Rivers were analysed as part of this to assess the effect of a failure in flood defences on the surrounding area. Upon a review of this analysis, PUNCH identified three of these locations which impacted upon the site of the proposed development. It appeared that the embankment for the N18 National Primary Route behaved as an effective barrier to large tidal inundations from both sides. Of the three breach locations which impacted the site, one breach location is located to the west of the N18 and the two further locations that impacted the site were on the east. The locations of the breaches which impacted the study site are identified in Figure 3-6 below.

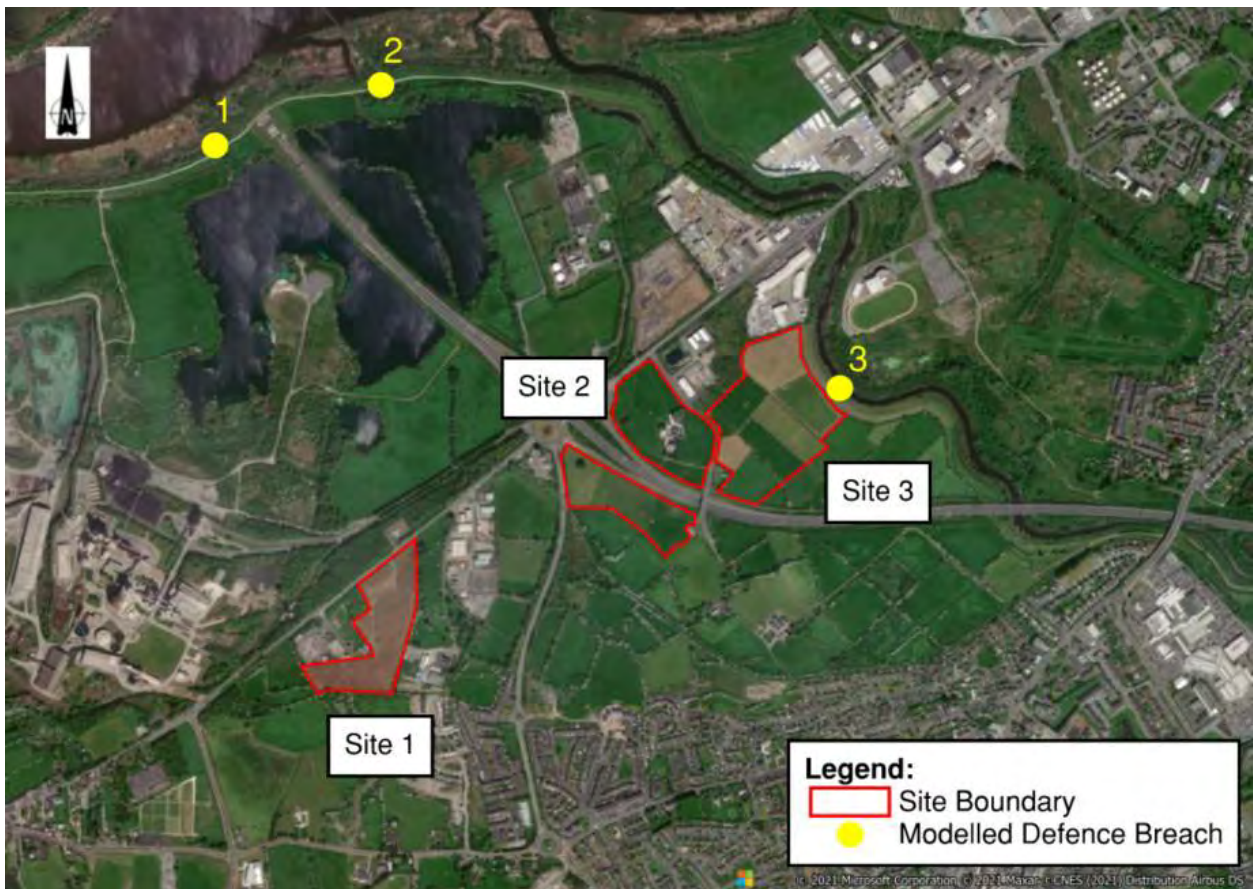


Figure 3-6: Locations of modelled CFRAMS defence breaches which impacted upon the site

The modelled breach which had the largest impact on the sites were location 2 for Site 2 and 3 for Site 3 as shown in Figure 3-6 above.

An extract from these maps, with the site boundary overlain, shows the flood extents and the flood depths at the site.

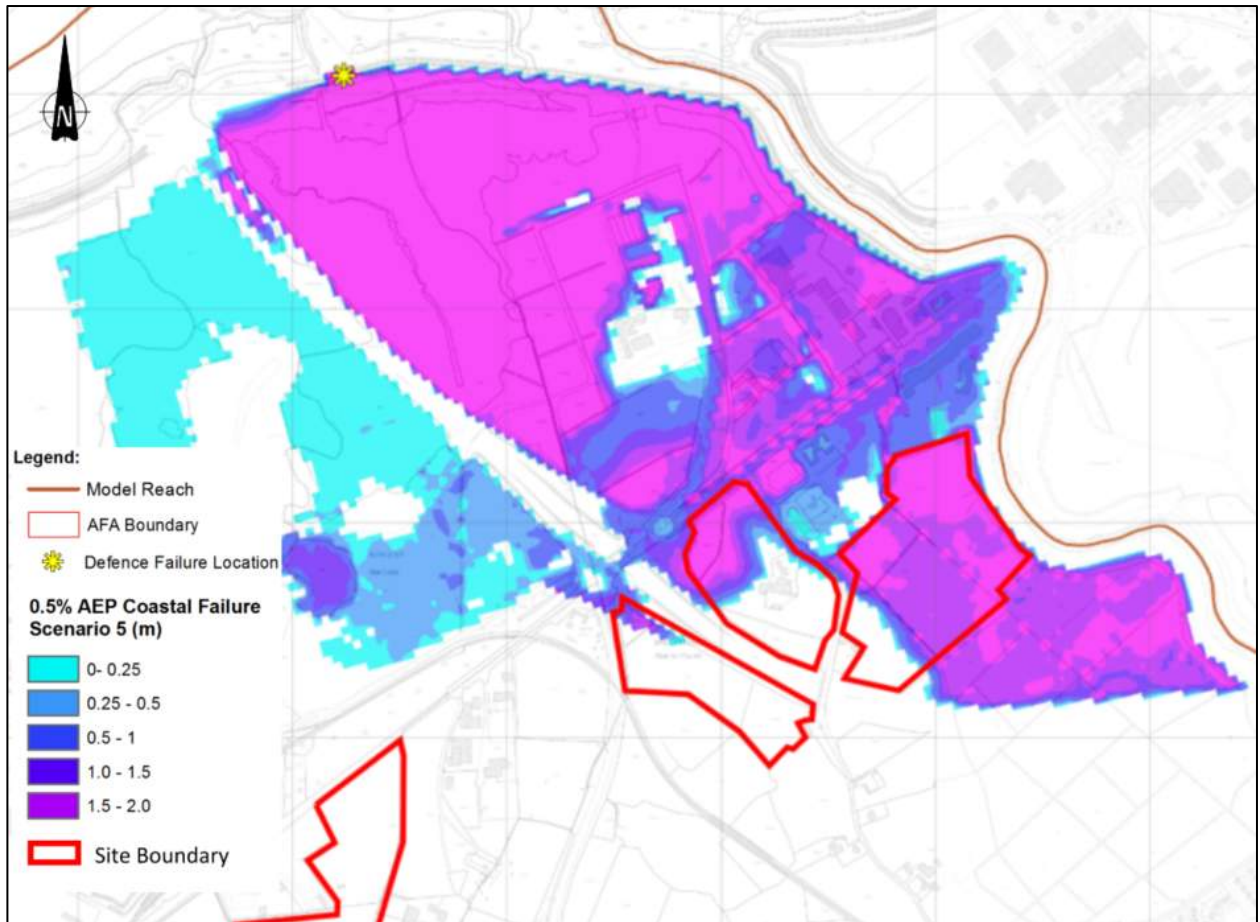


Figure 3-7: Point 2 0.5% AEP Flood extents from breach on River Shannon flood embankments

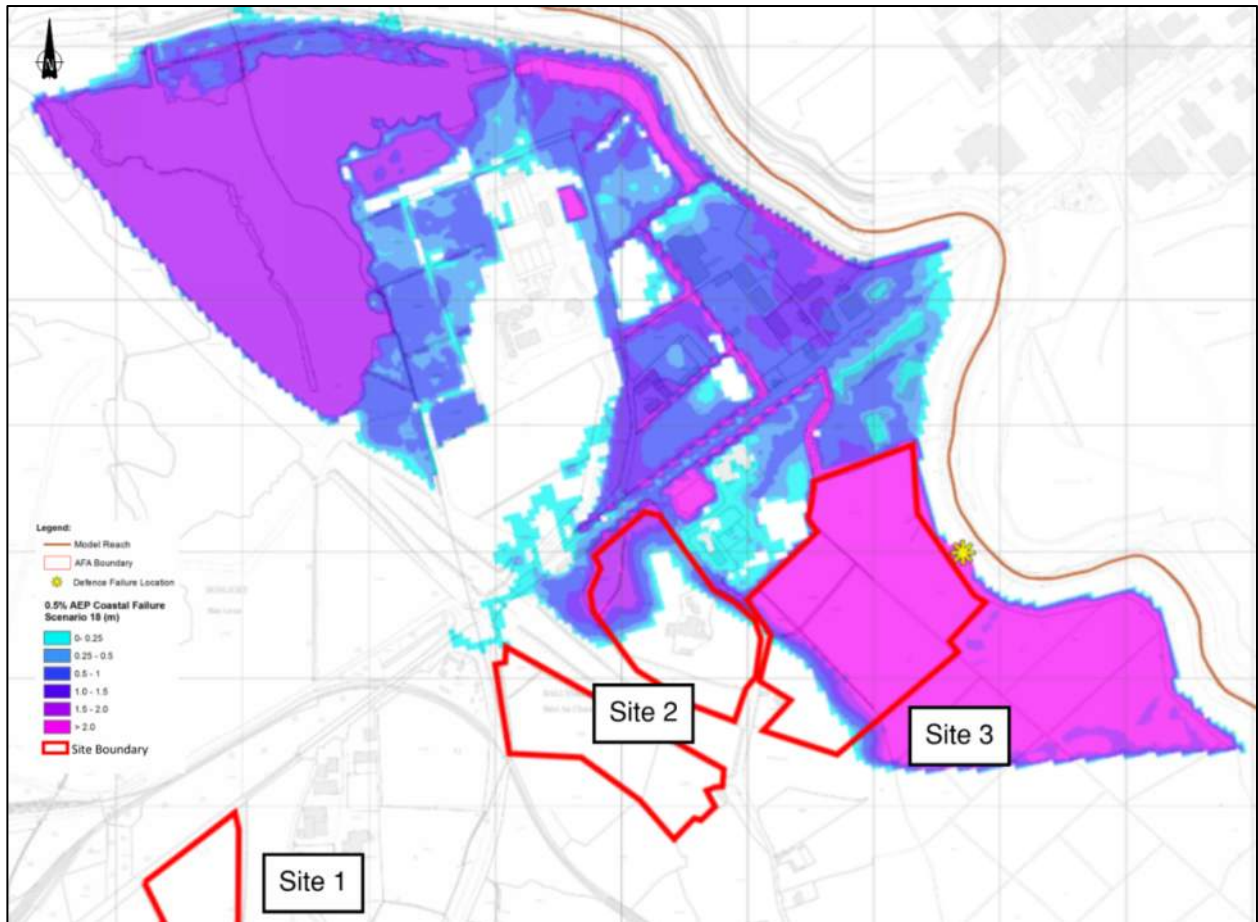


Figure 3-8: Point 3 0.5% AEP Flood extents from breach on River Shannon flood embankments

Based on the analysis carried out, Site 1 and the western side of Site 2 experienced no flooding for all three defence breach points.

Site 2, as shown in Figure 3-7, is expected to experience flooding of 2m or greater in approximately a third of the eastern side of the site. This area of the site is proposed to be rezoned to ‘Agriculture’ in the Draft Limerick Development Plan.

The results of the analysis from point 3 show flooding of 2m or greater for the majority of Site 3, as shown in Figure 3-82 & Figure 3-13 above. Similar to Site 2 this land is predominately zoned for ‘Agriculture’ with approximately a third of the site to the east zoned for ‘Semi-Natural Open Space’.

### 3.12 Draft Strategic Flood Risk Assessment

The Draft Strategic Flood Risk Assessment dated 26<sup>th</sup> June 2021 and prepared by JBA Consulting as a part of the Draft Limerick Development Plan 2022-2028 provides guidance for the integration of flood risk management into the development strategy for Limerick City and County.

In the report, flooding maps are provided for Limerick City and other settlements in Limerick County as shown below in Figure 3-9.

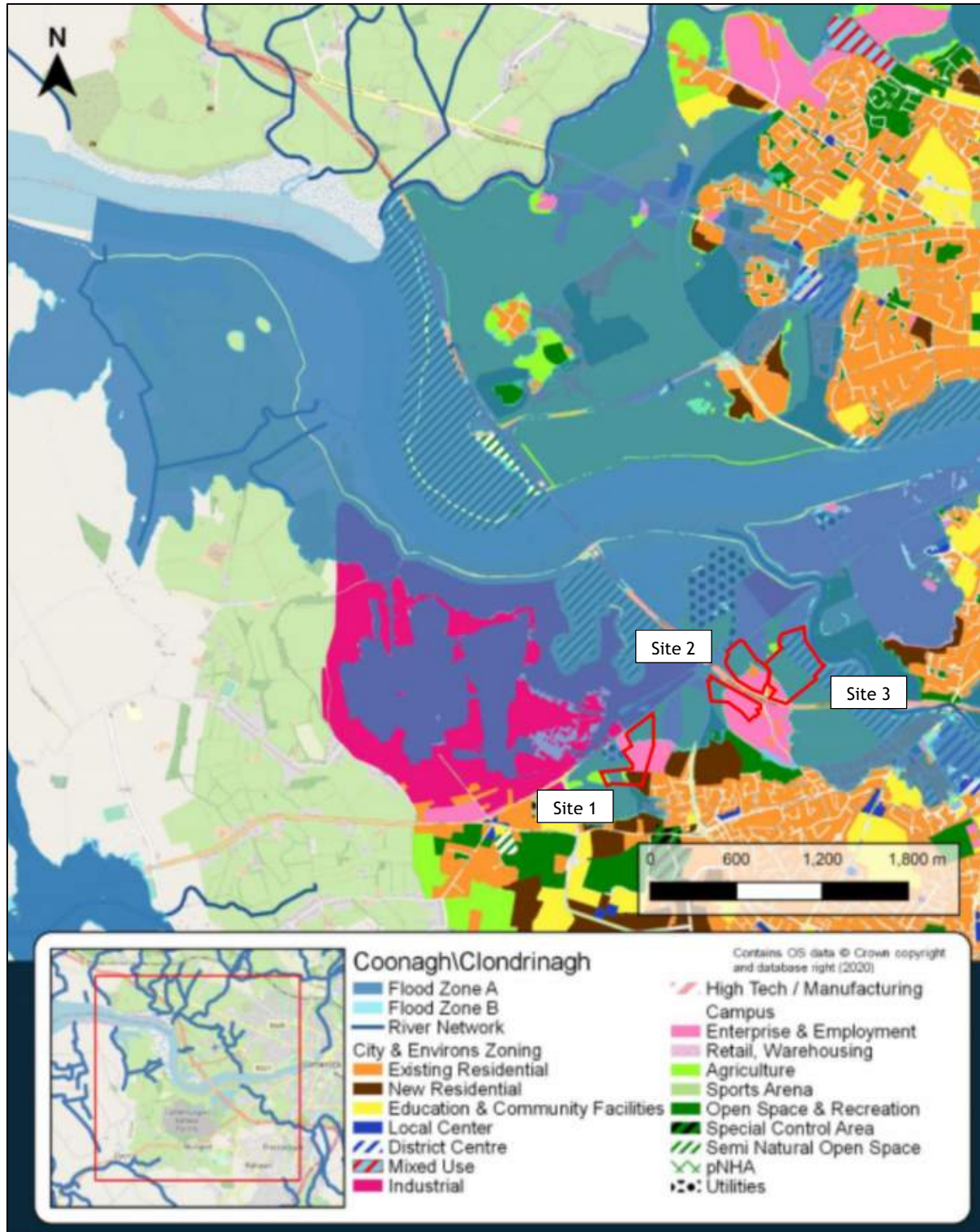


Figure 3-9: JBA Draft Strategic Flood Risk Assessment

According to the SFRA mapping in Figure 3-9, the sites are all partially located in Flood Zone A which approximately corresponds to the defended area noted in the CFRAM mapping. We can confirm from our site visit that the flood extents shown match the gradients observed on site.

JBA mapping is a preliminary set of mapping prepared for Limerick City and County Council. As per section 2.3 of the SFRA, the definition of the Flood Zone is based on an undefended scenario and does not take into account the presence of flood protection structures such as flood walls or embankments.

Hence, the flood extents shown are a worst-case scenario based on all flood defences in Limerick not being operational and ignored entirely.

### **3.13 Estimate of Flood Zone**

PUNCH Consulting Engineers have reviewed the available information as outlined in the above sections. The site is not indicated as being at risk of fluvial flooding

The breach analysis carried out by the OPW for the Flood Risk Management Plan relating to the area did not show any flooding affecting Site 1 or the western portion of Site 2 therefore the risk to those sites is currently low.

The existing flood defences are no doubt providing protection to the three sites from coastal flooding to varying degrees. If these flood defences could be accounted for Sites 1 & 2 would be classified as Flood Zone C but the residual risk of flooding would still need to be accounted for.

Again, if these flood defences could be accounted for, the eastern portion of Site 3 would be classified as Flood Zone B.

However, the FRMG advise that food zones ignore the presence of flood defences. Therefore we must conclude that the Flood Zone Areas for coastal floodplain noted in the JBA mapping and presented in the Draft SFRA is the correct zoning for each site in accordance with the FRMG.

## **4 Flood Risk Assessment**

### **4.1 Sources of Flooding**

When carrying out a Flood Risk Assessment, one should consider all potential risk and sources of flood water at the site. In general, the relevant flood sources are:

#### **Fluvial Flooding**

Fluvial flooding is the result of a river exceeding its capacity and excess water spilling out onto the adjacent floodplain. The proposed sites are located approximately 1km from Ballinacurra Creek and 1km from the River Shannon. From a review of the available information, and given the site levels, it is considered that the site is not at risk of fluvial flooding.

#### **Coastal Flooding**

Coastal flooding is the result of sea levels which are higher than normal and result in sea water overflowing onto the land during high tides or storm surges. The proposed sites are located 1km from the coast. From a review of the available information, the site it is considered to have a low residual risk of coastal flooding due to the existing flood embankment defences located on the River Shannon and Ballinacurra Creek.

#### **Pluvial Flooding**

Pluvial Flooding is the result of rainfall-generated overland flows which arise before run-off can enter any watercourse or sewer. It is usually associated with high-intensity rainfall. There are some areas within the site which may be subject to pluvial flooding due to their naturally low depressions. However, the provision of a suitable surface water drainage system for any proposed development on the site will mitigate against this risk.

#### **Groundwater Flooding**

Groundwater flooding occurs when the level of the water stored in the ground rises as a result of prolonged rainfall. From a review of the available information, there is no risk of groundwater flooding at the site.

### **4.2 Site Vulnerability**

The Planning System and Flood Risk Management Guidelines gives definitions for the type of developments that can take place in each Flood Zone. Table 4 defines the classifications of vulnerability of different types of development as detailed in the Flood Risk Management Guideline. Table 4-2 shows the types of development appropriate for each Flood Zone.

The choice of appropriate development proposals at this site will be dependent on these tables within each of the flood zone designations. This is explored further in Section 4.4.



**Table 4-1: Classification of vulnerability of different types of development**

Vulnerability class	Land uses and types of development which include*:
<b>Highly vulnerable development (including essential infrastructure)</b>	<p>Garda, ambulance and fire stations and command centres required to be operational during flooding;</p> <p>Hospitals;</p> <p>Emergency access and egress points;</p> <p>Schools;</p> <p>Dwelling houses, student halls of residence and hostels;</p> <p>Residential institutions such as residential care homes, children's homes and social services homes;</p> <p>Caravans and mobile home parks;</p> <p>Dwelling houses designed, constructed or adapted for the elderly or, other people with impaired mobility; and</p> <p>Essential infrastructure, such as primary transport and utilities distribution, including electricity generating power stations and sub-stations, water and sewage treatment, and potential significant sources of pollution (SEVESO sites, IPPC sites, etc.) in the event of flooding.</p>
<b>Less vulnerable development</b>	<p>Buildings used for: retail, leisure, warehousing, commercial, industrial and non-residential institutions;</p> <p>Land and buildings used for holiday or short-let caravans and camping, subject to specific warning and evacuation plans;</p> <p>Land and buildings used for agriculture and forestry;</p> <p>Waste treatment (except landfill and hazardous waste);</p> <p>Mineral working and processing; and</p> <p>Local transport infrastructure.</p>
<b>Water-compatible development</b>	<p>Flood control infrastructure;</p> <p>Docks, marinas and wharves;</p> <p>Navigation facilities;</p> <p>Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location;</p> <p>Water-based recreation and tourism (excluding sleeping accommodation);</p> <p>Lifeguard and coastguard stations;</p> <p>Amenity open space, outdoor sports and recreation and essential facilities such as changing rooms; and</p> <p>Essential ancillary sleeping or residential accommodation for staff required by uses in this category (subject to a specific warning and evacuation plan).</p>
*Uses not listed here should be considered on their own merits	

**Table 4-2: Matrix of Vulnerability versus Flood Zone to indicate Justification Requirement**

	Flood Zone A	Flood Zone B	Flood Zone C
Highly vulnerable development	Justification Test	Justification Test	Appropriate
Less vulnerable development	Justification Test	Appropriate	Appropriate
Water-compatible development	Appropriate	Appropriate	Appropriate

Where the Justification Test must be applied, Box 4.1 and Box 5.1 requirements must be met as reproduced and set out in Figure 10.

Box 4.1: Justification Test for development plans	Box 5.1 Justification Test for development management (to be submitted by the applicant)
<p>Where, as part of the preparation and adoption or variation and amendment of a development/local area plan<sup>1</sup>, a planning authority is considering the future development of areas in an urban settlement that are at moderate or high risk of flooding, for uses or development vulnerable to flooding that would generally be inappropriate as set out in Table 3.2, all of the following criteria must be satisfied:</p> <ol style="list-style-type: none"> <li>1 The urban settlement is targeted for growth under the National Spatial Strategy, regional planning guidelines, statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.</li> <li>2 The zoning or designation of the lands for the particular use or development type is required to achieve the proper planning and sustainable development of the urban settlement and, in particular:               <ol style="list-style-type: none"> <li>(i) Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement<sup>2</sup>;</li> <li>(ii) Comprises significant previously developed and/or under-utilised lands;</li> <li>(iii) Is within or adjoining the core<sup>3</sup> of an established or designated urban settlement;</li> <li>(iv) Will be essential in achieving compact and sustainable urban growth; and</li> <li>(v) There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.</li> </ol> </li> <li>3 A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere.               <p>N.B. The acceptability or otherwise of levels of any residual risk should be made with consideration for the proposed development and the local context and should be described in the relevant flood risk assessment.</p> </li> </ol>	<p>When considering proposals for development, which may be vulnerable to flooding, and that would generally be inappropriate as set out in Table 3.2, the following criteria must be satisfied:</p> <ol style="list-style-type: none"> <li>1. The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative development plan, which has been adopted or varied taking account of these Guidelines.</li> <li>2. The proposal has been subject to an appropriate flood risk assessment that demonstrates:               <ol style="list-style-type: none"> <li>(i) The development proposed will not increase flood risk elsewhere and, if practicable, will reduce overall flood risk;</li> <li>(ii) The development proposal includes measures to minimise flood risk to people, property, the economy and the environment as far as reasonably possible;</li> <li>(iii) The development proposed includes measures to ensure that residual risks to the area and/or development can be managed to an acceptable level as regards the adequacy of existing flood protection measures or the design, implementation and funding of any future flood risk management measures and provisions for emergency services access; and</li> <li>(iv) The development proposed addresses the above in a manner that is also compatible with the achievement of wider planning objectives in relation to development of good urban design and vibrant and active streetscapes.</li> </ol> </li> </ol> <p>The acceptability or otherwise of levels of residual risk should be made with consideration of the type and foreseen use of the development and the local development context.</p> <p>Note: See section 5.27 in relation to major development on zoned lands where sequential approach has not been applied in the operative development plan.</p> <p>Refer to section 5.28 in relation to minor and infill developments.</p>

Figure 4-1: Extracts from FRM Guidelines Justification Test Requirements

### 4.3 Climate Change

To mitigate against the residual risk of flooding to the site any proposed building should be set so that the finished floor levels of the development are above the flood level with an allowance for climate change. Table 4-3 below replicates Table 5-3 of the LCCC DRAFT SFRA which gives guidance on the recommended finished floor levels for new developments. The site is located in a tidal, defended area. As the flood defence embankment along the River Shannon north bank is a legacy structure it cannot be confirmed whether climate change was accounted for and therefore a climate change allowance will need to be included in setting development floor levels.

**Table 4-3: LCCC DRAFT SFRA Table 5-3: Recommended minimum finished floor levels.**

Scenario	Finished floor level to be based on
Fluvial, undefended	1% AEP flood + climate change (as Table 5-2) + 300mm freeboard.
Tidal, undefended	0.5% AEP flood + climate change (as Table 5-2) + 300mm freeboard (or 500mm where there is a risk of storm surge and wave action).
Fluvial, defended	1% AEP flood + 300mm freeboard. Climate change does not need to be included, provided it is included in the defence height or adaption plan for the scheme.  Where a breach model has been developed to further understand risks, FFL may be set based on model outputs.
Tidal, defended	0.5% AEP flood + 300mm freeboard (or 500mm where there is a risk of storm surge and wave action). Climate change does not need to be included, provided it is included in the defence height or adaption plan for the scheme.  Where a breach model has been developed to further understand risks, FFL may be set based on model outputs.

Based on the information above, any proposed development on the site will require finished floor levels to be set above the 0.5% AEP flood level + freeboard + climate change. The proposed site is located nearly 1km from the Shannon and as such there is no risk of storm surge or wave action at the site. Therefore, the 300mm value for freeboard will be used. The minimum Finished Floor level for any development at this site should therefore be 5.66mAOD.

## 4.4 Potential Site Development

With reference to Tables 4-1 & 4-2 and the current and proposed Development Plan zoning, the following development options are available on each site:

### 4.4.1 Site 1

Figure 4-2 below shows extracts from the Draft Limerick Development Plan Zoning alongside the estimated coastal flood zones in the site:

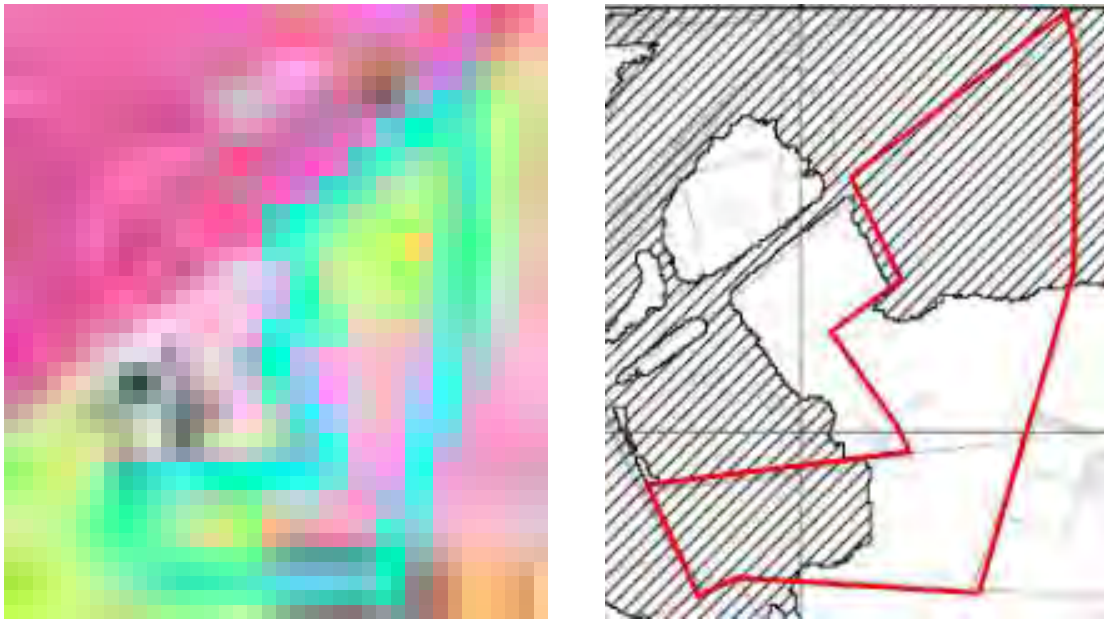
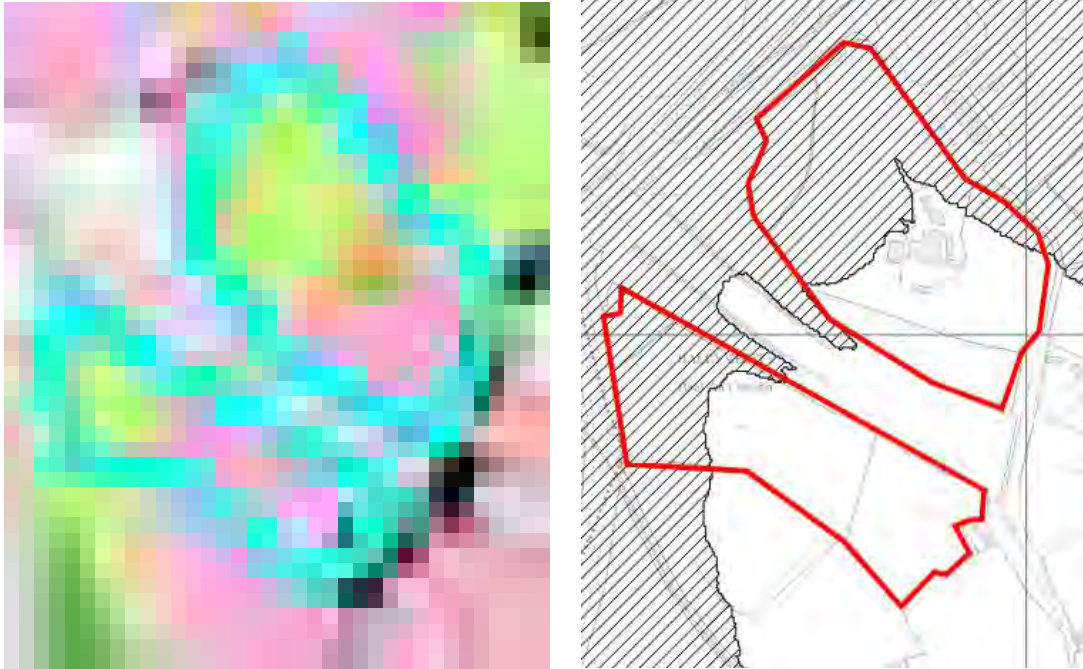


Figure 4-2: Extracts from Draft Development Zoning alongside Flood Map Zoning for Site 1

1. The unhatched area to the southeast of the site is located within Flood Zone C. All development is deemed appropriate in accordance with the FRMG subject to planning designation (current zoning: Industrial; proposed zoning: Enterprise and Employment are both deemed appropriate).
2. The western and northern portions of the site are located within defended Flood Zone A (current zoning: Industrial in the west and Enterprise and Employment/Industrial in the north; proposed zoning: Agriculture).
3. Flood Zone A is the most restrictive in terms of allowable development. It is possible to propose other type of less vulnerable development on this land from an engineering perspective however it will need to pass the Justification Test as set out in the FRMG and also noted in Figure 4.1 above. Please seek separate planning advice on this.
4. Given the low probability of flooding on the site based on various breach assessments in the area, it is highly likely that a less vulnerable use such as 'Enterprise and Employment' could be justified over the entirety of the site boundary. The site is also well serviced in regard drainage and access requirements and would therefore benefit from a 'less vulnerable' use zoning. Please seek separate planning advice on this.
5. Provided the Planning Justification (Box 4-1) is satisfied for the proposed use on the FZA portions of the site, development could proceed for the use deemed appropriate by a planning consultant, provided appropriate engineering flood mitigation measures (see further details set out in Section 4.5) could be included in the site development design proposals.

#### 4.4.2 Site 2

Figure 4-3 below shows extracts from the Draft Limerick Development Plan Zoning alongside the estimated coastal flood zones in the site:



**Figure 4-3: Extracts from Development Zoning alongside Flood Map Zoning for Site 2**

1. The unhatched area to the southeast of the site is located within Flood Zone C. All development is deemed appropriate in accordance with the FRMG subject to planning designation (current zoning: Industrial; proposed zoning: Enterprise and Employment are both deemed appropriate).
2. The western and northern portions of the site are located within defended Flood Zone A (current zoning: Industrial in the west and Enterprise and Employment/Industrial in the north; proposed zoning: Agriculture).
3. Flood Zone A is the most restrictive in terms of allowable development. It is possible to propose other type of less vulnerable development on this land from an engineering perspective however it will need to pass the Justification Test as set out in the FRMG and also noted in Figure 4.1 above. Please seek separate planning advice on this.
4. Given the low probability of flooding on the western portion of the site based on various breach assessments in the area, it is highly likely that a less vulnerable use such as 'Enterprise and Employment' could be justified. The breach assessment showing flooding on the eastern portion of the site is also a low probability event and as such the site should be suitable for a less vulnerable development proposal such as Enterprise and Employment. The site is also well serviced in regard drainage and access requirements and would therefore benefit from a 'less vulnerable' use zoning. Please seek separate planning advice on this.
5. Provided the Planning Justification (Box 4-1) is satisfied for the proposed use on the FZA portions of the site, development could proceed for the use deemed appropriate by a planning consultant, provided appropriate engineering flood mitigation measures (see further details set out in Section 4.5) could be included in the site development design proposals.

#### 4.4.3 Site 3

Figure 4-4 below shows extracts from the Draft Limerick Development Plan Zoning alongside the estimated coastal flood zones in the site:

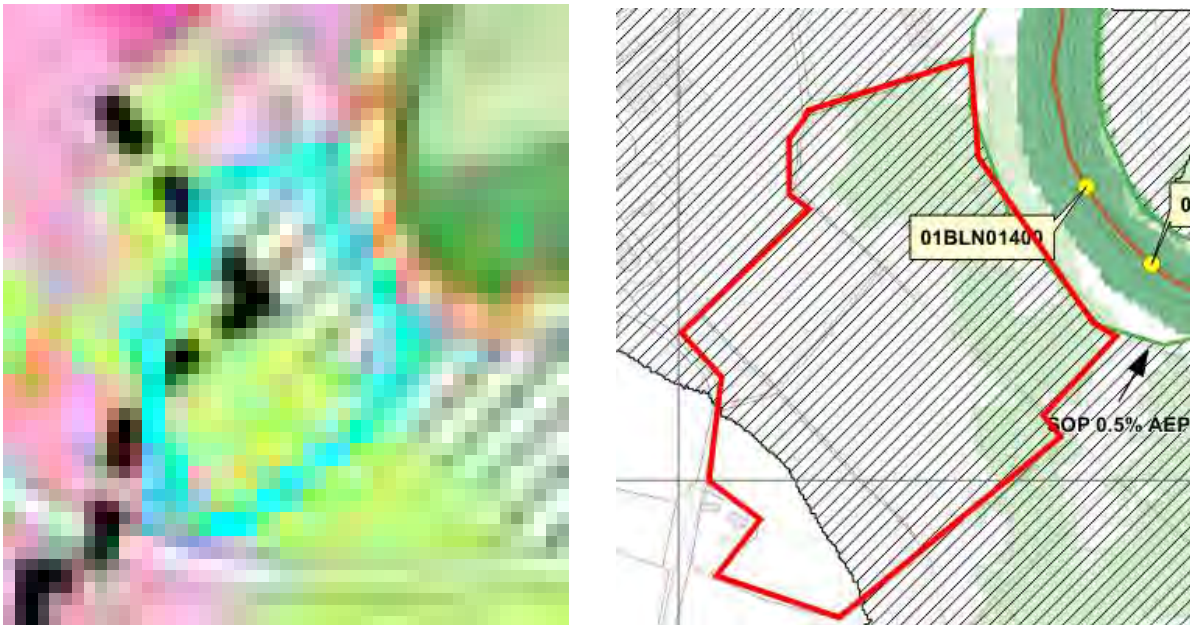


Figure 4-4: Extracts from Development Zoning alongside Flood Map Zoning for Site 3

1. The unhatched area to the southwest of the site is located within Flood Zone C. All development is deemed appropriate in accordance with the FRMG subject to planning designation (current/proposed zoning: Enterprise and Employment are both deemed appropriate).
2. The central portion of the site are located within defended Flood Zone A (current zoning: Enterprise and Employment; proposed zoning: Agriculture).
3. The western portion of the site is located within defended Flood Zone A. The green hatch refers to the Flood Zone B designation if the defences were considered (current/proposed zoning: Semi-Natural Open Space).
4. Flood Zone A is the most restrictive in terms of allowable development. It is possible to propose other type of less vulnerable development on this land from an engineering perspective however it will need to pass the Justification Test as set out in the FRMG and also noted in Figure 4.1 above. Please seek separate planning advice on this.
5. Given the low probability of flooding on the central portion of the site based on various breach assessments in the area, it is highly likely that a less vulnerable use such as 'Enterprise and Employment' could be justified. The breach assessment showing flooding on the eastern portion of the site is also a low probability event and as such the site should be suitable for a less vulnerable development proposal such as Enterprise and Employment. The site is also well serviced in regard drainage and access requirements and would therefore benefit from a 'less vulnerable' use zoning. Please seek separate planning advice on this as there may be reasons other than flooding for zoning the area Semi-Natural Open Space.
6. Provided the Planning Justification (Box 4-1) is satisfied for the proposed use on the FZA portions of the site, development could proceed for the use deemed appropriate by a planning consultant, provided appropriate engineering flood mitigation measures (see further details set out in Section 4.5) could be included in the site development design proposals.

#### 4.5 Standard Mitigation Measures

Parts of the sites are located in a defended Flood Zone A. As such the risk of flooding to the site is lessened and the key consideration from an engineering perspective when assessing flood risk for a particular development is to ensure that the residual risk of flooding at the site is addressed.

Every site proposal is different where the topography and constraints will be unique to that particular site proposal. However, there are a number of flood mitigation engineering options that are common to all sites that when implemented, can assist in reducing the flood risk to properties constructed. The following engineering options can be considered at these sites:

1. The finished floor level for any proposed development within the sites should be set to a minimum level as noted in Section 4.3. Given the existing site levels, consideration to raising any proposed buildings on stilts could be explored.
2. Due to the coastal nature of flooding predicted on the sites, earthwork compensation should not be required from a volumetric perspective if filling of land is proposed in order to raise buildings above the flood level. The disturbance of flow paths caused by the filling will however need to be addressed.
3. All surface water flows generated within any development will be captured by a dedicated surface water drainage network which will be designed for a 1 in 100-year storm event allowance for climate change. The proposed surface water drainage system will mitigate against any pluvial flood risk at the development.
4. Any development proposed for the lands should include water compatible construction where relevant. This will include features such as hard floors at ground level and sockets set at high level along walls.
5. Emergency access to any proposed development on the sites will need to be considered.
6. As part of any proposed site maintenance plan, all future proprietors should inspect all road gullies in the vicinity and report any blockages to the Local Authority and/or Irish Water. The proprietor should also inspect all surface water drainage within the site, in particular following periods of inclement weather, which may cause debris to obstruct stormwater inlets.

Additional engineered mitigation measures can also be implemented to further assist in reducing the flood risk of properties on any proposed development. These are usually specific to and, incorporated into any proposed development site layout and detailed design of the proposed structures. Other than recommending that FFL's are above the residual flood risk level of 5.66m AOD and in the absence of any proposal for the lands, no additional specific engineered mitigation measures can be recommended at this time.

## 5 Conclusions

PUNCH Consulting Engineers were appointed by Mr Michael Gabbett to carry out a Site-Specific Flood Risk Assessment for three sites located on the Dock Road.

This Site-Specific Flood Risk Assessment has been carried out in accordance with “*The Planning System & Flood Risk Management Guidelines*” published by the Department of the Environment, Heritage and Local Government in November 2009 and the Limerick City Local Area Plan.

A review of the flood risk in the area was carried out as the site is located near the River Shannon and Ballinacurra Creek.

Flood Maps produced as part of the CFRAMS were consulted to establish the Flood Zone. It was determined that all three sites are currently protected by existing flood defences on the River Shannon and Ballinacurra Creek to a varying degree and the actual flood risk to the site is currently low. However, the FRMG advise that food zones ignore the presence of defences. Therefore, we must conclude that each site has an area designated Flood Zone A as per the JBA mapping presented in the Draft SFRA.

Potential development options are discussed in the report based on the relevant flood zoning designation. The type of development proposed on the Flood Zone A areas may be subject to a Justification Test in accordance with The Planning System and Flood Risk Management Guidelines dependent on the site development proposals put forward. Given the low probability of flooding on the Flood Zone A designated site areas, it is highly likely that a ‘less vulnerable use’ such as ‘Enterprise and Employment’ could be justified. The sites are all well serviced in regard drainage and access requirements and would therefore benefit from a ‘less vulnerable’ use zoning. Further planning advice is required for the Planning Justification (Box 4-1).

The residual risk of flooding must be addressed. Potential flood mitigation measures appropriate for the sites were discussed and based on an appropriate site development proposal they can be explored further.

Appropriately zoned development on the Flood Zone A portions of the site can be delivered at low risk of flooding and not increase the risk of flooding to adjacent or nearby areas through the implementation of standard flood mitigation measures and specifically engineered development flood mitigation measures.



## **Appendix A Site Visit Images**



**Image 1: Existing entrance to site 3**



**Image 2: Existing OPW channels crossing Site 3**



**Image 3: Existing flood defence bordering Ballincurra Creek to the east of site 3**



**Image 4: Site 2 (west)**



**Image 5: Existing farmyard in site 2 (east)**



**Image 6: Existing OPW channel crossing southern boundary of Site 2 (east)**



**Image 7: Entrance to site 2 (east)**



**Image 8: Site 1**



**Image 9: Abandoned house in middle of site 1**



**Image 10: Wet ground observed at south-west corner of site 1**

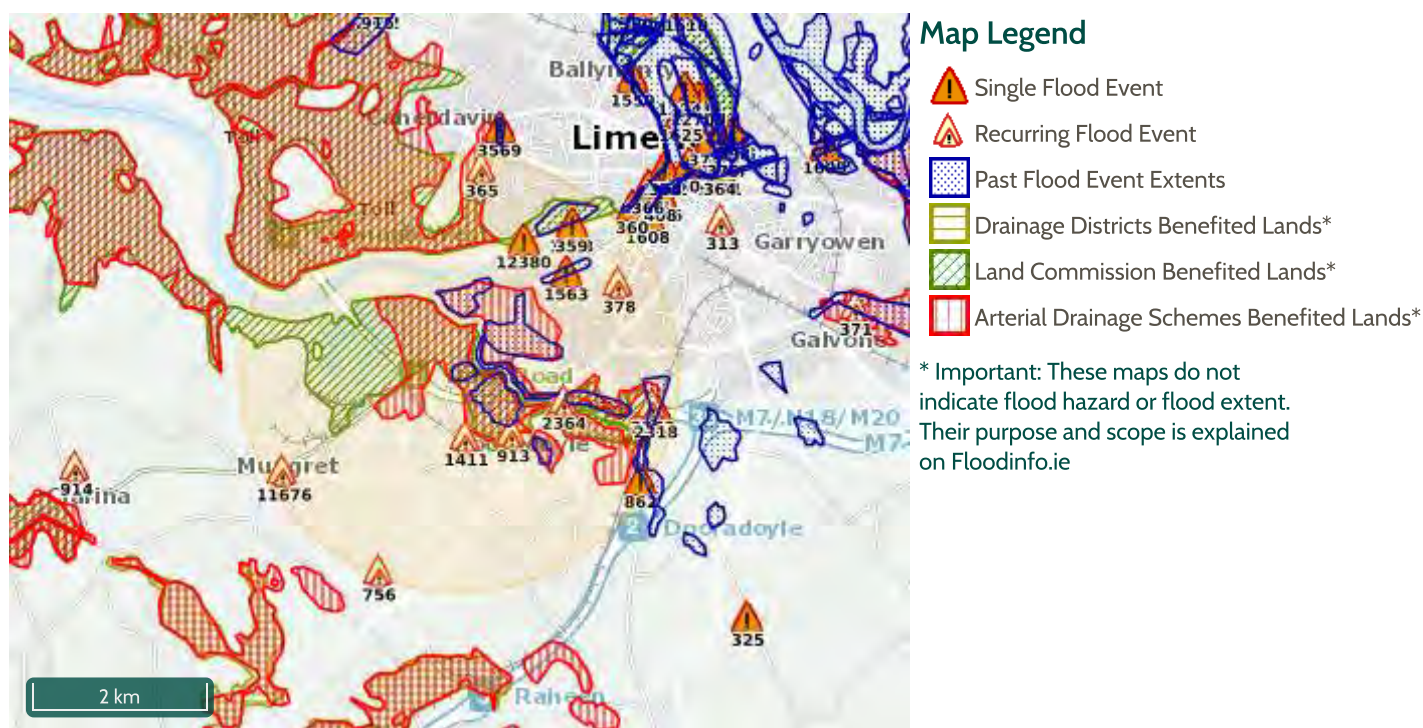
**Appendix B      OPW Historic Flood Events Record**



Report Produced: 5/8/2021 16:48

This Past Flood Event Summary Report summarises all past flood events within 2.5 kilometres of the map centre.













This report has been downloaded from [www.floodinfo.ie](http://www.floodinfo.ie) (the "Website"). The users should take account of the restrictions and limitations relating to the content and use of the Website that are explained in the Terms and Conditions. It is a condition of use of the Website that you agree to be bound by the disclaimer and other terms and conditions set out on the Website and to the privacy policy on the Website.



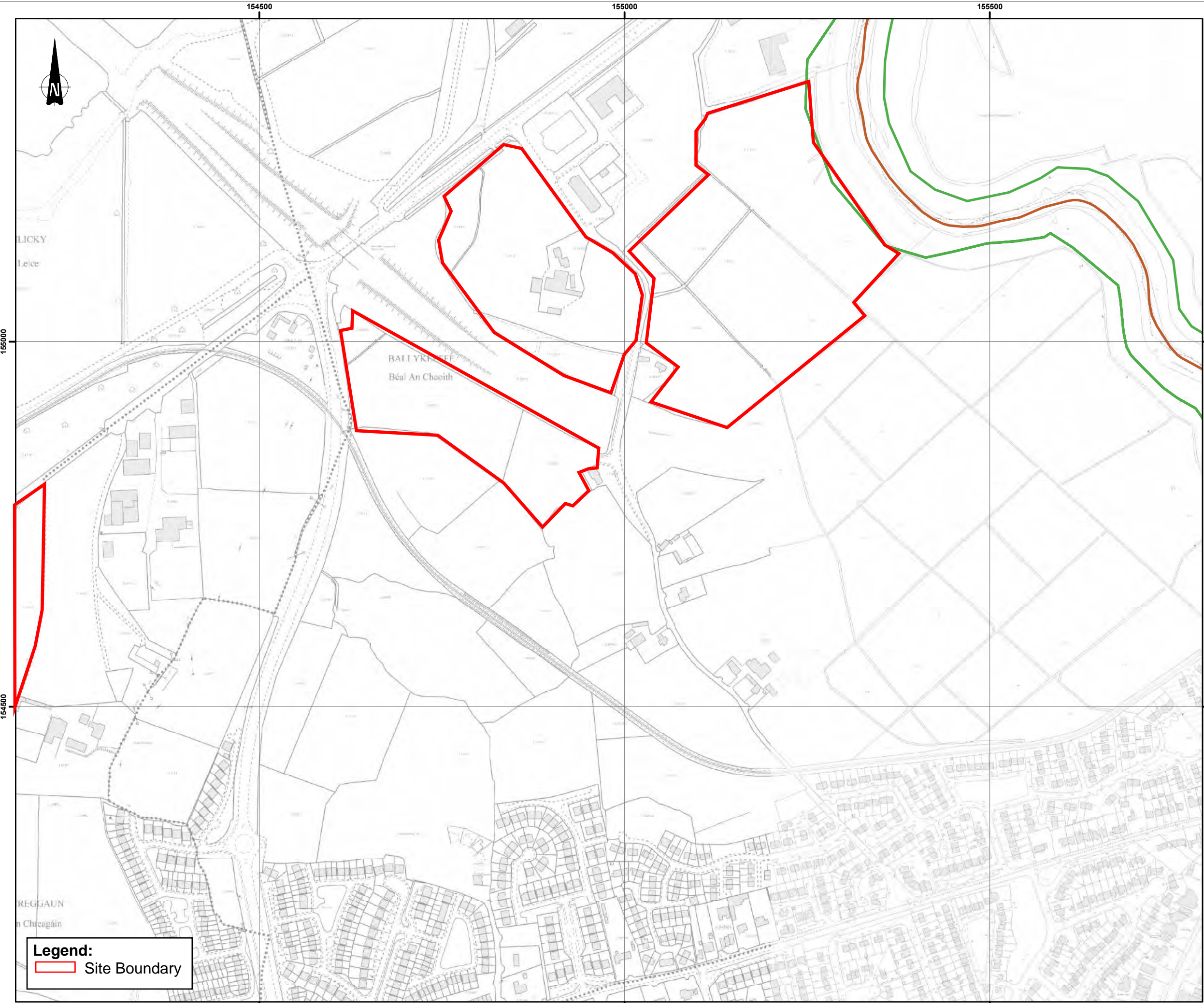
## 21 Results

Name (Flood_ID)	Start Date	Event Location
1.  Shannon Dock Road Limerick Dec 1999 (ID-301) Additional Information: <a href="#">Reports (5)</a> <a href="#">Press Archive (1)</a>	25/12/1999	Area
2.  Ballynaclough River Limerick Dec 1999 (ID-1986) Additional Information: <a href="#">Reports (3)</a> <a href="#">Press Archive (0)</a>	25/12/1999	Area
3.  Greenfield Road Rossbrien Dec 1999 (ID-304) Additional Information: <a href="#">Reports (3)</a> <a href="#">Press Archive (1)</a>	25/12/1999	Area
4.  Raheen Dooradoyle, Limerick Feb 1990 (ID-541) Additional Information: <a href="#">Reports (1)</a> <a href="#">Press Archive (0)</a>	01/02/1990	Area
5.  Ashbrook Gardens Limerick Recurring (ID-365) Additional Information: <a href="#">Reports (1)</a> <a href="#">Press Archive (0)</a>	n/a	Approximate Point
6.  Shannon Condell Road Limerick Feb 2002 (ID-359) Additional Information: <a href="#">Reports (3)</a> <a href="#">Press Archive (0)</a>	11/02/2002	Approximate Point

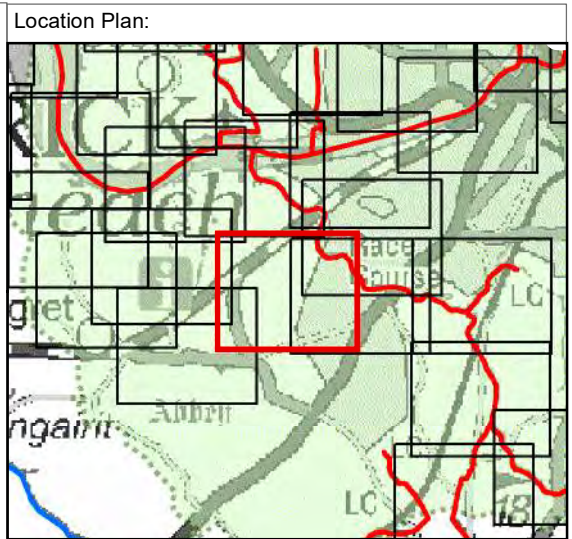


	Name (Flood_ID)	Start Date	Event Location
7.	 South Circular Road St Mary's Limerick Recurring (ID-378) Additional Information: <a href="#">Reports (1)</a> <a href="#">Press Archive (0)</a>	n/a	Exact Point
8.	 Turlough - Loughmore Common Limerick (ID-756) Additional Information: <a href="#">Reports (3)</a> <a href="#">Press Archive (0)</a>	n/a	Approximate Point
9.	 Ballyclogh River Rossbrien Limerick Feb 1995 (ID-862) Additional Information: <a href="#">Reports (1)</a> <a href="#">Press Archive (0)</a>	07/02/1995	Exact Point
10.	 Dooradoyle-St Nessans/Fr Russell recurring (ID-913) Additional Information: <a href="#">Reports (2)</a> <a href="#">Press Archive (0)</a>	n/a	Approximate Point
11.	 Dooradoyle Limerick recurring (ID-1411) Additional Information: <a href="#">Reports (1)</a> <a href="#">Press Archive (0)</a>	n/a	Approximate Point
12.	 Limerick Dock Rd Jan 1995 (ID-1563) Additional Information: <a href="#">Reports (1)</a> <a href="#">Press Archive (0)</a>	25/01/1995	Approximate Point
13.	 Limerick Condell Road Feb 1990 (ID-1603) Additional Information: <a href="#">Reports (2)</a> <a href="#">Press Archive (0)</a>	01/02/1990	Approximate Point
14.	 Condell Road Limerick Feb 1997 (ID-1607) Additional Information: <a href="#">Reports (2)</a> <a href="#">Press Archive (0)</a>	10/02/1997	Approximate Point
15.	 Ballynaclogh Rosbrien August 1986 (ID-2318) Additional Information: <a href="#">Reports (1)</a> <a href="#">Press Archive (0)</a>	05/08/1986	Approximate Point
16.	 Ballynaclogh Rosbrien Recurring (ID-2363) Additional Information: <a href="#">Reports (1)</a> <a href="#">Press Archive (0)</a>	n/a	Approximate Point
17.	 Ballynaclogh Ballinacurra Recurring (ID-2364) Additional Information: <a href="#">Reports (2)</a> <a href="#">Press Archive (0)</a>	n/a	Approximate Point
18.	 Shannon Westfields Limerick Dec 1999 (ID-299) Additional Information: <a href="#">Reports (3)</a> <a href="#">Press Archive (2)</a>	25/12/1999	Area
19.	 Shannon Adjacent Dock Road Limerick Dec 1999 (ID-302) Additional Information: <a href="#">Reports (3)</a> <a href="#">Press Archive (1)</a>	25/12/1999	Area
20.	 Limerick City 3rd January 2014 (ID-12380) Additional Information: <a href="#">Reports (1)</a> <a href="#">Press Archive (0)</a>	03/01/2014	Approximate Point
21.	 Mungret Village, Co. Limerick (ID-11676) Additional Information: <a href="#">Reports (1)</a> <a href="#">Press Archive (0)</a>	n/a	Approximate Point

**Appendix C      CFRAMS Mapping**



**Legend:**  
 Site Boundary



- Legend:**
- Nodes
  - Model Reach
  - AFA Boundary
  - Flood Defence: Wall
  - Flood Defence: Embankment
  - Defended Area
- 10% AEP Fluvial Flood Extent**  
 (1 in 10 chance in any given year)
- 1% AEP Fluvial Flood Extent**  
 (1 in 100 chance in any given year)
- 0.1% AEP Fluvial Flood Extent**  
 (1 in 1000 chance in any given year)

**IMPORTANT USER NOTE:**  
 THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

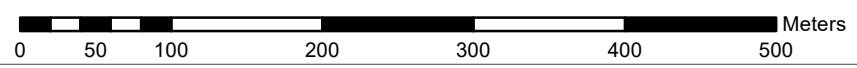


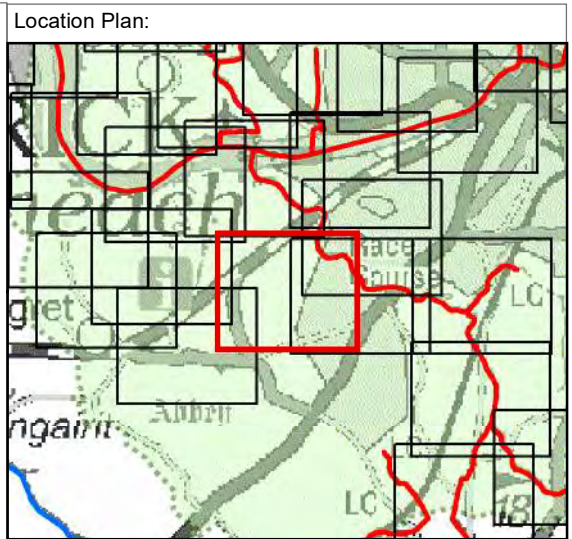
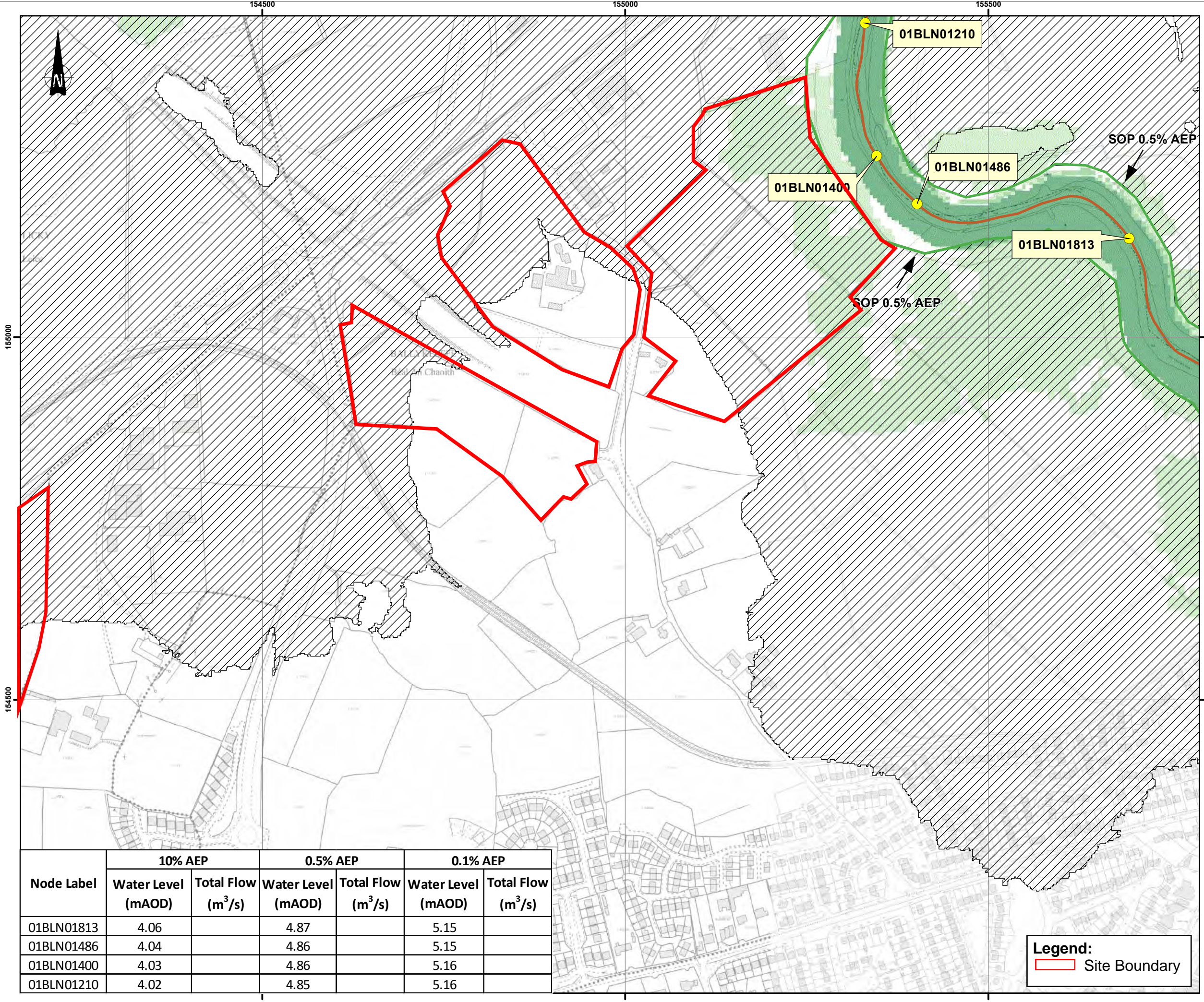
The Office of Public Works  
 Jonathan Swift Street  
 Trim  
 Co. Meath  
 C15 NX36

Merrion House  
 Merrion Road  
 Dublin 4  
 D04 R2C5

Project:	SHANNON CFRAM STUDY
Map Type:	EXTENT
Source:	FLUVIAL
Area:	<b>LIMERICK</b>
Scenario:	EXISTING
Drawn by:	EH
Checked by:	KM
Reviewed by:	MC
Approved by:	PS
Date:	June 2016

Map No.:	S2526LIK_EXFCD_F1_52
Sheet:	52 of 59
Map Scale:	1: 5000
Plot Scale:	1:1 @ A3
Revision:	0





**Legend:**

- Nodes
- Model Reach
- AFA Boundary
- Flood Defence: Wall
- Flood Defence: Embankment
- Defended Area

**10% AEP Coastal Flood Extent**  
 (1 in 10 chance in any given year)

**0.5% AEP Coastal Flood Extent**  
 (1 in 200 chance in any given year)

**0.1% AEP Coastal Flood Extent**  
 (1 in 1000 chance in any given year)

**IMPORTANT USER NOTE:**  
 THE VIEWER OF THIS MAP SHOULD REFER TO THE DISCLAIMER, GUIDANCE NOTES AND CONDITIONS OF USE THAT ACCOMPANY THIS MAP.

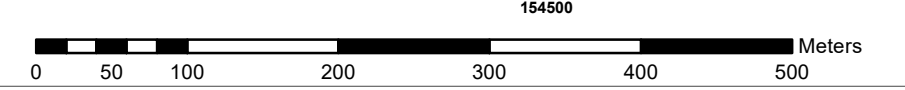


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 Jonathan Swift Street  
 Trim  
 Co. Meath  
 C15 NX36

Merrion House  
 Merrion Road  
 Dublin 4  
 D04 R2C5

Node Label	10% AEP		0.5% AEP		0.1% AEP	
	Water Level (mAOD)	Total Flow (m <sup>3</sup> /s)	Water Level (mAOD)	Total Flow (m <sup>3</sup> /s)	Water Level (mAOD)	Total Flow (m <sup>3</sup> /s)
01BLN01813	4.06		4.87		5.15	
01BLN01486	4.04		4.86		5.15	
01BLN01400	4.03		4.86		5.16	
01BLN01210	4.02		4.85		5.16	

**Legend:**  
 Site Boundary



Project:	SHANNON CFRAM STUDY
Map Type:	EXTENT
Source:	COASTAL - TIDAL
Area:	LIMERICK
Scenario:	EXISTING
Drawn by:	EH
Checked by:	KM
Reviewed by:	MC
Approved by:	PS
Date:	June 2016
Map No.:	S2526LIK_EXCCD_F1_52
Sheet:	52 of 65
Map Scale:	1: 5000
Plot Scale:	1:1 @ A3
Revision:	0

**Dooradoyle Crescent**

**LCC – C62 – 149**

## APPENDIX 1

### Dooradoyle Portland Urban Quarter Strategic Flood Risk Assessment Summary Report

- A Strategic Flood Risk Assessment (SFRA) report was prepared by ARUP in July 2020 in respect of Dooradoyle Portland Urban Quarter. This was augmented by supplementary reports prepared in October 2020 to consider the residual risk arising from any downstream breach of the existing embankments and to undertake a preliminary geotechnical assessment of existing flood defence embankments immediately adjoining the lands.
- The Shannon Catchment Flood Risk Assessment and Management (CFRAM) study was reviewed in detail as part of the initial flood risk review of the site and surrounding area. The CFRAM study found that the majority of the subject lands are at risk of tidal flooding, but that the risk is low as the site is protected in all but the most extreme events by existing OPW flood defence embankments. In the most extreme events, flooding of the subject lands originates from overtopping of the existing flood defence embankments at the eastern extent of the lands in the vicinity of the disused railway line. The CFRAMS established that fluvial flood risk is only a consideration in the vicinity of the Rossbrien and further upstream.
- The Arup SFRA then considered the subject site in greater detail than the CFRAMS, by incorporating more recent survey of the lands and embankment, updating the hydrological analysis of the upstream catchment and developing a detailed 1D-2D model of the river system.
- The updated survey confirms that the existing embankment is circa 200mm lower than its original design intent at the upper (eastern) end of the lands due to settlement and consolidation of the embankment material over time.
- The updated hydrological assessment of the Ballinacurra Creek and surrounding tributaries provided updated estimates of peak flows and a hydrograph shape for use as input into the hydraulic model built for this study.
- The hydraulic model confirmed that the subject lands are currently subject to tidal flooding which propagates from the flood defence embankments low point at the eastern end of the site
- In accordance with the Planning System and Flood Risk Management Guidelines (OPW 2009) the existing flood defence embankments were not considered in classifying the flood zoning of the subject lands. Thus, the majority of the subject lands lie within Flood Zone A and therefore a Justification Test is required in considering the development potential of the lands. Such a Development Plan Justification Test was recently completed by John Spain Associates and included in Appendix A above.
- An analysis of potential flow paths from a breach of the embankments downstream of the site (on both the Shannon and the Ballinacurra Creek) confirmed that this risk

is very low due to the protection offered by the elevated N18 roadway to the north and naturally higher ground to the west and south. Therefore, the only potential flow path from downstream would arise from a breach over a circa 480m length of the Ballinacurra Creek embankments from west of the R526 as far as the N18. However, for a breach in this location to affect the subject lands, it would need to coincide with at least a 1 in 50 year tidal flood event. Even at this, the lower lying lands at Ballykeefe and the large tract of agricultural land to its west, would first have to be inundated to a depth of over 2m before flood waters could propagate further east to the subject lands. The joint probability of such an event is extremely remote. Whilst these embankments are located outside of Clancourt owned lands, given the large area of already built up lands in Dooradoyle which are protected by these embankments, it is envisaged that maintenance of these embankments to a high standard must be and will be an ongoing priority for both LCCC and OPW.

- Given the above, the primary focus for flood protection to the subject lands is the sections of OPW embankments east of the R526. These existing OPW embankment have historically offered and continue to offer a high degree of protection, with no recorded failure to date. A preliminary geotechnical assessment of existing Ground investigation data as well as a review of past reports on these embankments confirm that OPW have previously topped up these embankment and for the most part their crest level is above the design 1 in 200year tidal level save for a very short section to the east that is only low by circa 200mm. As the underlying ground conditions both underneath and to the rear of the embankment does not vary significantly, repair and upgrading of the existing embankment is considered to represent to most likely optimum solution to bring flood protection to these lands up to the required standard. This is due to requiring far less new imported material and due to the fact that the existing embankment has at this stage already undergone the majority of its consolidation and therefore any future consolidation or settlement would be minimal compared to a new embankment.
- A straightforward solution to the flooding mechanism identified above to protect the main Clancourt site adjoining the Crescent Centre, is to restore the existing embankment to the 1 in 200-year design standard. The hydraulic modelling undertaken for this study demonstrates that this can be achieved with flood protection measures entirely on Clancourt lands and without increasing flood risk outside of the Clancourt lands.
- The hydraulic modelling work undertaken as part of this SFRA identified a potential additional option which has the potential to remediate flood risk, not just for the Clancourt lands, but for the entire Dooradoyle Portland Urban Quarter Masterplan area and for existing housing developments upstream on the Ballinacurra Creek and Ballysheedy River. Importantly, it would also alleviate the flooding of the Rosbrien Road which is identified as an important corridor for sustainable travel.
- An integrated approach can be achieved by Clancourt providing low level defences either side of the Ballinacurra Stream downstream of Rosbrien Road which would essentially tie into the upstream fluvial defences proposed as part of the Shannon CFRAMS study. Containing the flow in the channel here would marginally increase flood levels locally upstream of the Rosbrien Road and would thus require a modest increase (estimated to be a maximum of less than 0.2m increase at downstream end)

in the height of the proposed Shannon CFRAMS defences, but in the context of the wider area benefits, this additional cost would be represent very high value for money.

- In Summary, this Strategic Flood Risk Assessment Report has demonstrated that whilst lying in Flood Zone A, the flood risk to the site is very low due to the protection afforded by the existing OPW embankments which will need to be maintained given the large built-up area they all protect. The SFRA has shown that with modest scale interventions to improve upon and extend the existing flood defences, it is straightforward to provide the required standard of protection to the main Clancourt site, by works located solely on Clancourt lands. Furthermore, the SFRA has identified an opportunity to adopt a holistic approach to solve the current flooding issues for the lands bordering the Ballinacurra Creek in the Rosbrien Road areas, by delivering an integrated fluvial and tidal solution through cooperation and coordination of the defences to be upgraded on Clancourt lands with the CFRAM defences to be delivered upstream
-



# PLAN MAKING FLOOD RISK JUSTIFICATION TEST

**Dooradoyle Urban Quarter / Portland Park Lands**

*Prepared for*

**Clancourt Group**

*Prepared by*

**John Spain Associates**

**January 2022**



39 Fitzwilliam Place,  
Dublin 2, D02ND61  
Telephone: (01) 662 5803  
E-mail [info@johnspainassociates.com](mailto:info@johnspainassociates.com)  
[www.johnspainassociates.com](http://www.johnspainassociates.com)

## 1.0 INTRODUCTION

- 1.1 This document comprises the Flood Risk Plan Making Justification Test Report in respect of the Dooradoyle Urban Quarter / Portland Park Lands in Limerick.
- 1.2 The report has been prepared in accordance with the requirements of *The Planning System and Flood Risk Management* Guidelines published by the Minister for the Environment, Heritage & Local Government in November 2009 under Section 28 of the Planning & Development Act 2000 (as amended). This report should be read in conjunction with the Strategic Flood Risk Assessment prepared by Arup Consulting Engineers.
- 1.3 The Guidelines outline two Justification Test processes by which development proposals considered to be in areas of moderate or high flood risk should be assessed by planning authorities.
- 1.4 The **Plan-Making Justification Test** should be applied by a planning authority at the plan preparation and adoption stage where it is intended to zone or otherwise designate land for development which is at moderate or high risk of flooding. The **Development Management Justification Test** is applied when the planning authority is considering a planning application for development in an area which may be vulnerable to flooding.
- 1.5 In accordance with the requirements of the Guidelines, a proposed development to which the Guidelines apply, must comply with the Justification Test for Development Plans in reviewing the current plan and preparing the new Development Plan.
- 1.6 it is noted that it would ultimately be the responsibility of the Local Authority to undertake a Strategic Flood Risk Assessment (SFRA) as part of the plan making process. In this regard a development plan justification test has been prepared and is submitted to support the bringing forward of the subject lands for development as part of the preparation of the new Development Plan for Limerick.
- 1.7 As required by the Flood Risk Management Guidelines, it is also required to show compliance with the 'Justification Test for Development Management' as part of any planning application. In this respect we would refer to the Strategic Flood Risk Assessment prepared by Arup Consulting Engineers, which sets out that a technical solution is achievable to address flood risk if the lands are to be developed.

## 2.0 SITE LOCATION AND CONTEXT

### City Context

2.1 The subject lands are located in the urban area of Limerick, between the city centre and southern suburbs of Dooradoyle and Raheen.



Figure 1: Site Context (Source: Open Street Map).

2.2 The lands are located at a key undeveloped location at the confluence of the developed areas of the city and southern suburbs, as illustrated below for the Development Plan and Local Area Plan boundaries. The site is located along existing public transport routes, with existing services at the District Centre of the Crescent. Key employment locations along this corridor include the city centre, the Crescent, University Hospital Limerick and Raheen Industrial Estate.



**Aerial Imagery (Source: Bing Maps) Subject lands approximately in red; city boundary in blue; Southern Environs LAP in Green; and Castletroy LAP in yellow**

2.3 The lands represent a large infill site in an urban area, located between two of the primary locations of the Limerick Metropolitan Area (city and southern suburbs).

### Local Context

- 2.4 The lands are undeveloped in nature and strategically located between the city centre and southern suburbs. To the immediate north is the Ballinacurra Gardens estate, with playing pitches for Ballinacurra Gaels and Catholic Institute.
- 2.5 To the immediate south is the Crescent Shopping Centre, Kilteragh estate and Crescent Comprehensive. The Crescent serves as a District Centre for the wider area and hinterland.



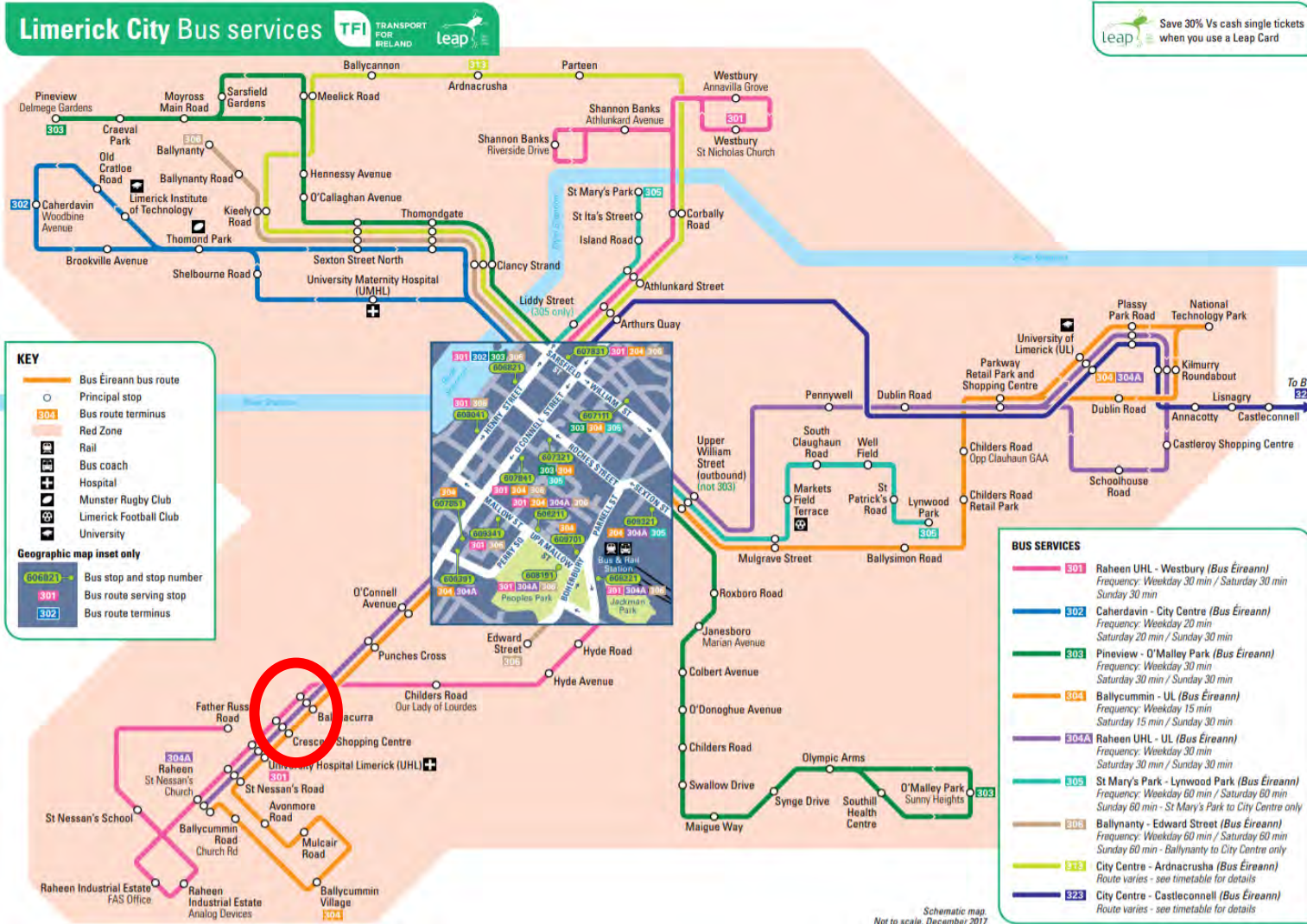
**Aerial Image of Local Context – (Source: Google Maps) approximate outline of lands in red; N18 in purple; disused rail line to Mungret Cement in yellow; and watercourse in blue**

- 2.6 North of the N18 is Portland Park, which comprises scrubland and trees. Aside from the pedestrian and cycle link it is generally of low quality and represents an opportunity for improvement for amenity and biodiversity. The lands south of the N18 are largely inaccessible with an incomplete riverbank route and represent another opportunity for improvement in terms of amenity and biodiversity through their opening up as part of development. The benefits of development alongside the delivery of amenity is that it provides activity, vibrancy and passive surveillance.

### Accessibility to Modes of Transport

- 2.7 The lands are exceptionally well located for various modes of transport, including local, national (N18, N24, N69) and motorway (M7, M20) road networks, bus, bicycle and pedestrian facilities.

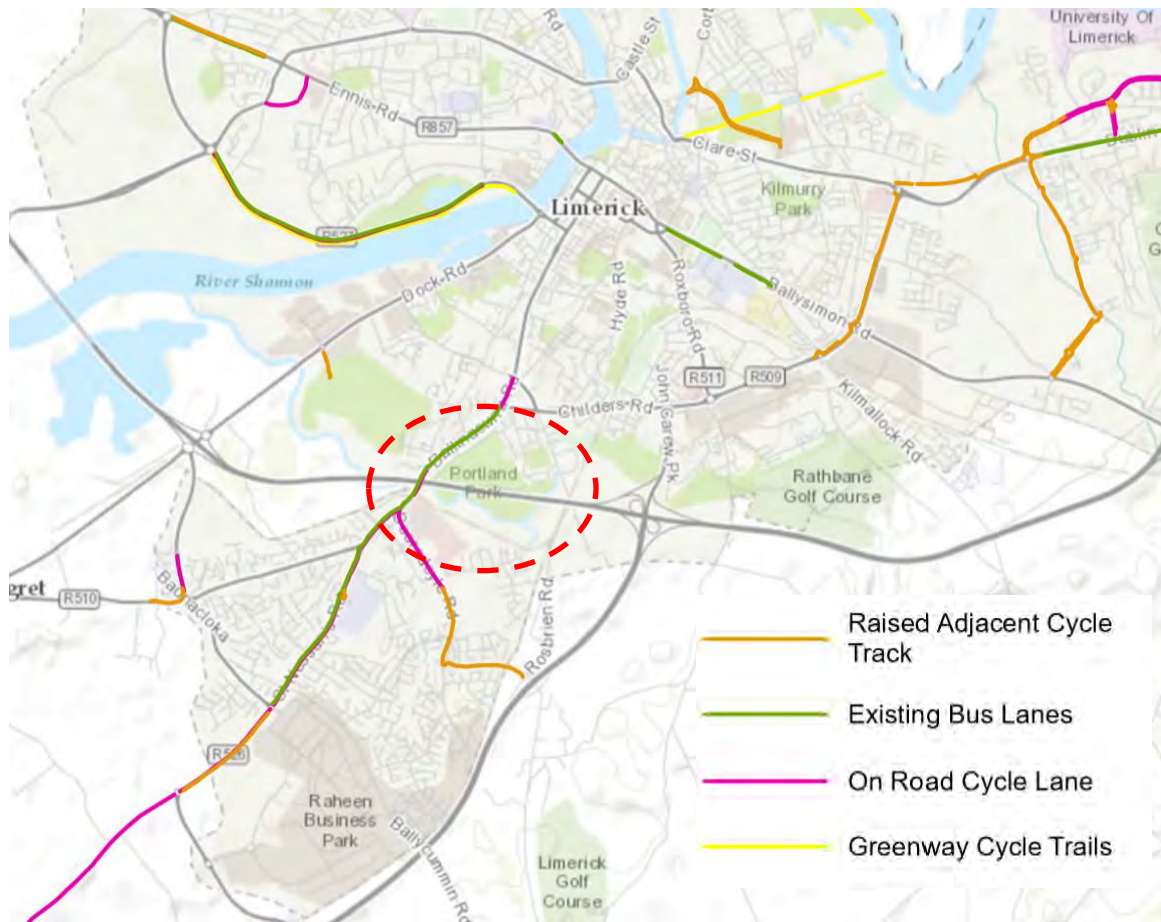
2.8 Bus Routes servicing the lands include the 301 (Raheen/University Hospital Limerick to Westbury via Childers Road and City Centre), 304 (Ballycummin to University Limerick via University Hospital Limerick, City Centre, Ballysimon Road and Childers Road) and 304A (Raheen/University Hospital Limerick to University of Limerick via City Centre and Dublin Road). Frequency of services vary from 15-30 minutes.



Limerick City Bus Services (Source: TFI)

2.9 The bus services also link with other local, regional and national bus, rail and airport services from the city centre.

2.10 There are a number of bicycle lanes in the vicinity:



**Existing Cycle Facilities (Source: Limerick Metropolitan Cycle Network Study)**

- 2.11 As noted earlier, in terms of permeability, the N18 and Ballinacurra Creek represent hard edges, limiting their crossing and funnelling various modes of transport through limited connections, such as the N18 overpass. In this respect, there is an opportunity for improvements of all modes of transport (primarily bicycle and pedestrian and also vehicular) in terms of permeability and connectivity. An 'Improved Public Transport Linkage/Coverage' opportunity is identified in particular through the lands in the Limerick Metropolitan District Movement Framework Study:



**Figure 7.3 Preliminary Proposed Schemes – Southern Corridor (Source: Limerick Metropolitan District Movement Framework Study)**

- 2.12 Such improvements which may be delivered as part of development are supported by the Southern Environs LAP 2021-2027:

*“To promote and facilitate a sustainable transport system that prioritises and provides for walking, cycling and public transport facilities while ensuring appropriate traffic management.*

- 2.13 We would additionally note, in Irish Rail’s submission on the new City and County Development Plan, the potential for utilising the existing rail lines to Foynes and Irish Cement (Mungret) as commuter rail corridors were highlighted to be explored which would provide for six new stations, including one along the northern boundary of the Crescent.

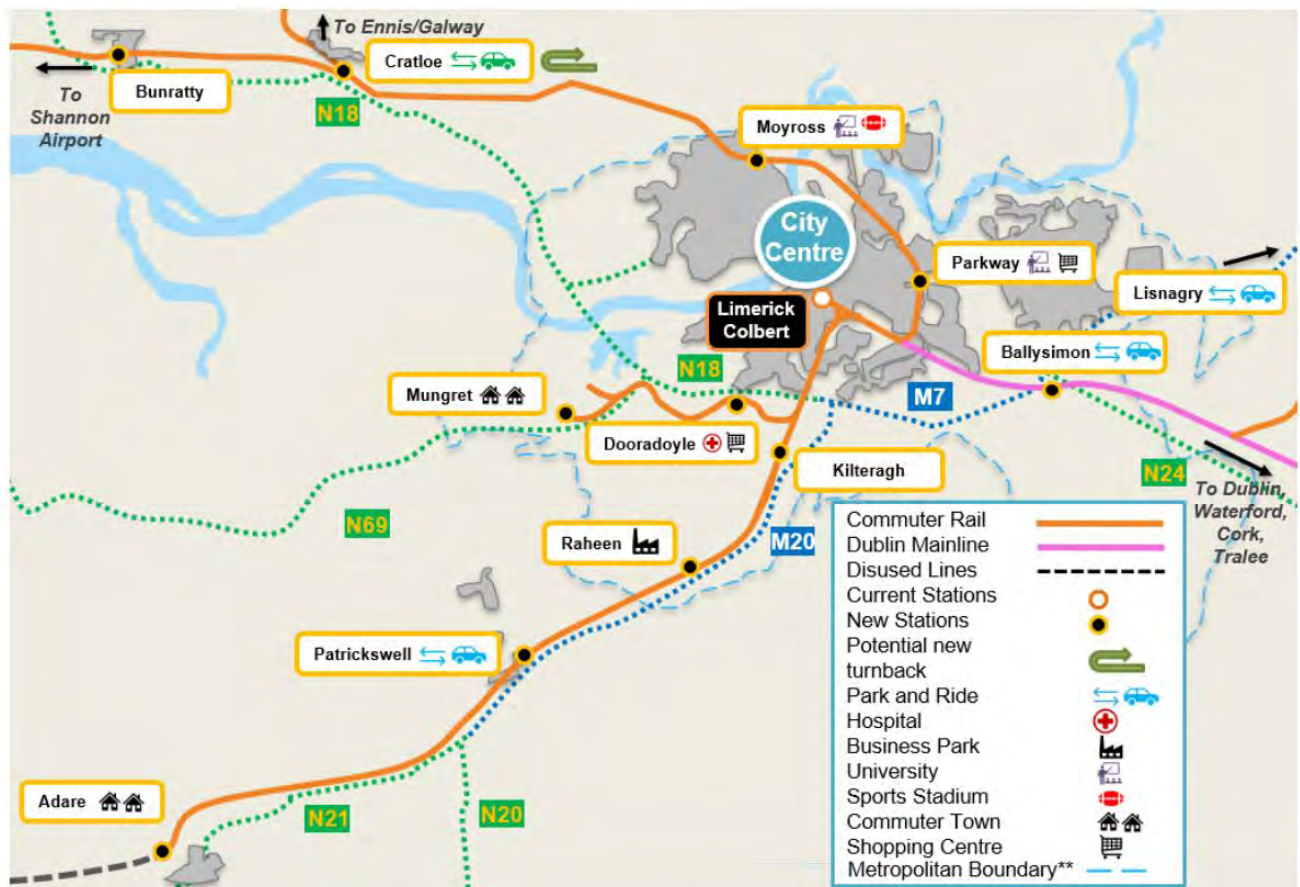
- 2.14 The submission states:

*“Iarnród Éireann note the objective of the Council “to support and encourage new and upgrading of existing rail networks”, and while the draft LSMATS provides proposed transport objectives to 2040, there are possibilities which Iarnród Éireann believe should be considered during the lifetime of the new Development Plan period to support the Councils objective and transform transport in Limerick City and County, and the Shannon Area. I refer to the June 2020 Programme for Government which stated that*



*in line with the commitment in the National Planning Framework to balanced regional development, the Government would “prioritise rail projects in Cork, Galway, Limerick, and Waterford on existing and unused lines”. Our rationale for presenting these also allows me to revert back to two key earlier points in this submission; interventions in the transport sector should be based on a long term strategic vision for the sustainable mobility of people and goods. This is driven by the principle that structural reform of policies takes a considerable time to implement and must be the subject of detailed advanced planning. Rail in particular, is subject to this reality and thus, consideration should be given now to a future rail vision for Limerick and to the steps to achieve it. This is a critical milestone as Ireland and the wider-EU have committed for climate-neutrality by 2050. The possibilities presented in this submission supports this aim and as they can largely be delivered incrementally to 2030 by Iarnród Éireann.”*

**Figure 5: Limerick-Shannon Suburban Rail Possibilities – Station Locations and Amenities\*\***



**\*\*Shannon rail link (Branch line) route alignment is indicative only**

**Source: Irish Rail submission on the Draft Limerick City and County Development Plan**

2.15 The additional public transport capacity that would be provided by such a proposal (as is clearly being explored by Irish Rail), in addition to the excellent existing bus infrastructure highlights the confluence of public transport infrastructure (a node) at this location. The submission by Irish Rail. It is also noteworthy that a critical mass of population is required for such projects to be feasible which supports the case for the development of the lands.

- 2.16 National objectives for a compact urban form set out that a key element to sustainable development and more efficient use of lands is for development to be located along such public transport corridors. In addition, the undeveloped nature of this key landbank between the city centre and southern environs represents an opportunity for improved connectivity to be delivered as part of the development of the lands.

### **Current Zoning Objectives**

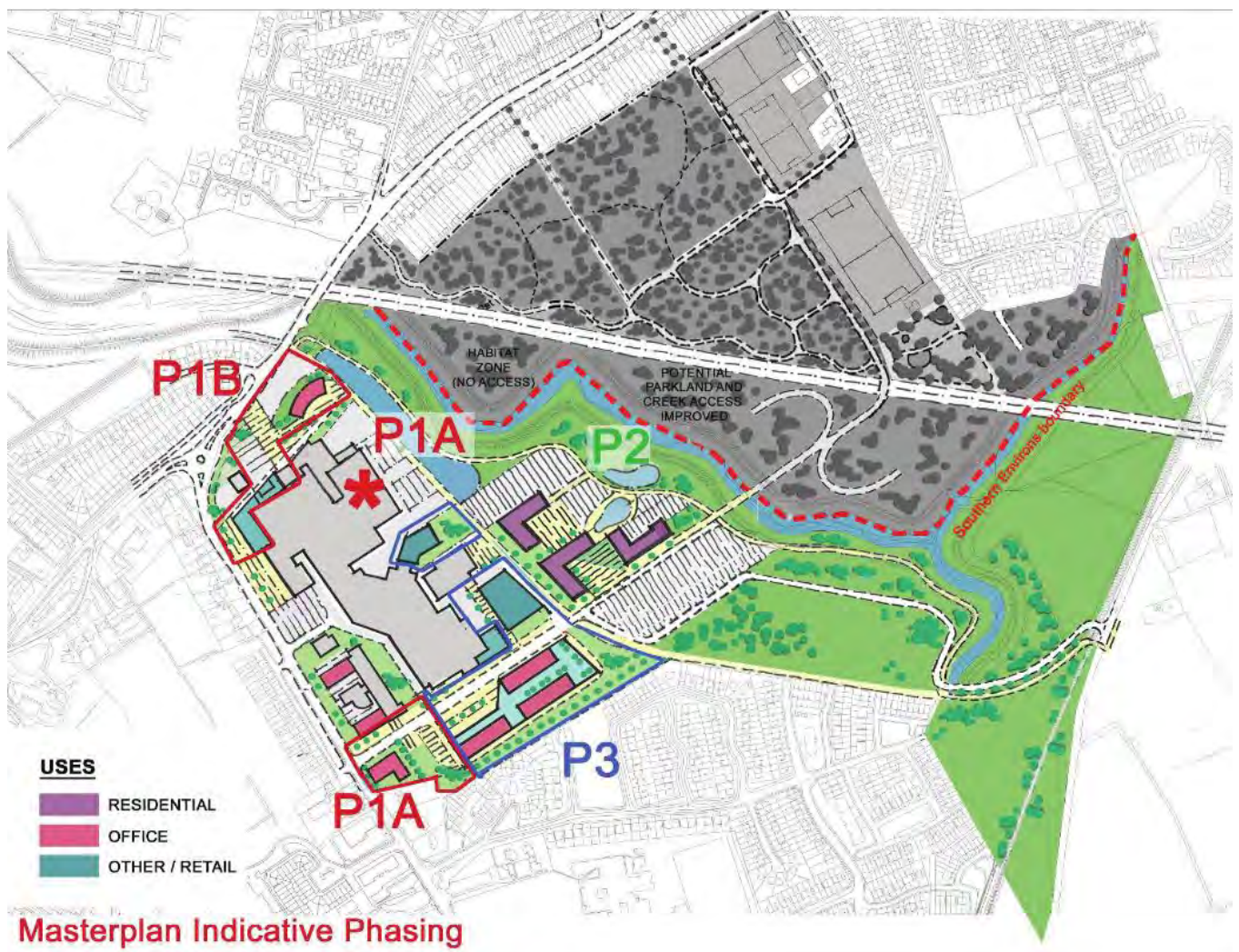
- 2.17 The lands south of Ballinacurra Creek have a zoning objective 'Semi-natural Open Space'. The lands north of the Balinacurra Creek primarily have a zoning objective 'Open space, park' and a portion of lands with the 'Agriculture' zoning objective.

### 3.0 PROPOSAL

3.1 The proposal has been revised from previous submissions made to the City and County Council to exclude 'highly vulnerable' uses including residential. The image below illustrates the potential for the delivery of:

- Employment uses
- Retail/Restaurant Uses
- Improvement of District Centre services
- Public open space, improved amenities and leisure uses
- Release of inaccessible lands for amenity and improved biodiversity
- Cycle and pedestrian permeability
- Elements of greenway

3.2 A concept plan illustrating the proposal is shown below:



#### **4.0 GUIDELINES FOR PLANNING AUTHORITIES ON ‘THE PLANNING SYSTEM AND FLOOD RISK MANAGEMENT (NOVEMBER 2009)’**

4.1 The relevant planning policy context for the Flood Risk Justification Test is provided by the “*Guidelines for Planning Authorities on the Planning System and Flood Risk Management* (November 2009)”.

4.2 The purpose of the Guidelines is to introduce ‘*comprehensive mechanisms for the incorporation of flood risk identification, assessment and management into the planning process.*’ The document goes on to state:

*“Planning authorities will ensure that only developments consistent with the overall policy and technical approaches of these Guidelines will be approved and permission will be refused where flood issues have not been, or cannot be, addressed successfully and where the presence of unacceptable residual flood risks to the development, its occupants or users and adjoining property remains.”*

4.3 The Guidelines identify three geographical areas known as ‘Flood Zones’ within which the likelihood of flooding is in a particular range. These zones are seen as a key tool in flood risk management. The three types or levels of flood zones are defined as follows:

- **Flood Zone A** – where the probability of flooding from rivers and the sea is highest (greater than 1% or 1 in 100 for river flooding or 0.5% or 1 in 200 for coastal flooding);
- **Flood Zone B** – where the probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 and 1% or 1 in 100 for river flooding and between 0.1% or 1 in 1000 year and 0.5% or 1 in 200 for coastal flooding); and
- **Flood Zone C** – where the probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 1000 for both river and coastal flooding). Flood Zone C covers all areas of the plan which are not in zones A or B.

4.4 The lands are located within Flood Zone A, B and C.

**Table 1: Classification of vulnerability of different types of development, extract from Table 3.1 of Flood Risk Guidelines**

Vulnerability class	Land uses and types of development which include*:
Highly vulnerable development (including essential infrastructure)	<p>Garda, ambulance and fire stations and command centres required to be operational during flooding;</p> <p>Hospitals;</p> <p>Emergency access and egress points;</p> <p>Schools;</p> <p>Dwelling houses, student halls of residence and hostels;</p> <p>Residential institutions such as residential care homes, children's homes and social services homes;</p> <p>Caravans and mobile home parks;</p> <p>Dwelling houses designed, constructed or adapted for the elderly or, other people with impaired mobility; and</p> <p>Essential infrastructure, such as primary transport and utilities distribution, including electricity generating power stations and sub-stations, water and sewage treatment, and potential significant sources of pollution (SEVESO sites, IPPC sites, etc.) in the event of flooding.</p>
Less vulnerable development	<p>Buildings used for: retail, leisure, warehousing, commercial, industrial and non-residential institutions;</p> <p>Land and buildings used for holiday or short-let caravans and camping, subject to specific warning and evacuation plans;</p> <p>Land and buildings used for agriculture and forestry;</p> <p>Waste treatment (except landfill and hazardous waste);</p> <p>Mineral working and processing; and</p> <p>Local transport infrastructure.</p>
Water-compatible development	<p>Flood control infrastructure;</p> <p>Docks, marinas and wharves;</p> <p>Navigation facilities;</p> <p>Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location;</p> <p>Water-based recreation and tourism (excluding sleeping accommodation);</p> <p>Lifeguard and coastguard stations;</p> <p>Amenity open space, outdoor sports and recreation and essential facilities such as changing rooms; and</p> <p>Essential ancillary sleeping or residential accommodation for staff required by uses in this category (subject to a specific warning and evacuation plan).</p>
*Uses not listed here should be considered on their own merits	

**Table 2: Matrix of Vulnerability, extract from Table 3.2 of Flood Risk Guidelines**

	Flood Zone A	Flood Zone B	Flood Zone C
Highly vulnerable development (including essential infrastructure)	Justification Test	Justification Test	Appropriate
Less vulnerable development	Justification Test	Appropriate	Appropriate
Water-compatible development	Appropriate	Appropriate	Appropriate

Table 3.2: Matrix of vulnerability versus flood zone to illustrate appropriate development and that required to meet the Justification Test.

- 4.5 The uses proposed as part of the concept for the lands would be considered appropriate and also require a Justification Test.
- 4.6 The key principles upon which the Guidelines are based are:
- Avoid development in areas at risk of flooding;  
If this is not possible, consider substituting a land use that is less vulnerable to flooding;  
Only when both avoidance and substitution cannot take place should consideration be given to mitigation and management of risks;
  - Inappropriate types of development that would create unacceptable risks from flooding should not be planned for or permitted;
  - Exceptions to the restriction of development due to potential flood risks are provided for through the use of a Justification Test, where the planning need and the sustainable management of flood risk to an acceptable level must be demonstrated.
- 4.7 It is a core objective of the guidelines to “*avoid unnecessary restriction of national, regional or local economic and social growth*” and to this extent the guidelines specifically allow a less rigid application of the guidelines in the case of development that makes a significant contribution to achieving fundamental objectives of national, regional and local planning policy provided that the technical requirements of flood risk management are met.
- 4.8 Fundamental objectives of national and regional planning policy are to achieve compact urban growth, with a particular emphasis on infill development and development contiguous with existing development. The subject lands are located at the confluence of the city centre and southern environs and therefore represent a significant opportunity to contribute towards compact urban growth within the defined settlement boundary on sequentially favourable and underutilised land.

## 5.0 JUSTIFICATION TEST FOR DEVELOPMENT PLANS

5.1 Section 4.23 of the Guidelines provide the planning authority must be satisfied that the development is necessary on the basis of the Justification Test as it applies to development plan preparation (Box 4.1 of the Guidelines, attached as Figure 3 below) where designating land for development in areas at high or moderate risk of flooding. It is stated:

*“Section 4.23 – Having prepared a Strategic Flood Risk Assessment and mapped flood zones as part of its development plan review process and any more detailed flood risk assessment as necessary, situations can arise where a planning authority will need to consider the future development of areas at a high or moderate risk of flooding, for uses of development vulnerable to flooding that would generally be inappropriate as set out in Table 3.2. In such cases, the planning authority must be satisfied that it can clearly demonstrate on a solid evidence base that the zoning or designation for development will satisfy the Justification Test outlined in Box 4.1 opposite.”*

**Figure 3: Box 4.1: Justification Test for Development Plans**

### Box 4.1: Justification Test for development plans

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

- 1 The urban settlement is targeted for growth under the National Spatial Strategy, regional planning guidelines, statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.
- 2 The zoning or designation of the lands for the particular use or development type is required to achieve the proper planning and sustainable development of the urban settlement and, in particular:
  - (i) Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement<sup>2</sup>;
  - (ii) Comprises significant previously developed and/or under-utilised lands;
  - (iii) Is within or adjoining the core<sup>3</sup> of an established or designated urban settlement;
  - (iv) Will be essential in achieving compact and sustainable urban growth; and
  - (v) There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.
- 3 A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere.

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

5.2 A response to each of the criteria of Box 4.1 of the Guidelines is set out below.

**1. The urban settlement is targeted for growth under the National Spatial Strategy, regional planning guidelines, statutory plans as defined above or**

***under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.***

National and regional planning policy in the form of the National Planning Framework 2040 and the Regional Spatial and Economic Strategy - Southern Regional Assembly both promote consolidation of the Limerick Metropolitan Area.

5.5 Consolidation of the Limerick Metropolitan Area is seen as paramount in order to achieve a successful regional development through the promotion of higher densities at appropriate locations in harmony with improved public transport systems.

5.6 The NPF recognises the importance of consolidation of cities in order to realise a competitive city, stating that:

*“Develop cities and towns of sufficient scale and quality to compete internationally and to be drivers of national and regional growth, investment and prosperity.”*

5.7 This consolidation is achieved through use of strategically located lands such as the site which are highly accessible and which provide a natural infill between existing developed areas of the city and southern suburbs, adjacent a District Centre and public transport corridor.

5.8 The National Planning Framework (NPF) is the Government’s plan to cater for the extra one million people that will be living in Ireland, the additional two thirds of a million people working in Ireland and the half a million extra homes needed in Ireland by 2040.

5.9 As a strategic development framework, Ireland 2040 sets the long-term context for our country’s physical development and associated progress in economic, social and environmental terms and in an island, European and global context.

5.10 National investment planning, the sectoral investment and policy frameworks of departments, agencies and the local government process will be guided by these strategic outcomes in relation to the practical implementation of Ireland 2040. The NPF sets out the importance of development within existing urban areas by *“making better use of under-utilised land including ‘infill’ and ‘brownfield’ and publicly owned sites together with higher housing and job densities, better services by existing facilities and public transport”*.

5.11 Objective 3a of the NPF states that it is a national policy objective to *“deliver at least 40% of all new homes nationally within the built up envelope of existing urban settlements”*. For the country’s five cities, this minimum target is 50%. The proposed development is a strategically located underutilised site adjacent a District Centre in an existing urban settlement along a public transport corridor and in close proximity to the M7. The proposed development is therefore compliant with the objective of the NPF.

5.12 Objective 4 states *“ensure the creation of attractive, liveable, well designed, high quality urban places that are home to diverse and integrated communities that enjoy a high quality of life and well being”*. The proposed development would provide for a high quality mixed use development in conjunction with amenity, permeability and connectivity



benefits. The lands are adjacent an existing District Centre, and therefore there is a significant amount of existing services in the vicinity, which the subject lands are well linked to. The additional population and density of the proposal would further strengthen the viability of the District Centre in an appropriate location and provide significant amenities to the wider area.

- 5.13 It is considered that the proposed development provides for the creation of an attractive, high quality, sustainable new mixed-use development within the existing urban area of the city. The provision of the new sustainable development is therefore consistent with the NPF objective.

Objective 11 of the National Planning Framework states that *“there will be a presumption in favour of development that encourages more people, jobs and activity within existing urban areas, subject to development meeting appropriate planning standards and achieving targeted growth”*.

- 5.14 The proposed development would provide a significant employment opportunity, strengthening the delivery of compact growth with an integrated mix of uses, reducing commuting by car as the lands site are well served by public transport.

- 5.15 The proposed development is located along one of the main routes into the city centre and is well served by public transport. The existing site is underutilised and presents a key opportunity site as identified in the NPF for redevelopment of a mixed use scheme. The proposed development is therefore in accordance with the objectives of the NPF in this regard.

- 5.18 The RSES set out the planned direction for growth up to 2040. The lands are located within the Limerick Shannon Metropolitan Area Strategic Plan. The overview for the MASP states:

*“Limerick City is the largest urban centre in Ireland’s Mid-West and the country’s third largest city. The NPF supports ambitious growth targets to enable Limerick City to grow by at least 50% to 2040 and to achieve its potential to become a city of scale.”*

- 5.19 It is clear therefore on the basis of the NPF and RSES, that Limerick is identified for significant growth and satisfies this element of the Justification Test.

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

**(i) Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement;**

- 5.20 The subject lands are a natural infill site between the developed areas north and south. The zoning of the lands would facilitate the delivery of employment and amenity uses and deliver on compact growth objectives through the use of an infill site in the interest of the proper planning and sustainable development of Limerick.

**(ii) Comprises significant previously developed and/or under-utilised lands;**

- 5.21 The subject lands are undeveloped and given the location with development north and south, represent an opportunity for infill development along a public transport corridor with existing retail and services adjoining, and in this respect in particular, are underutilised having regard to their strategic location.

***(iii) Is within or adjoining the core of an established or designated urban settlement;***

- 5.22 The lands represent an infill site between the established designated urban settlements of the city and southern suburbs. Dooradoyle Crescent is an established District Centre. In all respects, the lands are within or adjoining the core of an established urban settlement. The subject lands are within or immediately contiguous to the CSO defined Limerick City & Suburbs, within which at least 50% of all future housing must be located.

***(iv) Will be essential in achieving compact and sustainable urban growth; and***

- 5.23 This issue has been substantively addressed above under sub-sections (i), (ii) and (iii). As noted, the subject lands form a sequentially preferable and most logical location for the delivery of new economic and amenity development within the administrative area of Limerick. They form a natural infill to the existing established developed areas within the city boundary and southern suburbs. They are located in a highly accessible and strategic location adjacent a District Centre with associated services and along a transport corridor and in close proximity to the city centre.
- 5.24 The subject lands are therefore an important area for development in the context of the strategic development of the region. The subject lands are therefore essential for the achievement of the compact and sustainable urban growth of Limerick.

***(v) There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.***

- 5.25 The DOEHLG Development Plan Guidelines outline that a sequential approach to the development of land should be promoted whereby zoning should extend outwards from the centre of an urban area, with undeveloped lands closest to the core and public transport routes being given priority. The subject lands therefore offer suitable and available land adjoining the existing urban areas to accommodate development.
- 5.26 Appendix 1 of this document provides a diagrammatic representation of the current Development Plan Guidelines for the zoning of lands in a sequential manner, and demonstrates that the subject lands sequentially are favourable due to comprising an infill site on a public transport corridor adjacent and existing established District Centre, and as sought under the NPF and RSES, would deliver homes, economic development and associated amenities and services within the existing urban area on an infill site.
- 5.27 Appendix 2 Provides a note prepared by Arthur Cox, Solicitors outlining the legal basis for undertaking strategic flood risk assessments, and how such assessments should be undertaken at an early stage in the plan making process.

**3. A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere.**

5.28 A Strategic Flood Risk Assessment (SFRA) and Strategic Environmental Assessment (SEA) would be undertaken as part of the Development Plan making process. It is noted that notwithstanding the flood maps for the area, the existing embankments constructed in the 1960's provide flood defences to a 1 in 200-year tidal event, which is significant. We also understand that consultants are to be appointed to bring forward the Limerick Flood Scheme, and defences along the Ballinacurra Creek watercourse would form part of the Scheme. This would provide a defended corridor along Balinacurra Creek and further emphasise the strategic nature of the subject lands for development.

## 6.0 SUMMARY AND CONCLUSIONS

- 6.1 It has been identified that the subject lands are partially located in a Zone A, B and C in terms of flood risk. Having regard to the location of the lands, the nature of the development and the requirements of *'The Planning System and Flood Risk Management'* Guidelines, it has been determined that the subject proposal, in relation to the Flood Zone A and B lands, must be examined under the Justification Test for Development Plans for certain uses of the concept plan as set out in the Flood Risk Guidelines.
- 6.2 Having carried out the required Plan-Making Justification Test assessment, it has been determined that the subject proposal complies with the requirements of the Justification Test for Development Plans. The following points are of particular relevance:
- (i) The lands are located within the Southern Regional Assembly, encompassing the Limerick Metropolitan Area. The NPF recognises the importance of consolidation the such areas in order to realise a competitive city.
  - (ii) The lands strategic location in the existing urban are on a sequentially favourable infill site and present an excellent opportunity to create a high quality mixed use development and provide access to enhanced amenities and services.
  - (iii) The development of the subject lands will help to better connect the Dooradoyle area with the city core.
  - (iv) The development of the subject lands will also provide for the delivery of a critical mass of residential, economic social and amenity development which will support increased investment in the area, promote sustainable development and therefore result in both direct and indirect planning gain benefits to the County.
- 6.3 On the basis of the above, it is considered that the assessment under the Plan-Making Justification Test has demonstrated that the proposed development of the subject lands is appropriate.

## APPENDIX A – SEQUENTIAL ANALYSIS OF LAND

### Sequential Analysis

In its most basic description, a sequential analysis for the purposes of land use zoning, in order to achieve compact growth and in the context of Limerick City and Environs (the defined settlement boundary), seeks to assess lands with respect to its relative proximity to the city centre.

Compact Sustainable Growth is one of the Guiding principles for the Limerick and Shannon Metropolitan Area Spatial Plan (MASP) contained in the Regional Spatial and Economic Strategy (RSES):

*Compact sustainable growth – The development of brownfield and infill lands to achieve a target of at least 50% of all new homes within or contiguous to the existing built up area in Limerick City and 30% in Shannon and other settlements.*

The Sustainable Residential Development in Urban Areas – Guidelines for Planning Authorities (2009) provides for the following guidance on the sequential approach to the zoning of land:

*“When land is zoned in a development plan without the benefit of a more detailed local area plan designation, the development plan should identify where practicable the sequential and co-ordinated manner in which zoned lands will be developed, so as to avoid a haphazard and costly approach to the provision of social and physical infrastructure. The sequential approach as set out in the Department’s Development Plan Guidelines (DoEHLG, 2007) specifies that zoning shall extend outwards from the centre of an urban area, with undeveloped lands closest to the core and public transport routes being given preference, encouraging infill opportunities, and that areas to be zoned shall be contiguous to existing zoned development lands and that any exception must be clearly justified in the written statement of the development plan.”*

The Development Plan Making Guidelines (2007; Section 4.19) states:

*“In order to maximise the utility of existing and future infrastructure provision and promote the achievement of sustainability, a logical sequential approach should be taken to the zoning of land for development:*

- (i) Zoning should extend outwards from the centre of an urban area, with undeveloped lands closest to the core and public transport routes being given preference (i.e. ‘leapfrogging’ to more remote areas should be avoided);*
- (ii) A strong emphasis should be placed on encouraging infill opportunities and better use of under-utilised lands; and*
- (iii) Areas to be zoned should be contiguous to existing zoned development lands.*

*Only in exceptional circumstances should the above principles be contravened, for example, where a barrier to development is involved such as a lake close to a town. Any exceptions must be clearly justified by local circumstances and such justification must be set out in the written statement of the development plan.”*

For the purposes of this exercise, lands will be categorised as follows and in order of where development should be targeted:

- Generally developed - Sites in this category are primarily brownfield (vacant or underutilised) and located in the developed area of the settlement footprint
- Consolidated infill – Sites in this category represent larger scale infill sites, located between developed areas
- Contiguous expansion – Sites in this category represent an outward expansion contiguous to existing developed areas

A useful exercise is to review aerial imagery of the settlement to determine, broadly, the categorisation of lands. Such an exercise is an initial screening of lands, to broadly identify where development and zoning of lands such be explored and targeted.

As part of this sequential assessment, we have carried out this exercise (below). The diagram, overlaid on aerial imagery (Google Maps) identifies the developed area, areas which would provide for consolidated infill of lands and areas which if developed would comprise contiguous expansion. As part of this exercise, the current BusConnects proposals (it is acknowledged certain roads may not be delivered where not existing) and the existing heavy rail lines (referenced as potential future passenger rail by Irish Rail in their Strategic Issues Paper submission to LCCC) are also mapped. This exercise is a mapped illustration of the guidance provided in the Development Plan Guidelines on where land should be zoned and sequentially in which order of priority (outwards from the centre and along transport corridors).



## Note on Flood Risk Assessment

In 2009 the Minister for the Environment issued the Planning System & Flood Risk Management Guidelines (the “**Guidelines**”). The Minister’s Foreword states that the guidelines require the planning system at national, regional and local levels to avoid development in areas at risk of flooding, particularly flood plains, **unless there are proven wider sustainability grounds that justify appropriate development and where the flood risk can be reduced or managed to an acceptable level without increasing flooding risk elsewhere**. A core objective of the guidelines is to avoid **inappropriate** development in areas at risk of flooding.

At the outset it is important to recognise that there is no outright planning prohibition on development in areas affected by flood risk. Nor is there a policy of excluding the possibility of lands located within flood plains from being zoned for development. Inappropriate types of development that would create unacceptable risks from flooding should not be planned for or permitted. However, by following the Guidelines, once certain criteria are met and certain procedures are followed, zoning for appropriate development, and development accordingly in certain flood risk areas may proceed, as is outlined below.

Planning authorities are to identify flood hazard and potential flood risk **at the earliest stage**. The Guidelines require that a **sequential approach** to flood risk management be adopted when preparing a development plan in general. This is based firstly on avoidance of areas at risk of flooding. If avoidance is not practicable, consideration should be given to substituting a land use that is less vulnerable to flooding. When for planning reasons both avoidance and substitution cannot take place, consideration should be given to mitigation and management of risks.

How development may be accommodated within flood risk areas is provided for through the use of a **Justification Test** set out in the Guidelines, **where the planning need and the sustainable management of flood risk to an acceptable level must be demonstrated**.

### Justification Test for Development Plans

Where, as part of the preparation of a development plan, a planning authority is considering the future development of areas in an urban settlement that are at moderate or high risk of flooding, for uses or development vulnerable to flooding (dwellings are considered highly vulnerable development) that would generally be inappropriate, all of the following criteria must be satisfied:

1. The urban settlement is targeted for growth under the National Planning Framework, Regional Spatial & Economic Strategy, statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.
2. The zoning or designation of the lands for the particular use or development type is required to achieve the proper planning and sustainable development of the urban settlement and, in particular:
  - a. Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement;

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- b. Comprises significant previously developed and/or under-utilised lands;
  - c. Is within or adjoining the core of an established or designated urban settlement;
  - d. Will be essential in achieving compact and sustainable urban growth; and
  - e. There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.
3. A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere.

In summary the Guidelines provide the framework within which Planning Authorities can zone land for development which is located within identified Flood Risk Zones (A & B) in certain circumstances which there is an identified planning need to do so, and where an engineering solution is available which can manage the risk without causing unacceptable adverse impacts elsewhere.

The Guidelines identify that the assessment of potential flooding risk in the form of Strategic Flood Risk Assessment (SFRA), should be undertaken at the early stages of the development plan making process, and before decisions are made on the zoning of land.

The Office of Public Works (OPW) is the lead agency for flood risk management in Ireland. In this role they actively engage with Planning Authorities who are preparing Development Plans. In their submissions to both the Draft Southern Environs LAP and the Limerick Development Plan 2022-2028 Issues Paper they identified a particular need for *“a more detailed assessment would be recommended for the SELAP and should be at a minimum a Stage 2 SFRA. The Guidelines set out that land use zoning, informed by the suitable level of FRA and if necessary a Justification Test, should be concluded at the Plan-making Stage.”*

They go on to state that:

*“Chapter 5 of the Guidelines state that most flood risk issues should be raised within strategic assessments undertaken by local authorities at the plan-making stage. As flood risk assessments are integrated with the SEA process, Section 3.10 also highlights the need that FRA’s be undertaken as early as possible in the process so that the SEA is fully informed of the flood risks and impacts of the proposed zoning or development”.*

This overall approach to flood risk assessment is summarised well in the OPW’s submission to Limerick Council on the Development Plan Issues Paper when it stated:

*“In the preparation of the Draft Plan, the OPW recommends that particular attention is paid to the following sections of the Guidelines;*

- Chapter 3 – The Planning Principles,
- Chapter 3 – The Sequential Approach, and definitions of Appropriate Development,
- Chapters 3 and 4 – The Plan-making Justification Test where it is intended to zone or otherwise designate land where there is a moderate or high probability of flooding, noting



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*that the application of the Test should be supported by analysis to an appropriate level of detail.*

*The OPW advises that clear commitments and strategic objectives regarding flood risk and the principles of the Guidelines are included in the Draft Plan, and that persons with the relevant expertise review any flood risk assessments submitted Limerick City and County Council”.*

## **Concluding Comments**

The first step in the process is the carrying out of a comprehensive assessment of land capacities of all potential sites located within the built up area of the city and suburbs to determine whether sufficient land is available in the right places and capable of being developed within the period of the plan to meet the projected housing needs of the city. Having then established the needs, should some of these potential sites be located within flood zones, then the Justification Tests should be carried out in accordance with the Guidelines.

From the foregoing review of the relevant national Guidelines on Flood Risk Assessment, and the advice provided by the national lead agency on flooding (OPW), it is clear that it is both necessary and appropriate for Limerick City & County Council to undertake a detailed Strategic Flood Risk Assessment as part of the preparatory work for the new City & County Development Plan. This should also include the preparation of sufficiently detailed Justification Tests on those lands which have been identified as being needed to achieve national and regional planning objectives of promoting compact sustainable growth of the city and suburbs, where they may be located with identified Flood Zones.

Clancourt Group  
Dooradoyle Portland Urban  
Quarter  
Strategic Flood Risk Assessment

262009

Draft 2 | 9 July 2020

Draft

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 262009

**Ove Arup & Partners Ireland Ltd**

**Arup**  
50 Ringsend Road  
Dublin 4  
D04 T6X0  
Ireland  
[www.arup.com](http://www.arup.com)

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## Executive Summary

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Arup was commissioned by Clancourt Group to undertake a Strategic Flood Risk Assessment for a proposed Dooradoyle Portland Urban Quarter Masterplan which incorporates Clancourt's landholding adjacent to and including the existing Crescent Shopping Centre in Dooradoyle, Limerick.

The Shannon Catchment Flood Risk Assessment and Management (CFRAM) study was used to carry out an initial flood risk review of the site and surrounding area. The CFRAM study found that the site is subject to tidal flooding which originates at the upper (eastern) end of the lands where the existing flood defence embankment is slightly lower (c. 0.2m due to degradation over time) than further downstream.

A hydrological assessment of the Ballinacurra Creek and surrounding tributaries was carried out to produce estimates of peak flows and a hydrograph shape for use as input into the hydraulic model built for this study. This assessment included the derivation of peak flows using several methodologies. The application of the Flood Studies Update FSU methodology was deemed the most appropriate for this study as it adopts the most recent hydrological datasets specific to Ireland and is also considered the most comprehensive flow estimation method available. Results also compare well to the IH124 and FSR6 variable methods and are more conservative than flows derived under the Shannon CFRAM study, which provides further confidence that the flow estimation is conservative.

In order to derive site specific tidal conditions, the Shannon Catchment Flood Risk Assessment and Management (CFRAM) Study and the Irish Coastal Protection Strategy Study (ICPSS) Phase IV – Shannon Estuary were assessed. These studies were compared with historical gauge records at Baals Bridge and Limerick Dock. While all source showed good correlation the CFRAMS levels resulted in the highest boundary conditions and as such were adopted for this assessment.

A detailed coupled one-dimensional (1D) and two-dimensional (2D) unsteady flow hydraulic model of the Ballinacurra Creek and Ballysheedy tributary was constructed in order to accurately simulate flood risk in the vicinity of the subject lands, including both fluvial and coastal sources. The model was informed by a bathymetric survey of the river, LiDAR survey of the floodplain and topographical survey of the river and embankments.

The model confirmed that the subject lands are currently subject to tidal flooding which propagates the flood defence embankments low point at the eastern end of the site. In accordance with the Planning System and Flood Risk Management Guidelines (OPW 2009) the existing flood defence embankments were not considered in classifying flood zoning of the subject lands. Thus, the majority of the subject lands lie within Flood Zone A and requires a Justification Test. Such a Development Plan Justification Test was recently completed by John Spain Associates and included in Appendix G

However, the existing OPW embankment offer a high degree of protection; modelling results demonstrate that this embankment is overtopped for the 200-year tidal event along the lowest point of its crest, which is located near its eastern site boundary. A site walkover and topographical survey of this embankment confirmed that this low point is likely a result of settlement of the embankment over time from its original design level, of in the order of 0.2m. A significant volume of flood water would therefore currently inundate the subject lands during the extreme tidal events which would originally have been contained within the defended estuarine channel.

The obvious quick fix solution to the above flooding mechanism to protect the main Clancourt site adjoining the Crescent Centre, is to restore the existing embankment to the 1 in 200-year design standard. The flood modelling undertaken for this study demonstrates that this can be achieved without altering the flood risk profile outside of the Clancourt lands.

However, the flood modelling work undertaken as part of this SFRA identified a more strategic solution which has the potential to remediate flood risk, not just for the Clancourt lands, but for the entire Dooradoyle Portland Urban Quarter Masterplan area and for existing housing developments upstream on the Ballinacurra Creek and Ballysheedy River. This is shown in Figure 1.

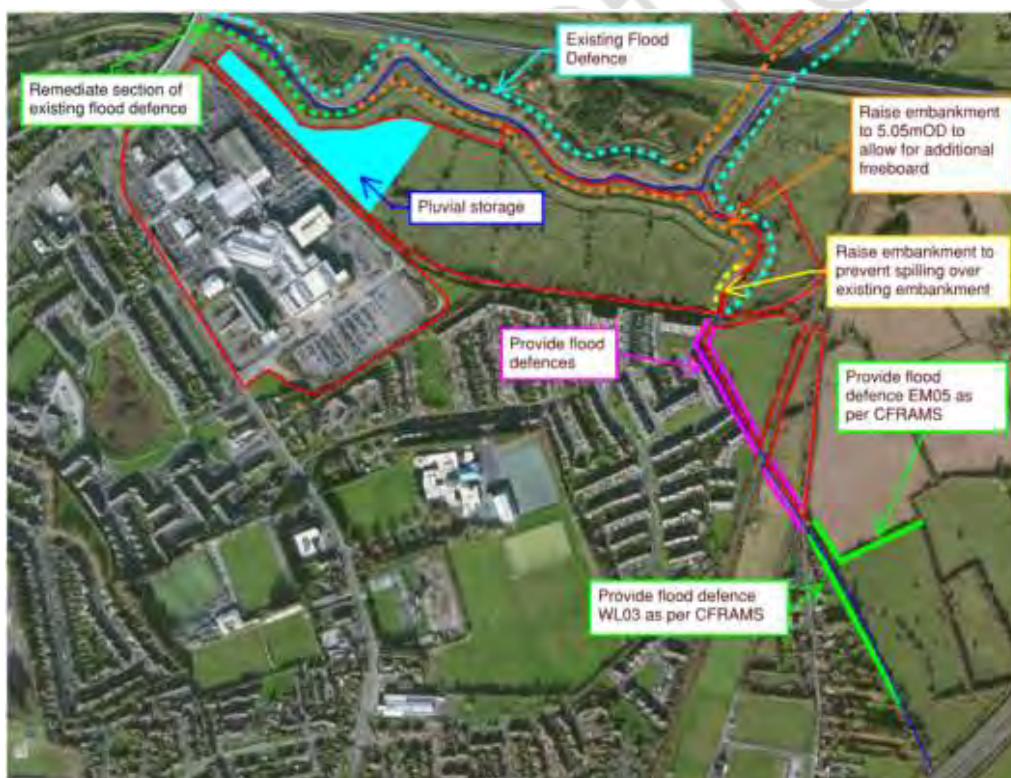


Figure 1 Overview of tie in between proposed Clancourt tidal flood protection enhancement measures and the proposed upstream Shannon CFRAMS fluvial flood protection measures (to provide holistic approach to combined tidal and fluvial flood risk in the vicinity of the Rossbrien Road)

To achieve this, it is necessary to consider any proposed flood defences in the context of the Shannon CFRAM.

The proposed defences on the Clancourt lands address the tidal risk and include defences immediately downstream of the Rosbrien Road (coloured purple in Figure 1). The Shannon CFRAMS include proposed measures to address fluvial risk immediately upstream of Rosbrien Road (coloured green in Figure 1). An integrated approach can be achieved by Clancourt providing low level defences either side of the Ballinacurra Stream downstream of Rosbrien Road which would essentially tie into the Shannon CFRAMS defences immediately upstream. Containing the flow in the channel here would marginally increase flood levels locally upstream of the Rosbrien Road and would thus require a modest increase (envisaged to be a maximum of less than 0.2m increase at downstream end) in the height of the proposed Shannon CFRAMS defences, but in the context of the wider area benefits, this additional cost would be represent very high value for money.

In Summary, this Strategic Flood Risk Assessment Report has demonstrated that, with modest scale interventions to improve upon and extend the existing flood defences, it is eminently possible, taking an integrated approach to solve the current flooding issues for the lands bordering the Ballinacurra Creek in the Dooradoyle/Rosebrien Road areas.



# 1 Introduction

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## 1.1 Context

Arup was commissioned by Clancourt Group to undertake a Strategic Flood Risk Assessment for a proposed Dooradoyle Portland Urban Quarter Masterplan which incorporates Clancourt's landholding adjacent to and including the existing Crescent Shopping Centre in Dooradoyle, Limerick.

The subject lands are located in an underutilised area between the existing developed lands in Dooradoyle and the City Centre, and the development of these lands is seen as critical in creating a stronger and sustainable linkage of the two areas.

The lands are already protected to a high standard by existing OPW embankments. The main aim of this commission is to provide an evidence base to justify the development of these strategic lands, and to demonstrate that the development can satisfactorily address flood risk both on and adjoining the lands, in a manner which is compatible with any future flood relief works (as identified in the Shannon CFRAMS) and which does not worsen flood risk elsewhere.

## 1.2 Scope

The scope of the study is as follows:

- Undertake a site visit to gain a thorough understanding of the flood risk at the site, and ground truth all topographical datasets and historic flood maps.
- Scope and procure up to date topographic surveys of the site to facilitate the study.
- Undertake a hydrological assessment of the Ballinacurra Creek and its minor tributary that are both adjacent to the site. The assessment will use methods appropriate to the size of the catchment, including the recent Flood Studies Update (FSU), which has not previously been applied.
- Undertake an assessment of the design tidal levels in the Shannon Estuary and Ballinacurra Creek using best available data.
- Consider the joint probability of fluvial/tidal events at the site.
- Develop a detailed 1D/2D hydraulic model of the relevant reach of the Ballinacurra Creek and its floodplain to represent the existing and future condition.
- Review the risk of groundwater flooding at the site for both the existing scenario and for a potential future development scenario.
- Consideration of pluvial flood risk and the existing urban surface water drainage catchment which drains to the Creek.
- Liaison with the specialist Planning Consultants advising the project, in terms of the wider planning issues relating to a future development of the site.

- Preparation of a Strategic Flood Risk Assessment Report that sets out our key findings.

### 1.3 Study Area

The study area, highlighted in Figure 1 below, is located south of Limerick City adjacent to the N18 to the north. The study area lies directly north of the Crescent Shopping Centre lands (in Clancourt's ownership) and is traversed by the Ballinacurra Creek.

Figure 2: Study Area identified as 'undeveloped land' highlighted in yellow



The land south of the Creek is in the ownership of Clancourt Group whereas most of the lands directly to the north of the Creek (Portland Park) are owned by Limerick City and County Council.

Figure 2 below shows the Study Area in the context of the wider Limerick City metropolitan boundary.

It can be seen from this figure that the combined lands along the Ballinacurra Creek present an opportunity to provide connectivity between Limerick City and the Southern Suburbs.

Figure 3: Map of Limerick and Southern Suburbs



Figure 4 below provides finer detail in terms of the landownership within the Study Area.

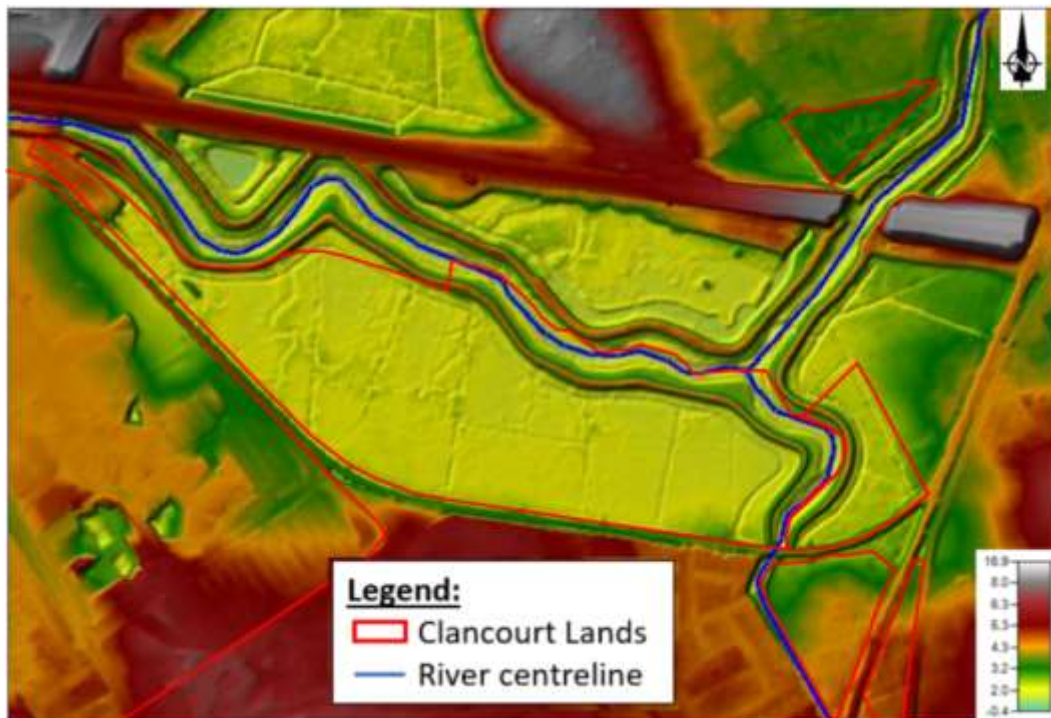
Figure 4 Details of landownership



## 1.4 Study Area Description

The overall site area in Clancourt's ownership is approximately 35 ha (including the Crescent Shopping Centre development) with the largest area south of Ballinacurra Creek being approximately 16.8 ha. The topography of area west of the main railway line does not vary significantly across the site ranging in level from approximately 2.20mOD at the southern end of the site to 1.9mOD at the northern end of the site. The ground rises further and more sharply to the east of the railway line. Refer to Figure 4 below for LIDAR mapping illustrating ground levels within the Study Area.

Figure 5: Existing Ground Levels – LIDAR



An OPW flood protection embankment runs along both banks of the Ballinacurra Creek as far east as the railway line and its tributary, the Ballysheedy Stream as far as the Rosbrien Road. Levels of the top of the embankment vary from 3.75mOD in the east to 5.3mOD at the western end of the site. Refer to Appendix A for an embankment survey drawing provided by Punch Consulting Engineers (2014), including plan and vertical profile.

## 1.5 Description of Masterplan Proposal

Following the adoption of the Regional Spatial & Economic Strategy (RSES) for the Southern Region, including the Metropolitan Area Strategic Plan (MASP) for Limerick, which were both published on the 31st January 2020, Limerick City & County Council will shortly commence preparations of a new City & County Development Plan for the combined Council area. This new Development Plan must be aligned and be fully consistent with the Regional Strategy.

Having regard to the planning policies and objectives contained in the RSES/MASP, Clancourt believes that its land holding can be utilised to contribute towards meeting the significant housing and employment needs the city will face arising from the very significant population growth targets set out for Limerick in the National Planning Framework (NPF).

The Crescent Centre and adjoining lands (i.e. the study area) sit on an important strategic public transport corridor which links the southern suburbs with the city centre. However, much greater sustainable transport linkages need to be developed to cross the existing barrier which is the M7/N18 corridor and the Ballinacurra Creek to improve connectivity with the city centre.

Directly to the north of the Creek are lands owned by Limerick Council (Portland Park), which, while being laid out as a public park, are underutilised, poorly supervised in terms of passive surveillance and not well kept. The combined lands to the northeast of the Crescent Centre along the Ballinacurra creek and the lands around and including Portland Park present a gap in the continuity of the city's urban fabric and limit the connectivity of the city to Dooradoyle/ Raheen. We believe the combined lands offer immense potential and opportunity to help knit the southern suburbs into the city and to provide a major infill site for both housing and employment, as well as recreational use.

Rezoning these unutilised lands could provide in the region of 1,900 housing units – around 20% of Limerick City's requirements by 2026. Developing this underutilised asset will also make a significant contribution towards meeting Limerick City's target of 50% of future housing to be on infill/brownfield sites within the city & suburbs. Importantly, the development will also be in close proximity to existing retail and other services and to areas of high-density employment.

A preliminary concept of the proposed masterplan is shown in Figure 6 below.

The Masterplanning has been informed by the detail strategic flood risk assessment (SFRA) described in this report recognising that the study area is already protected to a high standard but will require further flood risk management measures to be developed to provide confidence in providing sustainable development in the areas.

The following sections of this report set out the processes undertaken and the key findings of the SFRA,

Figure 6 Preliminary Concept Sketch of Masterplan



Draft

## 2 Data Collection

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Early in the Masterplanning process, site walkovers were carried out (between April and July 2018). During these walkover surveys, the topographical features of the site and the relevant watercourses were recorded. Refer to Appendix B for photographs taken during the walkover of 18 July 2018.

Following the initial site walkover, river survey data was provided by Murphy Surveys Ltd (May 2018). The survey data consisted of a long section along the watercourses, cross-sections and photographs along the watercourses at approximately 50 - 100m spacings as well as at any structures along the watercourses.

Light Detection and Ranging (LIDAR) was also acquired from Fugro (May 2018) in order to define the surrounding ground elevations.

The following data was also collected and reviewed:

- Flooding history of the site from the OPW National Flood Hazard Mapping website ([www.floodmaps.ie](http://www.floodmaps.ie))
- Site geological data from the Geological Survey of Ireland website ([www.gsi.ie](http://www.gsi.ie))
- Limerick County Development Plan 2010 – 2016 (as extended)
- Southern Environs Local Area Plan 2011 - 2017
- Ordnance Survey Ireland Discovery Series Map
- Shannon CFRAM Study

All levels quoted in this report relate to Malin Head datum.

## 3 Planning Context

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### 3.1 Introduction

The following planning policy documents are relevant to the assessment of this proposed development.

- The national planning guidelines published by the OPW and the Department of the Environment, Heritage and Local Government in November 2009 entitled ‘The Planning System and Flood Risk Management: Guidelines for Planning Authorities’.
- In terms of planning policy context, the following documents apply:
  - Ireland 2040 NPF
  - Regional Spatial & Economic Strategy for the Southern Region
  - Limerick County Development Plan 2010-2016
  - Southern Environs Local Area Plan 2011 – 2017.

### 3.2 The Planning System and Flood Risk Management Guidelines

#### 3.2.1 Introduction

In November 2009, the Department of Environment, Heritage and Local Government and the Office of Public works jointly published a Guidance Document for Planning Authorities entitled “The Planning System and Flood Risk Management”.

The guidelines are issued under Section 28 of the Planning and Development Act 2000 and Planning Authorities and An Bord Pleanála are therefore required to implement these Guidelines in carrying out their functions under the Planning Acts.

The aim of the guidelines is to ensure that flood risk is neither created nor increased by inappropriate development.

The Minister’s foreword to the Guidelines ‘*recognise the fact that many of the areas where people live and work are already subject to flood risk, and that the needs of regeneration and growth can be reconciled, while taking due account of the need to minimise and mitigate such risks.*’

This principle applies directly to the subject lands.

Since the introduction of the guidelines on the ‘Planning System and Flood Risk Management’ in 2009, flood risk assessment now rightly forms a key part of good spatial development planning, recognising that developments in areas at risk of flooding should be limited to those areas where ‘*there are proven wider sustainability grounds that justify appropriate development and the flood risk can*



*be reduced or managed to an acceptable level without increasing flood risk elsewhere’.*

The guidelines require the adoption of a Sequential Approach (to Flood Risk Management) of Avoidance, Reduction, Justification and Mitigation and they require the incorporation of Flood Risk Assessment into the process of making decisions on planning applications and planning appeals.

Fundamental to the guidelines is the introduction of flood risk zoning and the classifications of different types of development having regard to their vulnerability.

The management of flood risk is now a key element of any development proposal in an area of potential flood risk and should therefore be addressed as early as possible in the site master planning stage.

Accordingly, the flood risk assessment work undertaken in preparing this report has informed the development of the proposed masterplan.

### 3.2.2 Definition of flood zones

Flood Zones are geographical areas within which the likelihood of flooding is in a particular range.

There are three types of flood zones defined in the Guidelines. Refer Table 1 below.

Table 1: Flood zone definitions

<b>Flood Zone A</b>	Probability of flooding from rivers and the sea is highest (greater than 1% or 1 in 100 for river flooding or 0.5% or 1 in 200 for coastal flooding).
<b>Flood Zone B</b>	Probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 year and 1% or 1 in 100 for river flooding and between 0.1% or 1 in 1000 year and 0.5% or 1 in 200 for coastal flooding); and
<b>Flood Zone C</b>	Probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 1000 for both river and coastal flooding). Flood Zone C covers all areas of the plan which are not in zones A or B.

### 3.2.3 Definition of vulnerability classes

Table 2 summarises the Vulnerability Classes defined in the Guidelines and provides a sample of the most common type of development applicable to each.

Table 2: Vulnerability classes

<b>Highly Vulnerable Development</b>	Includes Garda, ambulance and fire stations, hospitals, schools, residential dwellings, residential institutions, essential infrastructure, such as primary transport and utilities distribution and SEVESO and IPPC sites, etc.
<b>Less Vulnerable Development</b>	Includes retail, leisure, warehousing, commercial, industrial and non-residential institutions, etc.
<b>Water Compatible Development</b>	Includes Flood Control Infrastructure, docks, marinas, wharves, navigation facilities, water-based recreation facilities, amenity open spaces and outdoor sport and recreation facilities

### 3.2.4 Types of vulnerability class appropriate to each zone

Table 3 illustrates the different types of Vulnerability Class appropriate to each Zone and indicates where a Justification Test will be required.

Table 3: Justification test applicability

	<b>Flood Zone A</b>	<b>Flood Zone B</b>	<b>Flood Zone C</b>
Highly Vulnerable	Justification Test	Justification Test	Appropriate
Less Vulnerable	Justification Test	Appropriate	Appropriate
Water Compatible	Appropriate	Appropriate	Appropriate

The flood risk management guidelines recognise that there is a need to reconcile the desire to avoid development in areas at risk of flooding while also ensuring sequential and compact urban development as several large urban centres are already located in areas that are at risk of flooding. Section 3.7 of the guidelines state the following;

*“Notwithstanding the need for future development to avoid areas at risk of flooding, it is recognised that the existing urban structure of the country contains many well-established cities and urban centres, which will continue to be at risk of flooding. At the same time such centres may also have been targeted for growth in the National Spatial Strategy, regional planning guidelines and the various city and county development plans taking account of historical patterns of development and their national and strategic value. In addition, development plans have identified various strategically located urban centres and particularly city and town centre areas whose continued growth and development is being*

*encouraged in order to bring about compact and sustainable urban development and more balanced regional development. Furthermore, development plan guidelines, issued by the Minister for the Environment, Heritage and Local Government under Section 28 of the Planning and Development Act 2000, have underlined the importance of compact and sequential development of urban areas with a focus on town and city centre locations for major retailing and higher residential densities”.*

### 3.3 Ireland 2040 and RSES (Southern Region)

National and regional planning policy in the form of the National Planning Framework 2040 and the Regional Spatial and Economic Strategy - Southern Regional Assembly both promote consolidation of the Limerick Metropolitan Area.

Consolidation of the Limerick Metropolitan Area is seen as paramount in order to achieve a successful regional development through the promotion of higher densities at appropriate locations in harmony with improved public transport systems.

The National Planning Framework is the Government’s plan to cater for the extra one million people that will be living in Ireland, the additional two thirds of a million people working in Ireland and the half a million extra homes needed in Ireland by 2040.

As a strategic development framework, Ireland 2040 sets the long-term context for our country’s physical development and associated progress in economic, social and environmental terms and in an island, European and global context.

National investment planning, the sectoral investment and policy frameworks of departments, agencies and the local government process will be guided by these strategic outcomes in relation to the practical implementation of Ireland 2040. The NPF sets out the importance of development within existing urban areas by “making better use of under-utilised land including ‘infill’ and ‘brownfield’ and publicly owned sites together with higher housing and job densities, better services by existing facilities and public transport”.

Objective 3a of the NPF states that it is a national policy objective to “deliver at least 40% of all new homes nationally within the built-up envelope of existing urban settlements”. For the country’s five cities, this minimum target is 50%.

The RSES set out the planned direction for growth up to 2040. The subject lands are located within the Limerick Shannon Metropolitan Area Strategic Plan. The overview for the MASP states: “Limerick City is the largest urban centre in Ireland’s Mid-West and the country’s third largest city. The NPF supports ambitious growth targets to enable Limerick City to grow by at least 50% to 2040 and to achieve its potential to become a city of scale.”

### 3.4 Limerick County Development Plan

Section 8.3.6 of the Limerick County Development Plan outlines specific objectives for flood risk which have been developed in accordance with “The Planning System and Flood Risk Management Guidelines for Planning Authorities, 2009.” These objectives ensure that flood risk management is fully integrated into the County Development Plan. The objectives outlined in Section 8.3.6 include:

- **Objective IN O36: Minimise threat and consequences of flooding**

*“It is the objective of the Council to avert, or where this is not possible, to minimise the threat of flooding in new developments and existing built up areas. Priority will be given to the protection of vulnerable uses that would be seriously affected by the consequences of flood events. The Council will have regard to Government Guidelines, ‘The Planning System and Flood Risk Management’ and OPW data and advice in the assessment of all development proposals and any subsequent amendments.”*

- **Objective IN O37: Manage river catchments and surface water run-off**

*“It is the objective of the Council to assist in the sustainable management of river catchments to reduce both the quantity of water run-off and its speed and unpredictability, allow rivers to take their natural flow, and allow flooding only to occur in lower sensitivity areas.”*

- **Objective IN O38: Screening for Flood Risk**

*“It is the objective of the Council to continue to screen for flood risk as part of the Strategic Environmental Assessment (SEA) process.”*

- **Objective IN O 39: Flood risk management and development**

*“It is an objective of the Council to ensure that land uses are zoned, and developments allowed where there is minimum flood risk, prioritising the protection of certain land uses particularly vulnerable to the effects of flooding. To this end:*

- a) The sequential approach to zoning and assessment recommended in ‘The Planning System and Flood Risk Management’, DEHLG November 2009 and any subsequent document will be adopted.*
- b) The Council will work with the OPW to ensure up to date data and assessment, and to take a precautionary approach where there are gaps in data. Attention will be given to the records and assessments of past flood events, the position of OPW benefiting lands, and the position of alluvial soils in establishing a preliminary estimate of risk.*
- c) It is an objective of the Council to prepare a Strategic Flood Risk Assessment for relevant areas of County Limerick.*
- d) Require any development proposal in a location identified as being subject to flooding to:*

1. *Carry out a flood risk / catchment analysis for the development to assess the likely level of flood hazard that may affect the site to the satisfaction of the Council;*
  2. *Design the development to avoid flood levels, incorporating building design measures and materials to assist evacuation and minimize damage to property from flood waters;*
  3. *Demonstrate that the proposal will not result in increased risk of flooding elsewhere, restrict flow across floodplains, where compensatory storage / storm water retention Volume 1 Transport and Infrastructure Limerick County Development Plan 2010-2016 November 2010 (as varied) 8 - 27 measures shall be provided on site and will not alter the hydrological regime up stream or downstream or at the development location so as to pose an additional flood risk or to increase flood risk;*
  4. *Proposals should have provision to reduce the rate and quantity of runoff i.e. minimisation of concrete surfaces and use of semi permeable materials and include adequate measures to cope with the flood risk, e.g. sustainable drainage systems.*
- e) *Have regard to the Office of Public Works Planning Policy Guidance in the design and consideration of development proposals; and*
- f) *Preserve riparian strips free of development and ensure adequate width to permit access for river maintenance. All flood risk assessments should have regard to national flood hazard mapping, predicted changes in flood events resulting from climate change and the River Shannon Catchment Flood Risk and Management Plan Studies (CFRAM) when completed by the OPW and the Shannon International River Basin Management Plan. The ‘development management justification test’ and the ‘plan - making justification test’ as detailed in The Planning System and Flood Risk Guidance document will guide Council responses to development proposals in areas at moderate or high risk of flooding.”*
- **Objective IN O40: To minimise the impact of structures and earthworks on flood plains and river flow.**  
  
*“It is an objective of the Council in general not to permit development of the following types in or across flood plains or river channels unless it can be clearly demonstrated using flood impact assessments, that they would not create or exacerbate risk of flooding in sensitive locations such as:*
    - a) *construction of embankments, wide bridge piers or similar structures.*
    - b) *raising of ground levels where this would interfere with natural river flow or currents.”*

- **Objective IN O41: Sustainable Urban Drainage systems**

*“It is the objective of the Council to reduce insofar as possible, the rate and quantity of surface water run-off from all new developments. Developments*

*should where possible, incorporate sustainable urban drainage systems (SuDS)."*

### 3.5 Southern Environs Local Area Plan

On 16 May 2016 Limerick City & County Council extended the duration of the Southern Environs Local Area Plan 2011-2017 for a further five years, until May 2021.

The Local Area Plan identifies the following objectives:

- **Objective IN 5: Flood risk assessment**

*"It is an objective of the Council to require a comprehensive flood risk assessment for proposals in zoned areas at risk of flooding or areas adjoining same. The effects up and down stream shall be considered as cumulative effects of these developments. Flood risk assessment shall be carried out to the appropriate level of detail to demonstrate that flood risk to and from the development can and will be adequately managed. Such assessment will have to be guided by the contents of the The Planning Systems and Flood Risk Management (November 2009) guidelines and any subsequent guidance on the topic. Where development is permitted in areas subject to flooding, flood mitigation requirements will be required by the Council in terms of design, both internal and external and in layout and in the provision of appropriate Sustainable Urban Drainage Infrastructure (SUDS)."*

- **Objective IN 6: Flood risk and the Shannon CFRAM report**

*"It is an objective of the Council to be guided by the measures proposed by the forthcoming Shannon CFRAM report."*

## 4 Definition of Flood Hazard & Flood Mechanisms

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### 4.1 Potential Sources of Flooding

The potential sources of flooding considered for the proposed site can be categorised as:

#### **Fluvial Flooding**

Fluvial flooding occurs when rivers exceed their capacity due to sustained or heavy precipitation. The potential risk of fluvial flooding on these lands is from the Ballinacurra Creek and associated tributaries.

#### **Coastal Flooding**

Coastal flooding occurs when normally dry, low-lying land is flooded by sea water. Coastal flood risk is applicable on these lands due to the tidal influence of the Ballinacurra Creek.

#### **Pluvial flooding**

Pluvial flooding occurs when the capacity of the local urban drainage network is exceeded during periods of intense rainfall. At these times, water can collect at low points in the topography and cause flooding. In the case of these lands, pluvial flood risk can also arise due to the surface water outfalls being 'tidelocked' during periods of high tide resulting in surface water backing up behind the existing flood defence embankments.

#### **Groundwater flooding**

Groundwater Flooding can occur during lengthy periods of heavy rainfall, typically during late winter/early spring when the groundwater table is already high. If the groundwater level rises above ground level, it can pond at local low points and cause periods of flooding.

### 4.2 Historic Flooding

Reports and maps from the OPW Flood Hazard Mapping website ([www.floodmaps.ie](http://www.floodmaps.ie)) have been examined as part of this flood risk assessment. A total of nine single flood events are recorded within proximity to the site, refer to Figure 6 for the locations of these events.

Figure 7: Historic Flood Events – Floodmaps.ie



Table 4 below gives a summary of these flood events including the flood event name, start date, flood quality code and additional information where available.

Table 4: Summary of flood records

Label No.	Flood Event Name	Start Date	Flood Quality Code*	Additional Information
1	Ballynacloagh Ballinacurra Recurring	-	3	<a href="http://floodmaps.ie/View/FloodReports.aspx?Type=Reports&amp;FloodId=2364">http://floodmaps.ie/View/FloodReports.aspx?Type=Reports&amp;FloodId=2364</a>
2	Ballynacloagh River Limerick Dec 1999	25 Dec 1999	3	<a href="http://floodmaps.ie/View/FloodReports.aspx?Type=Reports&amp;FloodId=1986">http://floodmaps.ie/View/FloodReports.aspx?Type=Reports&amp;FloodId=1986</a>
3	Greenfield Road Rosbrien Dec 1999	25 Dec 1999	2	<a href="http://floodmaps.ie/View/FloodReports.aspx?Type=Reports&amp;FloodId=304">http://floodmaps.ie/View/FloodReports.aspx?Type=Reports&amp;FloodId=304</a>
4	Ballynacloagh Rosbrien Recurring	-	3	<a href="http://floodmaps.ie/View/FloodReports.aspx?Type=Reports&amp;FloodId=2364">http://floodmaps.ie/View/FloodReports.aspx?Type=Reports&amp;FloodId=2364</a>
5	Raheen Dooradoyle, Limerick Feb 1990	01 Feb 1990	1	<a href="http://floodmaps.ie/View/FloodReports.aspx?Type=Reports&amp;FloodId=541">http://floodmaps.ie/View/FloodReports.aspx?Type=Reports&amp;FloodId=541</a>
6	Greenfield Road Rosbrien Dec 1999	25 Dec 1999	2	<a href="http://floodmaps.ie/View/FloodReports.aspx?Type=Reports&amp;FloodId=304">http://floodmaps.ie/View/FloodReports.aspx?Type=Reports&amp;FloodId=304</a>

\*Code 1: Contains, for a given flood event at a given location, reliably sourced definitive information on peak flood levels and/or maximum flood extents.

\*Code 2: Contains, for a given flood event at a given location, reliably sourced definitive information on flood levels and/or flood extents. It does not however fully describe the extent of the event at the location.

\*Code 3: Contains, for a given location, information that, beyond reasonable doubt, a flood has occurred in the vicinity.



## 4.3 Summary of Flood Mechanisms

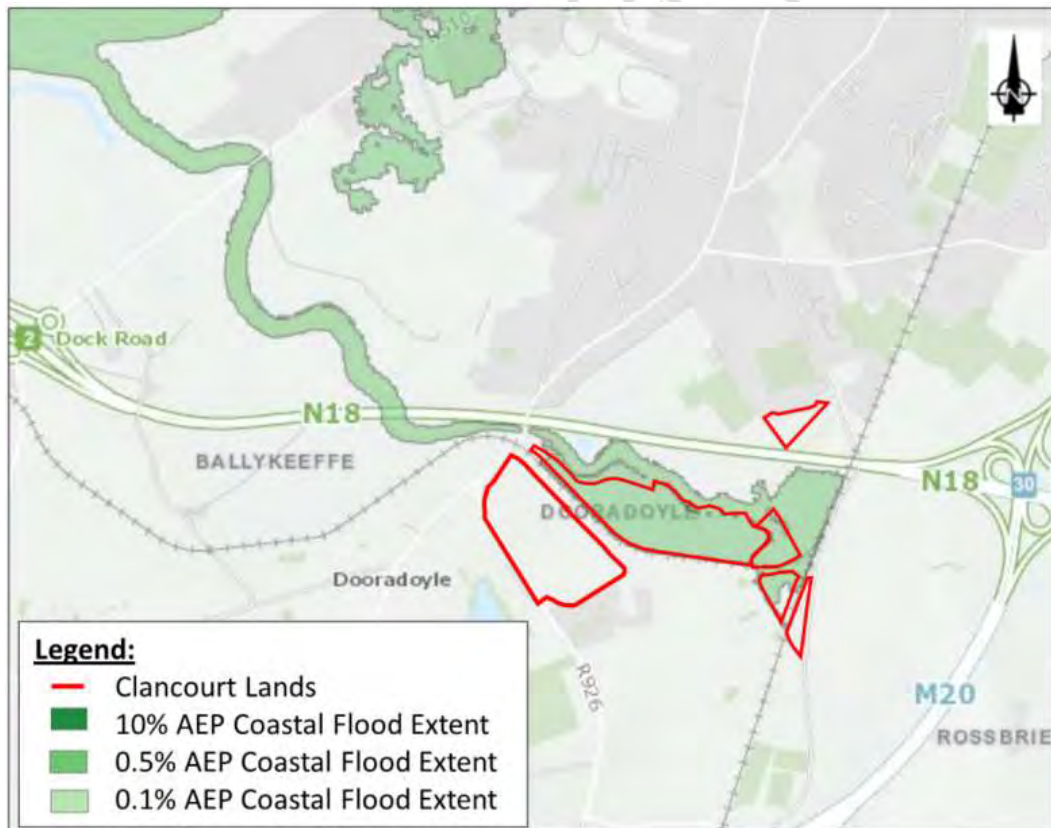
### 4.3.1 Tidal Flooding

As much of the subject lands lie within the historic estuarine floodplain of the Ballinacurra Creek, the greatest flood risk to the subject lands is from tidal flooding. The area was later protected by extensive OPW flood defence embankments which serve to protect a wide area of the existing development in the Dooradoyle Area from tidal flooding.

The Shannon Catchment Flood Risk Assessment and Management (CFRAM) study was used to carry out an initial review the coastal flood risk of the site and surrounding area.

Figure 7 below, taken from [www.floodinfo.ie](http://www.floodinfo.ie) shows the predicted tidal flood extents for various return periods in the vicinity of the subject lands.

Figure 8: Coastal Flooding Location – floodinfo.ie



As can be seen in Figure 7 above, whilst the existing flood protection embankment which runs along the Ballinacurra Creek on the northern boundary of the site provides a high level of protection, some flooding can occur from tidal events at or above the 1 in 10-year event. Only a very small portion of lands are predicted to flood in the 10% AEP event, but this increases significantly in the larger 0.5% and 0.1% AEP events. The flooding originates at the upper (eastern) end of the lands where the existing embankment is slightly lower than further

downstream. The extent of flooding is a function of the tidal level in the creek and the duration over which it can spill over the embankment.

Figure 8 and 9 provide more detailed extracts of the Flood Extent Maps.

Figure 9: Shannon CFRAMs Flood Extent Maps (Drawing No.: S2526LIK\_EXCCD\_F1\_31)

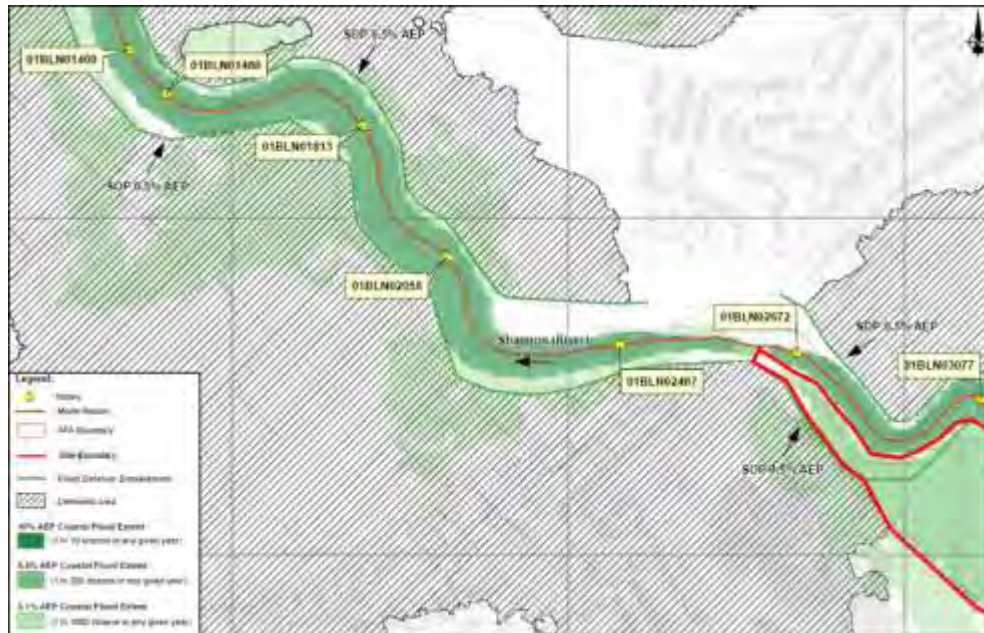
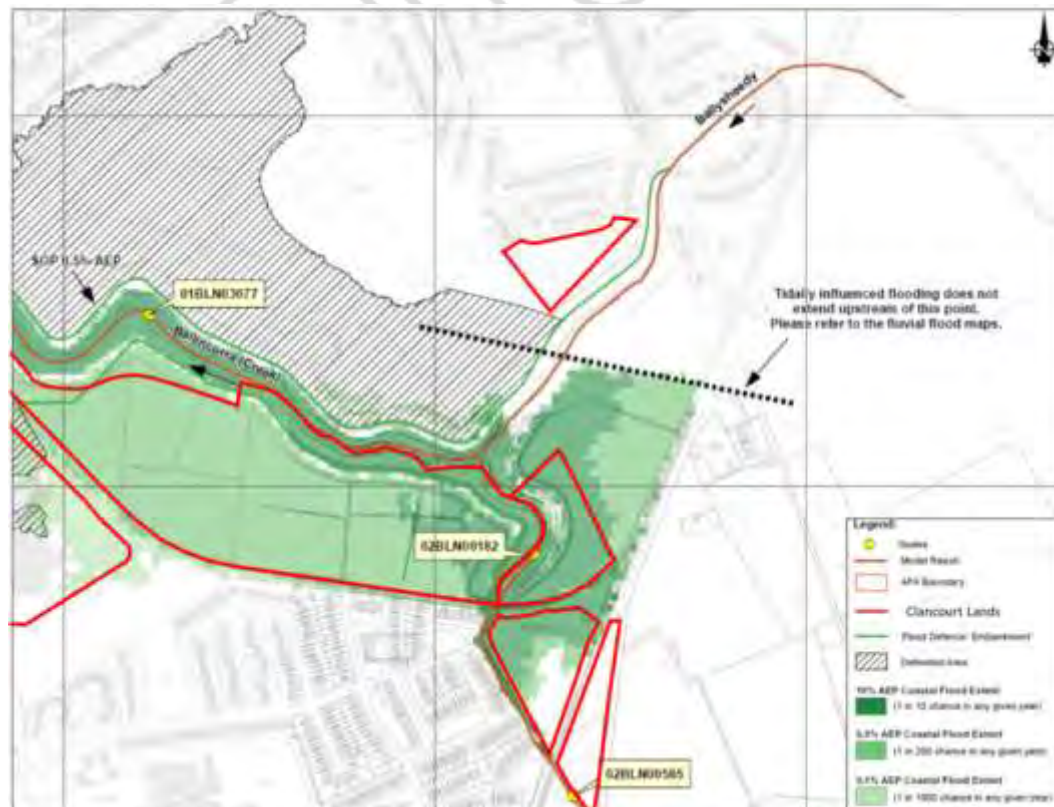


Figure 10: Shannon CFRAMs Flood Extent Maps (Drawing No.: S2526LIK\_EXCCD\_F1\_30)



Water Level results for the nodes identified in the above extracts are tabulated below in Table 5.

Table 5: Water levels as estimated under the Shannon CFRAM

	<b>10% AEP Event</b>	<b>0.5% AEP Event</b>	<b>0.1% AEP Event</b>
<b>Node Label</b>	<b>Water Level (mOD)</b>	<b>Water Level (mOD)</b>	<b>Water Level (mOD)</b>
02BLN00565	4.64	4.64	4.64
02BLN00182	3.95	4.23	4.28
01BLN03077	3.94	4.25	4.33
01BLN02672	3.93	4.27	4.36
01BLN02407	4.07	4.87	5.15
01BLN02058	4.07	4.87	5.16
01BLN01813	4.06	4.87	5.15
01BLN01486	4.04	4.86	5.15

The sudden decrease in water level at and upstream of node label 01BLN02407 indicates a significant hydraulic flow restriction at the existing culvert under the Ballinacurra Road (R526).

This culvert is a 2.92 x 3.2m rectangular culvert which runs for chainage 2580 to 2631. It significantly impedes the upstream propagation of the tidal wave and thus serves to significantly reduce the flood risk upstream of this point. The difference in water level across the bridge increases with increasing tide levels as the capacity of the structure is significantly exceeded and the additional head of the more extreme tides has only a minor influence on levels upstream of the R526.

In extreme tidal events, there is very little gradient in river levels across the subject lands from the throttle at the R526 bridge to the existing railway line as the inflow is relatively small from a small upstream catchment and therefore levels are dictated by the downstream boundary at the R526 bridge.

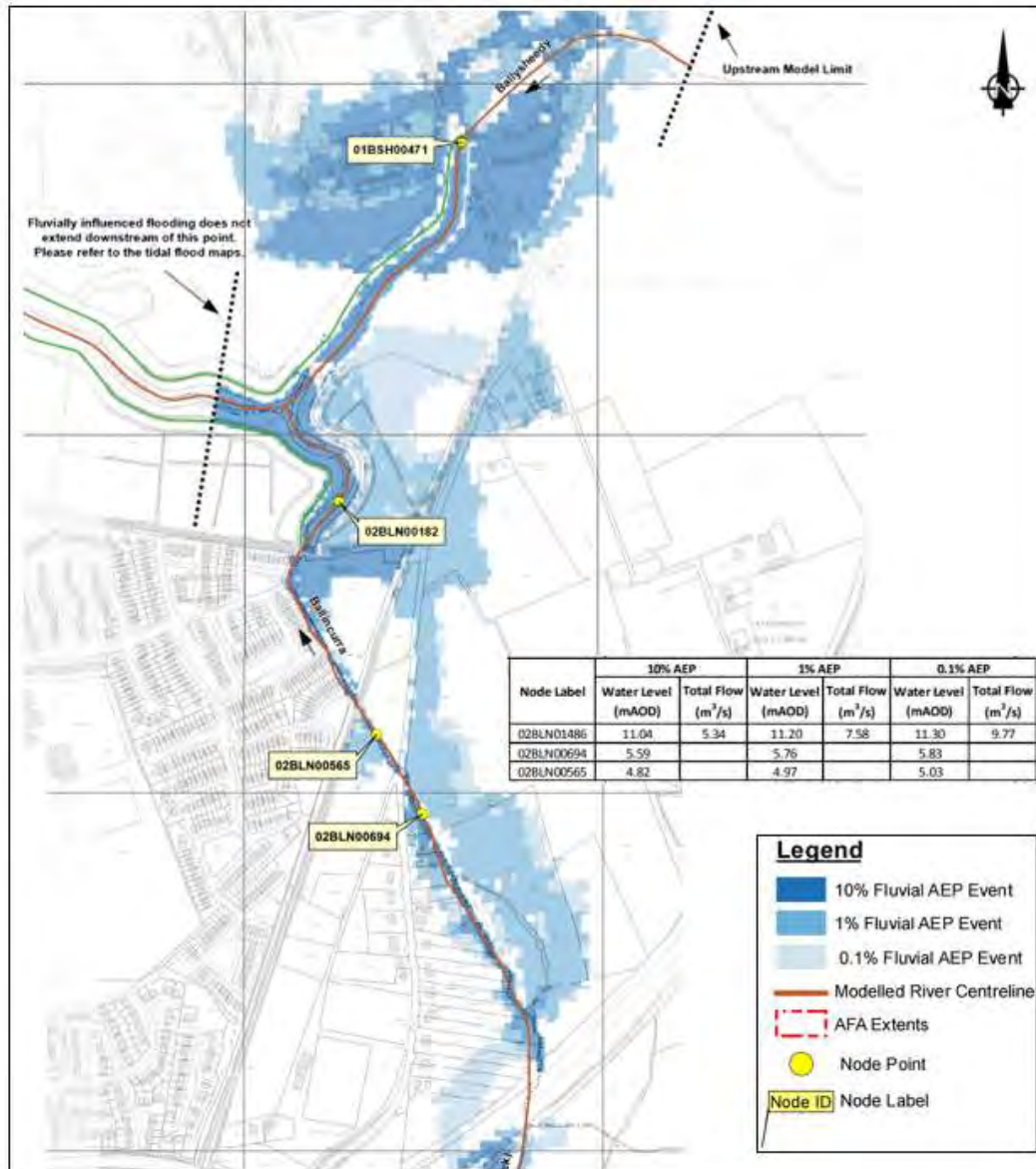
Upstream of the railway line, the gradient of the riverbed increases significantly and flood risk upstream of the railway line is driven by fluvial events. This is evidenced in the CFRAM mapping where the tidal flood extents extend only as far as the railway line which is locally elevated and serves to define a clear divide between the reach dominated by tidal events and that dominated by fluvial events.

### 4.3.2 Fluvial Flooding

The Shannon Catchment Flood Risk Assessment and Management (CFRAM) study was also initially used to review the fluvial flood risk in the vicinity of the subject lands and surrounding area.

As can be seen in Figure 10 below, the existing OPW flood defence embankment which runs along the Ballinacurra Creek on the northern boundary of the site, protects the site from fluvially dominated events up to and including the 1 in 1000-year fluvial flood event, thus providing a very high level of protection.

Figure 11: Shannon CFRAMs Flood Extent Maps (Drawing No.: S2526LIK\_EXFCD\_F1\_30)



Water levels for each of the labelled nodes in the above extract are tabulated below in Table 6.

Table 6: Water levels as estimated under the Shannon CFRAM

	10% AEP Event	1% AEP Event	0.1% AEP Event
Node Label	Water Level (mOD)	Water Level (mOD)	Water Level (mOD)
02BLN00565	4.82	4.97	5.03
02BLN00182	3.59	3.64	3.69
01BSH00471	3.61	3.66	3.69

As can be seen in Table 6 above, the fluvial water levels do not vary significantly between the three severity events in the area downstream of the railway line, again because of the large area of channel relative to the comparatively small flow, with levels largely being dictated by the downstream boundary at the R526 bridge.

The gradient increases upstream of the railway line, reflecting the change to the fluvially dominated reach with a much steeper bed gradient and smaller channel cross section.

Whilst not full apparent from the mapping due to the resolution of the grid size, the railway line is elevated versus surrounding ground and largely acts to separate flooding into separate areas upstream and downstream.

### 4.3.3 Pluvial Flooding

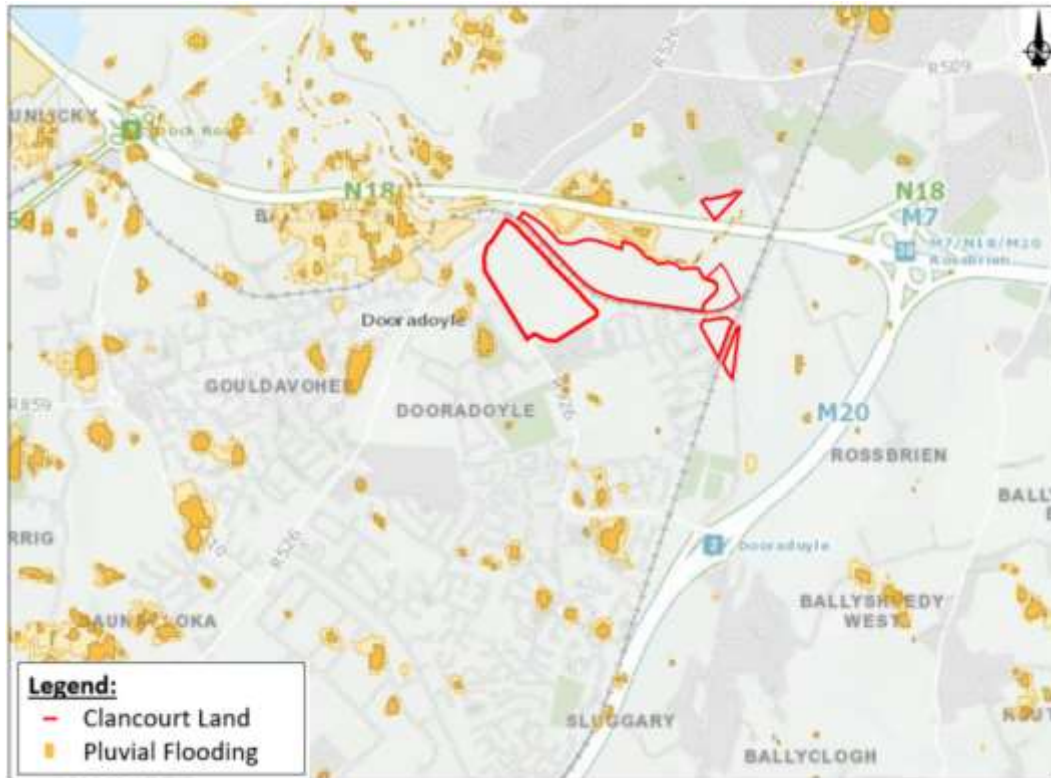
Pluvial flooding occurs when extreme rainfall overwhelms drainage systems or soil infiltration capacity, causing excess rainwater to pond above ground at low points in the topography. In the case of the subject lands, pluvial flooding will also occur during periods where high levels in the estuary as a result of high tides, prevents discharge from the surface water drainage system, when the system effectively becomes 'tidelocked'.

An extract from the OPW's Preliminary Flood Risk Assessment (PFRA) mapping is illustrated in Figure 11. This illustrates small areas of localised pluvial flooding along the northern boundary of the site on the opposite side of the creek.

Pluvial flood risk can generally be mitigated through the implementation of appropriately designed drainage systems incorporating suitably sized attenuation areas.

Given that this mapping was produced as part of a high-level strategic study, completed at a national scale with several very coarse assumptions, it is not prudent to base a site-specific flood risk assessment on this PFRA mapping alone.

Figure 12: Pluvial Flood Risk – OPW PFRA



As noted in Section 2, a detailed survey of the river channel was undertaken as part of this study. This survey identified two surface water outfalls to the river in the subject lands; one 200mm diameter pipe and one 900mm diameter pipe. The outfall levels of these pipes are located at 0.986m OD and 0.275m OD respectively, refer Figure 12 below for details. The pluvial catchment served by these pipes has been estimated through a combination of LiDAR review and site walkover. Figure 13 provides an overview of the pluvial catchment served by these pipes (Crescent Shopping Centre lands and existing development to the south “other”) as well as the catchment draining directly to the river, i.e. the overbank area within the subject site.

Figure 13: Existing stormwater outfalls

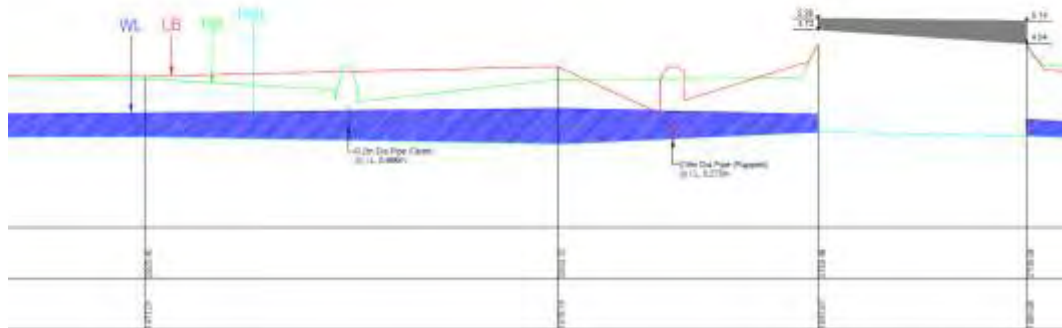


Figure 14: Pluvial catchment – existing



The existing Crescent Shopping Centre has a low point of circa 3.3m OD at the boundary with the subject site. The developed lands to the south are slightly higher at circa 4.5m OD. As the outfalls are relatively low compared to the developed lands they are servicing, pluvial risk to these catchments can be considered relatively low except during particularly high tides. For example, in a 1 in 10-year event, the predicted tidal levels at the location of the surface water outlets rise to over 3.7m OD, in which case, stormwater run-off cannot discharge by gravity. Allowing for the hydraulic gradient in the drainage system, storage of surface water behind the existing defences will be required at lower return periods.

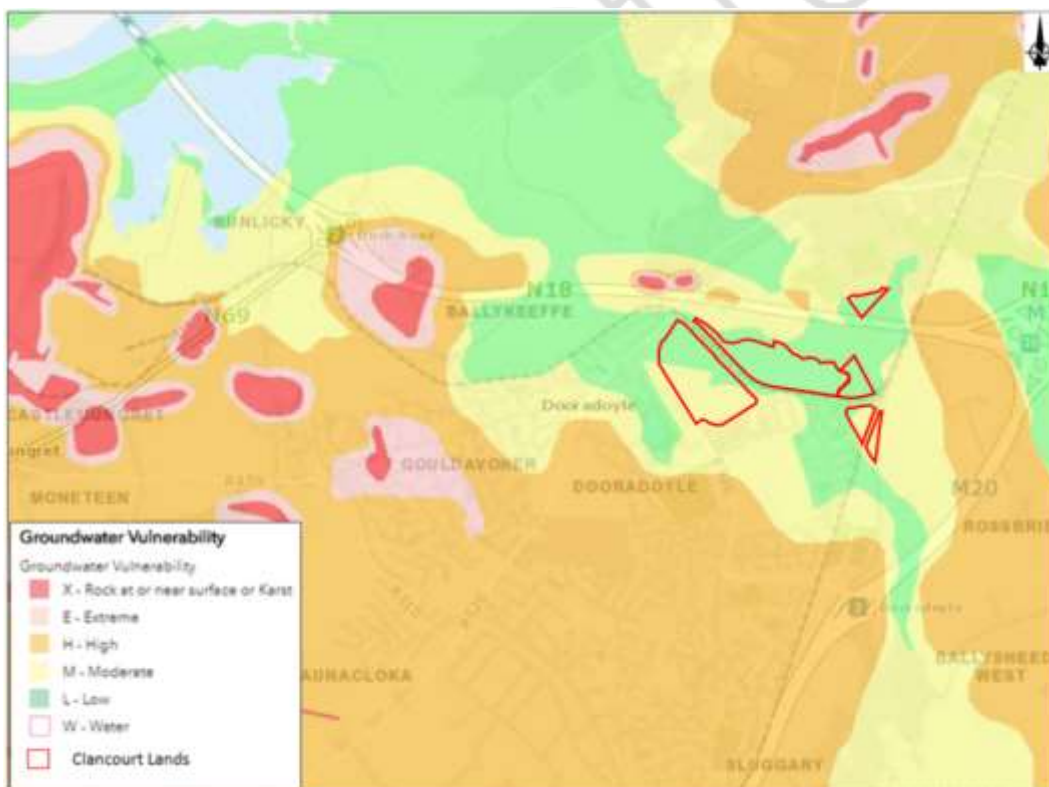
The lands within the study area are relatively low-lying at circa 2mOD. During tidal/fluvial events, excess surface water is stored in the subject lands. Therefore, surface water storage and pluvial flood risk would need to be addressed as part of any future planning development, with an appropriate surface water storage area being provided.

#### 4.3.4 Groundwater Flooding

Groundwater flooding can occur during lengthy periods of heavy rainfall, typically during late winter/early spring when the groundwater table is already high. If the groundwater level rises above ground level, it can pond at local low points and cause extended periods of flooding. Groundwater flooding is generally dependent on the geological setting.

The groundwater vulnerability for the site is presented in Figure 14. It indicates that groundwater vulnerability is relatively constant across the site. Most of the site falls into the “Low” groundwater vulnerability category with a small portion of the site along the northern boundary having a “Moderate” groundwater vulnerability classification.

Figure 15: GSI Groundwater Vulnerability Mapping



A geotechnical site investigation by Irish Geotechnical Services Ltd. (2002) consisting of 4 boreholes within the site boundary indicates the presence of groundwater, rising to an average standing level of 1.70m below ground immediately following boring. Due to the age of above investigation, further site investigation is recommended to accurately assess the current groundwater conditions of the site.



## 5 Hydrology

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### 5.1 Overview

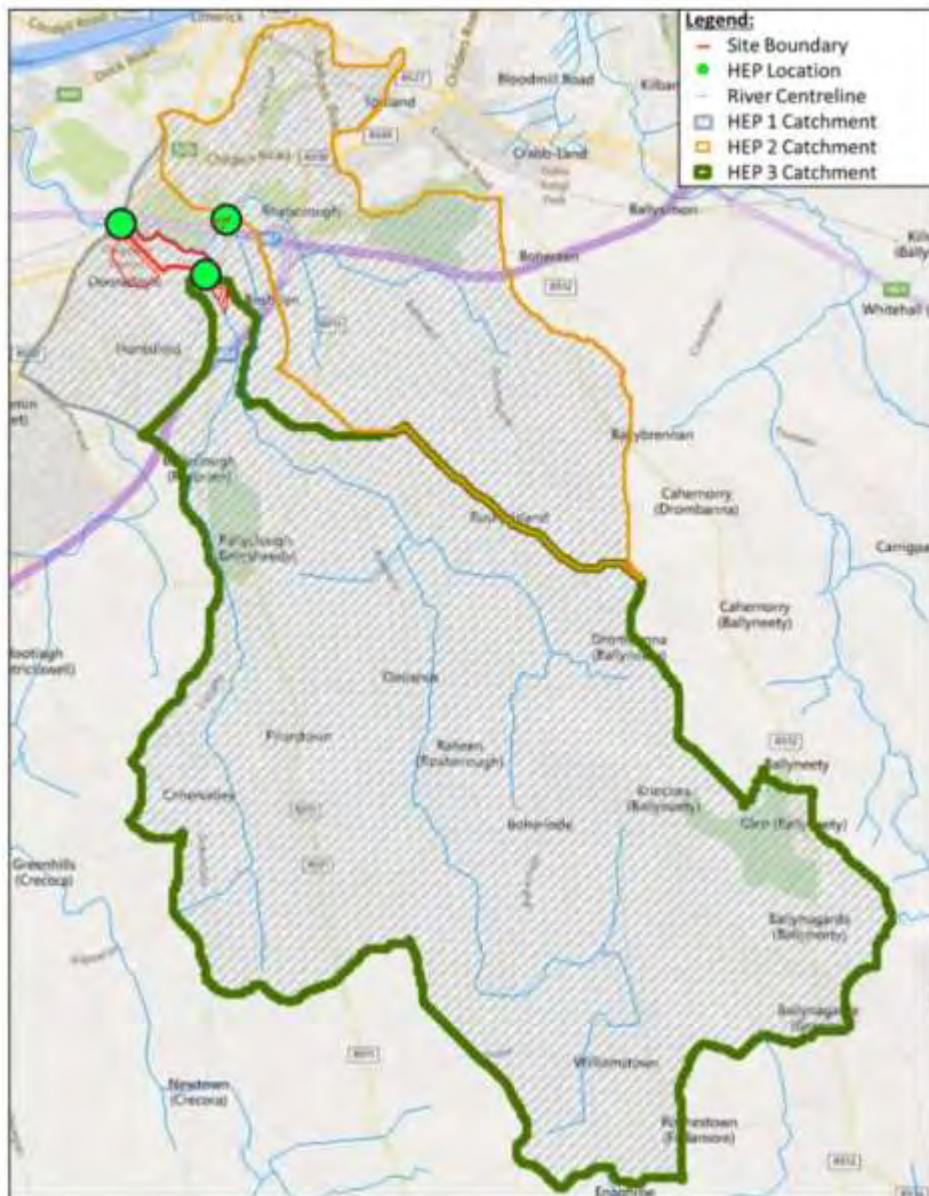
A hydrological assessment of the Ballinacurra Creek and surrounding tributaries was carried out to produce estimates of peak flows and a hydrograph shape for use as input into the hydraulic model built for this study. This assessment included the derivation of peak flows using the following methodologies:

- The Flood Studies Update (FSU)
- Flood Study Report (FSR)
- Institute of Hydrology Report No. 124 (IH124)
- FSR Unit Hydrograph

The peak flows were estimated for three Hydrological Estimation Points (HEP). The river network was sourced from the EPA river network data and the corresponding catchment was derived from the FSU database of ungauged catchments.

Figure 15 below indicates the proposed site boundary, surrounding watercourses, HEP's and the respective catchments.

Figure 16: Catchment overview (Bing Maps)



The FSU Programme, commenced in 2005, and was undertaken by the OPW with a view to developing new flood estimation methods for Ireland, which would significantly improve the quality of flood estimation to aid flood risk management. The FSU is a substantial update of the FSR and the IH124. The FSU was developed using revised datasets specific to Ireland and is now considered by OPW as the primary methodology for flood estimation in Ireland.

The OPW acknowledge that other methods should also be used; hence the FSR IH124 and FSR Unit Hydrograph methods were also employed in determining the peak flows for the river. All methods of hydrological estimation have limitations, particularly in relation to small catchments and these should be considered when reviewing flow estimations in this report.

Details of the FSU method are presented below. Please refer to Appendix C for details of the alternative flow estimation methods.

## 5.2 Flood Studies Update (FSU)

The FSU adopts the median annual flood,  $Q_{med}$  as the index flood. FSU Work package 2.3 contains a method to estimate  $Q_{med}$  using a regression equation which uses seven different physical catchment descriptors (PCD's). The equation estimates  $Q_{med}$  for a rural catchment.

$$Q_{med_{Rural}} = 1.237 \times 10^{-5} AREA^{0.937} BFIsoils^{-0.922} SAAR^{1.306} FARL^{2.217} DRAIN^{0.341} S1085^{0.185} (1 + ARTDRAIN2)^{0.408}$$

The FSU 7-variable equation has a standard factorial error of approximately 1.37.

### 5.2.1 Subject Site

To determine the peak flows using the FSU method, the  $Q_{med}$  value is first calculated for the subject site using PCDs; this is then calibrated to a hydrologically similar gauged catchment to determine the appropriate peak flows for a range of design storms.

$Q_{med} (PCD) = Q_{med_{rural}} \times \text{Urban Adjustment Factor (UAF)}$

$$UAF = (1 + URBEXT)^{1.482}$$

HEP 1 represents the combination of HEP 2 and HEP 3, including a portion of the river downstream of these HEP's. The FSU Webportal provides Physical Catchment Descriptors (PCDs) for HEP 2 and 3 only.

HEP 1 is in a tidally dominated area and no PCDs were available. To allow fluvial flood flow estimation, PCDs for HEP 1 were calculated based on a weighted average using the catchment areas of the overall catchment and the other two HEP's. PCDs used in the FSU index flow estimation for the subject site are detailed in Table 7.

Table 7: Physical Catchment Descriptors – Subject Lands

Physical Catchment Descriptors	Description	HEP 1	HEP 2	HEP 3
Contributing Catchment (km <sup>2</sup> )	Catchment area	46.08	10.36	31.85
BFISOIL	Base flow index derived from soil data	0.719	0.703	0.705
SAAR (mm)	Long-term mean annual rainfall amount in mm.	933	932	921
FARL	Flood attenuation by reservoir and lake	1	1	1
DRAININD (Km/km <sup>2</sup> )	Drainage density	0.711	0.503	0.859
S1085 (m/km)	The slope of the main channel between 10% and 85% of its length measured from the downstream end of the catchment	4.72	4.76	5.45
ARTDRAIN2	Percentage of the catchment river network included in the Drainage Schemes	0.180	0.042	0.011
URBEXT	Urban Extent	0.17	0.24	0.02
UAF	Urban Adjustment Factor	1.26	1.38	1.04

## 5.2.2 Pivotal Site

The Qmed value calculated for a subject site is equivalent to having only one to two years gauged data at the site hence it is necessary to adjust the Qmed using a gauged “pivotal site”. The pivotal site is a hydrologically similar gauged site with a long-established record of flow. The pivotal site can be on the same watercourse or a different watercourse; hydrological similarity is based on AREA, SAAR and BFISOIL values.

Generally, sites with a hydrological similarity < 1.0 indicates a high similarity and a value of > 2.0 indicates a low similarity. In each case, where a pivotal site was available, the case of the lowest hydrological similarity was selected for the analysis.

The subject site adjustment factor (AdjFac) is calculated by estimating the Qmedrural for the subject site using PCDs and comparing the resulting value with the gauged (pivotal site) Qmed value i.e.:

$$\text{AdjFac} = \text{Qmedrural}(\text{gauged}) / \text{Qmedrural}(\text{PCD})$$

The adjustment is then partially or fully transferred to the subject site:

$$\text{Qmedrural, (adjusted)} = (\text{AdjFac})^h \times \text{Qmedrural}(\text{PCD})$$

The typical procedure is to apply a full transfer by setting the exponent h to 1.0.

The pivotal site analysis was not conducted for HEP 1 as there is no PCD available on the FSU Webportal. The PCD values corresponding to the pivotal sites for HEP 2 (25034) and HEP 3 (16051) are contained in Table 8.

Table 8: FSU physical catchment descriptors – Pivotal Site

FSU Physical Catchment Descriptors	Description	HEP 2	HEP 3
Location Number	Identifier of ungauged location	25034	16051
Contributing Catchment Area (km <sup>2</sup> )	Catchment area	10.77	34.19
BFISOIL	Base flow index derived from soil data	0.759	0.676
SAAR (mm)	Long-term mean annual rainfall amount in mm.	969	895
FARL	Flood attenuation by reservoir and lake	1	1
DRAIN <sub>D</sub> (Km/km <sup>2</sup> )	Drainage density	0.273	0.755
S1085 (m/km)	The slope of the main channel between 10% and 85% of its length measured from the downstream end of the catchment	2.57	1.62
ARTDRAIN <sub>2</sub>	Percentage of the catchment river network included in the Drainage Schemes	0.678	0
URBEXT	Urban Extent	0	0
UAF	Urban Adjustment Factor	1	1
dhi	Hydrological Similarity	0.41	0.26

### 5.3 Qmed Estimation

The annual flood flow Q<sub>med</sub> was initially derived using the FSU Catchment Descriptor method. This estimate was reviewed following a pivotal site analysis. No suitable pivotal site could be found for HEP1 and HEP3, however a suitable pivotal site was found for HEP2, which allowed improvement of the Q<sub>med</sub> estimate. Table 9 summarises Q<sub>med</sub> values calculated for each HEP.

Table 9: Q<sub>med</sub> Estimation Results

Site	HEP 1	HEP 2	HEP 3
Sub. Q <sub>med</sub> (m <sup>3</sup> /s)	7.33	1.71	4.4
AdjFactor	1	1.33	1
Sub. Q <sub>med</sub> adjusted (m <sup>3</sup> /s)	7.33	2.29	4.4

#### 5.3.1 Growth Curve

The growth factor used to estimate the range of flows is determined by using a Pooling Group Analysis based on the FSU methodology.

This data is then plotted in a flood frequency chart. The distribution that best fits this chart determines the growth curve.

In this instance both the EV1 and GEV distributions fit the data. However, the EV1 distribution produced a slightly more conservative growth factor and thus was used for the calculation of the design peak flow. To calculate the growth factors and subsequently the flow rates for each HEP, the EV1 distribution was adopted. This analysis was carried out for each HEP, which produced very similar results. For consistency, the most conservative growth factor was selected for each HEP. Table 10 presents the growth factors for each return period.

Table 10: FSU Method - Growth Factors

Return Period (years)	1.3	2	5	10	50	100	200	1000
AEP	75%	50%	20%	10%	2%	1%	0.5%	0.1%
Growth Factors	0.77	1	1.35	1.57	2.08	2.29	2.50	3.00

## 5.4 Selection of Flow Method

Table 11 below shows a summary of the  $Q_{100}$  flows calculated as well as the peak flows obtained from the FSSR16 unit Hydrograph Method. Upon review of the calculations it is deemed the FSSR 16 method produces excessively large flows and has therefore been discarded from further analysis.

Table 11: Flow results summary

$Q_{100}$ (m <sup>3</sup> /s)					
Site	FSU	IH124	FSR 6	Shannon CFRAM	FSSR16 - Unit Hydrograph Method
HEP 1	16.78	15.11	15.80	NA	29.62
HEP 2	5.24	5.47	4.99	4.00	10.69
HEP 3	10.08	10.02	8.38	8.10	16.6
Selected Design flows highlighted					

The application of the FSU methodology is deemed the most appropriate for this study, as it adopts the most recent hydrological datasets specific to Ireland and is also considered the most comprehensive flow estimation method available. Results also compare well to the IH124 and FSR6 variable methods and are more conservative than flows derived under the Shannon CFRAM study, which provides further confidence that the flow estimation is conservative.

## 5.5 Inflow Hydrographs

The FSR Rainfall Runoff hydrograph shape was adopted as the basis of the hydrograph shape, with the hydrograph being scaled to match the relevant peak flow estimates. An additional lateral inflow was added along the lower reach to match the peak flow estimates at HEP1 to provide consistency between the hydrological assessment and the hydraulic analysis.

## 5.6 Tidal Conditions

In order to derive site specific tidal conditions, the following studies were reviewed:

- Shannon Catchment Flood Risk Assessment and Management (CFRAM) Study.
- Irish Coastal Protection Strategy Study (ICPSS) Phase IV – Shannon Estuary.

Furthermore, historical gauge records at Baals Bridge and Limerick Dock in comparison to the ICPSS Point S16 and the Shannon tidal condition assessed under the CFRAM study were analysed. This analysis concluded that the ICPSS data, CFRAM levels and local gauge data all correlate reasonably well. Figure 16 presents a location map of the relevant gauge and data point locations in relation to the study area.

Figure 17: Gauge/data point locations



The data used for the purposes of this report were located at ICPSS Point S16 and CFRAM Nodes 01BLN02058 and 01BLN00413.

Based on the validation of the data in the above-mentioned analysis as well as the correlation seen in Figure 17, it was decided to use the CFRAM water levels to represent the downstream boundary for the analysis.

Figure 17 below illustrates the data acquired from the above studies and Table 12 presents the corresponding water levels for the downstream reach of the Ballinacurra Creek.

Figure 18: Tide Water Levels

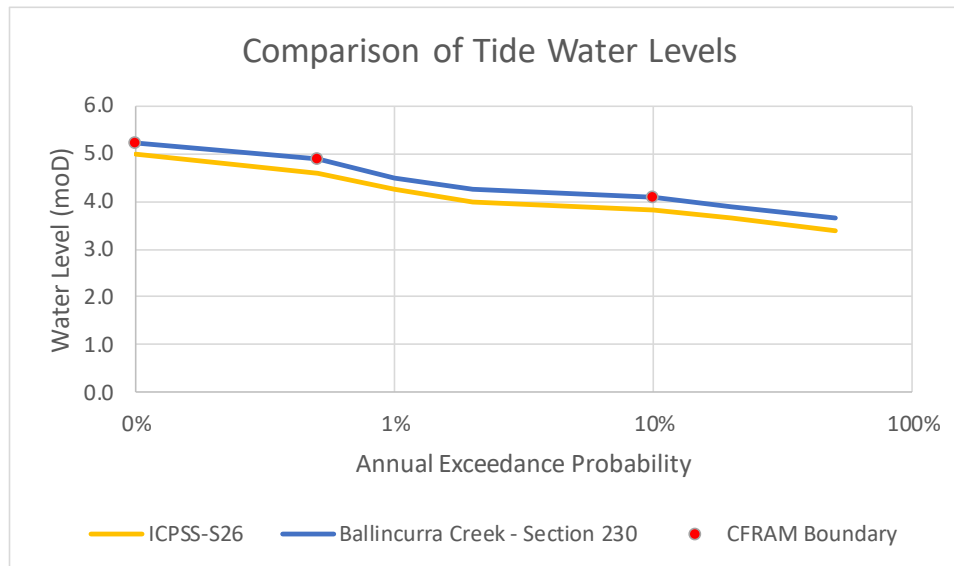


Table 12: Tidal Water Level Data as downstream boundary

RTP	AEP	Tide WL (mOD) Ballinacurra Creek (Section 230)
2	50%	3.64
5	20%	3.89
10	10%	4.07
50	2%	4.24
100	1%	4.48
200	0.5%	4.87
1000	0.1%	5.22

## 5.7 Joint Probability – Tidal/fluvial flows

Theoretically, fluvial and tidal flooding are not fully independent, based on the assumption that intense rainfall and tidal surges are both likely to be associated with low air pressure events. As part of the Shannon CFRAM study historical extreme river water levels were compared to extreme tide level recordings. This analysis found the likelihood of abnormal high tidal levels coinciding with peak river water levels is relatively low.



A range of theoretical joint occurrences between tidal and fluvial flooding were analysed and it was found that floods along the lower river reaches are dominated by the critical tidal events with little sensitivity to the fluvial flood source, which is also the case for the subject lands in this study.

It is therefore proposed to adopt the same methodology and assess fluvial design events with the 50% AEP tidal downstream boundary and combine the tidal design events with the 50% AEP fluvial upstream boundary, which provides for a reasonably conservative and practical approach.

## 5.8 Final Design Flows

Design Flows for each HEP have been calculated by multiplying the estimates of  $Q_{med}$  listed in Table 9 by the flood frequency curve shown in Table 10 and are presented in Table 13 below.

Table 13: Final Design Flows

Return Period	AEP	HEP1	HEP2	HEP3
		(m <sup>3</sup> /s)	(m <sup>3</sup> /s)	(m <sup>3</sup> /s)
2	50%	7.33	2.29	4.40
10	10%	11.51	3.60	6.91
50	2%	15.25	4.76	9.15
100	1%	16.79	5.24	10.08
200	0.5%	18.33	5.73	11.00
1000	0.1%	21.99	6.87	13.20

## 6 Hydraulic Model Development and Analysis of Existing Situation

Given that the CFRAMS was undertaken at a broad catchment scale for the entire Shannon catchment, it was decided that greater definition of the local flood risk was required both to understand existing sensitivity to flood risk and to assess the potential impact of any development of these lands.

A detailed coupled one-dimensional (1D) and two-dimensional (2D) unsteady flow hydraulic model of the Ballinacurra Creek and Ballysheedy tributary was therefore constructed in order to more accurately simulate flood risk in the vicinity of the subject lands, including both fluvial and coastal sources. The model was developed using HEC-RAS 5.0.4 software.

### 6.1 Data Acquisition

As stated in Section 2 above, survey data was provided by Murphy Surveys Ltd. The survey data was used in order to construct the 1D element of the model. Light Detection and Ranging (LIDAR) was also acquired in order to construct the 2D element of the model. Finally, the embankment plan and vertical profile provided by Punch Consulting Engineers (2014) was used (where applicable) to model the existing embankment, linking the 1D and 2D elements of the model.

### 6.2 Model Geometry

#### 6.2.1 Model Extents

The Ballinacurra Creek reach extends from just upstream of the Rosbrien Road to the downstream extent at the entrance to the Shannon River. The Ballysheedy reach extends upstream from the confluence with the Ballinacurra Creek to just upstream of the railway line. The Irish National Grid (ING) coordinates of the extent of the model is presented in Table 14 and Figure 18 shows the location of the model extents.

Table 14: Model extent coordinates

Watercourse	Upstream Extent		Downstream Extent	
	Easting	Northing	Easting	Northing
Ballinacurra Creek	157256	153951	155312	155917
Ballysheedy	157622	155026	157055	154534

Figure 19: Model extents & river reaches

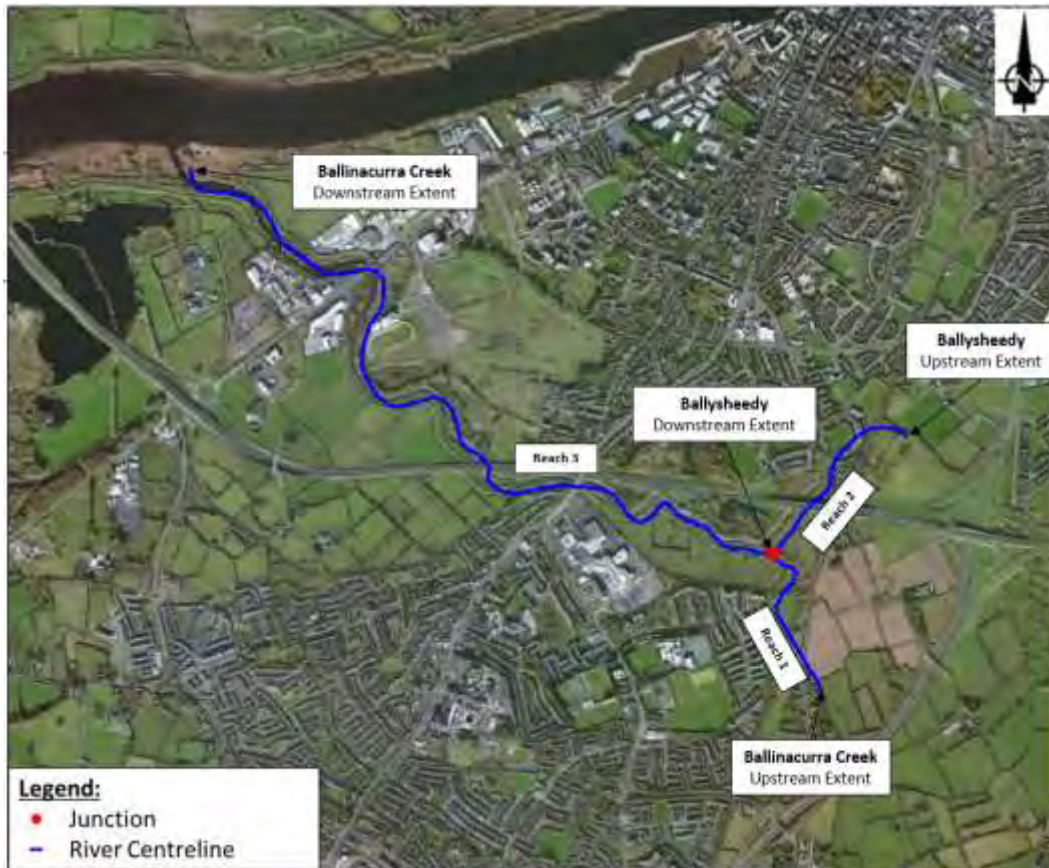
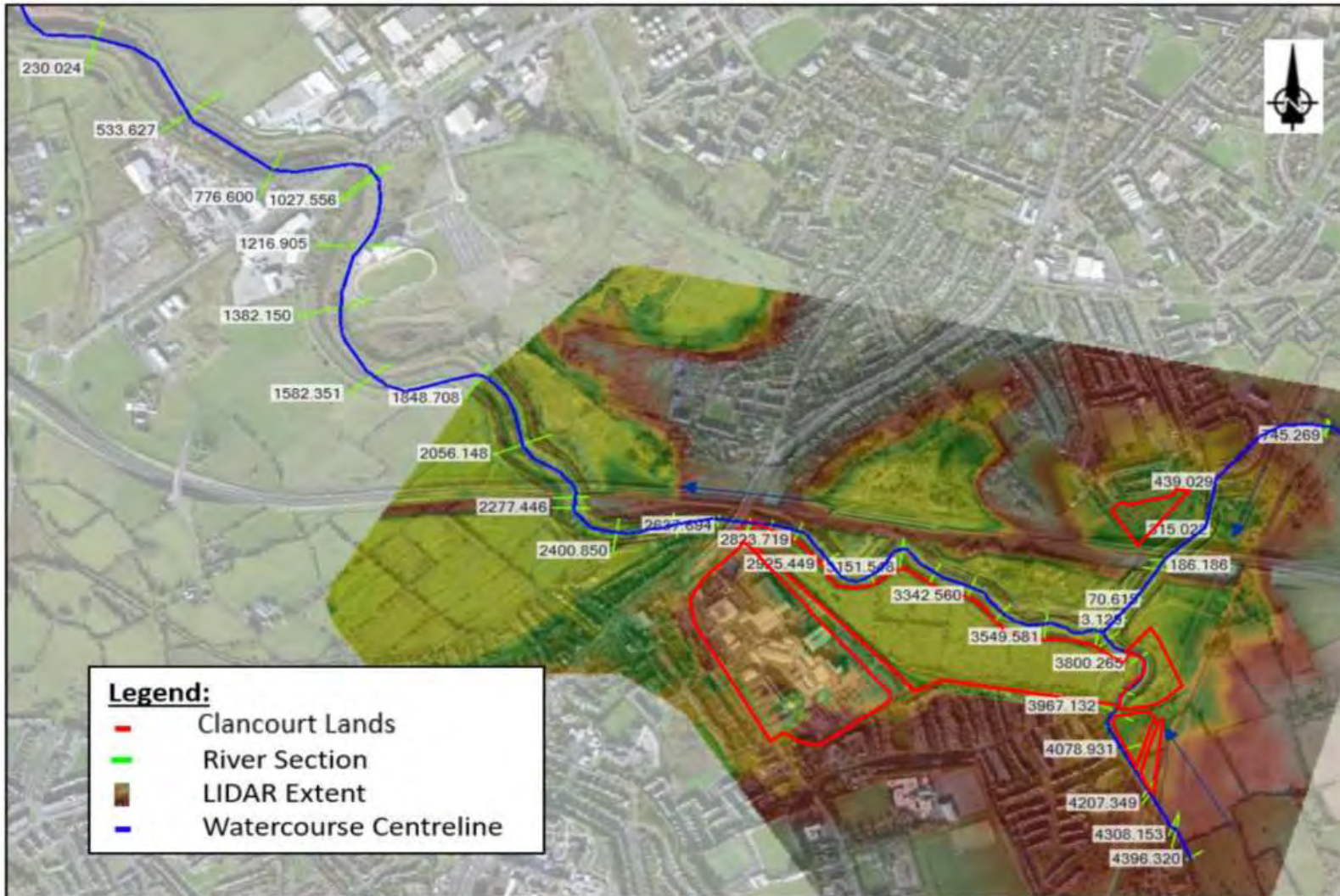


Figure 19 on the following page illustrates the numbering of River Sections within the model.

Figure 20: River Sections



## 6.2.2 Channel Geometry

The channel geometry for the model was imported into the model directly from the survey by Murphy Surveys Ltd. The accuracy of the imported geometry was validated using the photographs provided, the acquired LIDAR data as well as the site walkovers.

The cross-section labelling system adopted in the model is consistent with the “ISIS Chainage” given in the survey data. Appendix D presents the model cross-section.

## 6.2.3 Hydraulic Roughness Coefficients

The roughness values of the 1D model have been defined for three separate sections of each cross section: (1) The left bank, (2) The main channel, and (3) The right bank. These sections of each cross section in the model are defined using panel markers.

The Manning’s n roughness values of the 1D model were selected based on a detailed analysis and following review of survey photographs and two site visits undertaken by Arup.

Both the Ballinacurra Creek and the Ballysheedy River are meandering with a main channel partially consisting of stones & weeds and banks consisting of relatively thick vegetation. Selected Manning’s values fall within the corresponding typical ranges as presented in Table 15 and 16. Please refer to Appendix D for specific Manning’s values used at each cross section.

Table 15: Typical Manning’s n values for river channel

Channel Characteristics	Manning’s n value
<b>Main Channel</b>	
Clean, straight	0.030
Clean, meandering	0.035
Stones & weeds, meandering	0.045
<b>Banks</b>	
Weeds & vegetation	0.040
Heavy weeds & vegetation	0.050
Mature trees and thick vegetation	0.060

Table 16: Typical Manning's n values for floodplain

Land Use	Manning's n value
Roads	0.020
Buildings	0.100
Parkland	0.030
Open space	0.035
Forestry	0.06

## 6.2.4 Hydraulic Structures

Within the model extents, there are several existing hydraulic structures consisting of bridges/culverts as well as the existing flood protection embankment.

### 6.2.4.1 Bridges/Culverts

A total of eight existing bridges/ culverts with varying dimensions were included in the model. The structures were modelled using survey information provided by Murphy Surveys Ltd. Refer to Appendix F for a brief summary and cross section of each of the hydraulic structures within the model.

### 6.2.4.2 Lateral Structure

In order to model the existing OPW flood protection embankment, a lateral weir embankment was included in the model. The embankment centreline positions and elevations were modelled using the embankment plan and vertical profile (Punch Consulting Engineers – 2014) where applicable. Due to the limited extents of this embankment data, LIDAR data was also used to model the embankment. All lateral weirs were modelled in an identical manner using the following weir data assumptions;

- Weir width: 2.0m
- Weir computation: Standard Weir Equation
- Weir Coefficient: 1.1
- Weir Crest Shape: Broad Crested

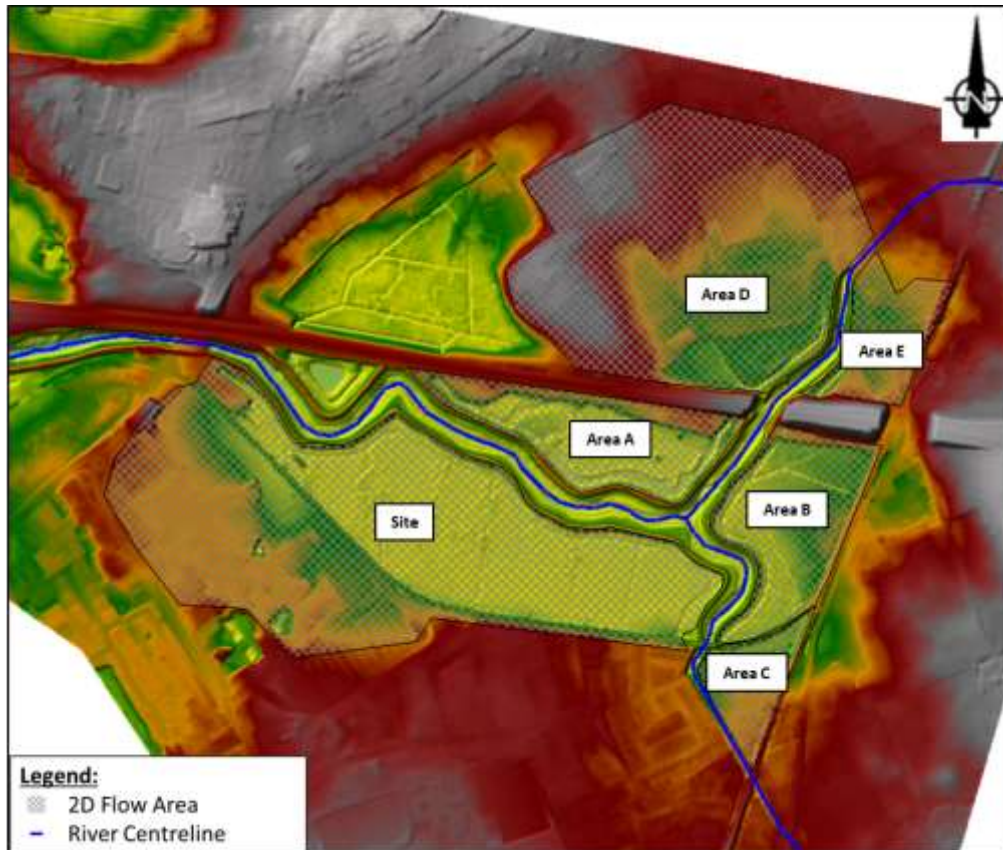
Tailwater connections for the lateral embankment weirs were set to their relevant 2D Flow Areas within the system, thus linking the 1D and 2D aspects of the model.

## 6.2.5 Two-dimensional Flow Area

In order to model the two-dimensional flood extents within the floodplain, several 2D flow areas were modelled.

These 2D flow areas were modelled using a 4m x 4m computational mesh with each cell covering an average area of approximately 16m<sup>2</sup>, providing a reasonably accurate representation of the undeveloped subject site. The 2D flow area forms the two-dimensional extents of the model and is connected to the one-dimensional extent of the model by means of the lateral structures within the model, as stated in Section 7.2.4.2 above. Refer to Figure 20 below for a graphical representation of the 2D flow areas within the model.

Figure 21: 2D flow areas



## 6.3 Unsteady Flow Data

### 6.3.1 Boundary Conditions

In order to simulate the unsteady flow within the model, three boundary conditions were included. Two inflow hydrographs at the upstream extents of the model and one downstream tidal boundary.

The FSR Rainfall Runoff hydrograph shape as detailed in Appendix C was adopted as the basis of the hydrograph shape, with the hydrograph being scaled to match the relevant peak flow estimates. Figure 21 and 22 present the inflow hydrograph shapes used before scaling.

Figure 22: Typical inflow hydrograph Ballinacurra Creek, Reach 1

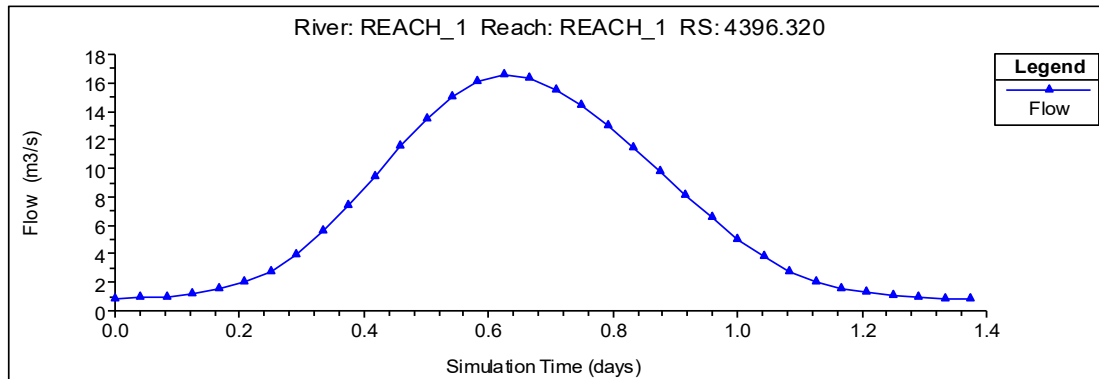
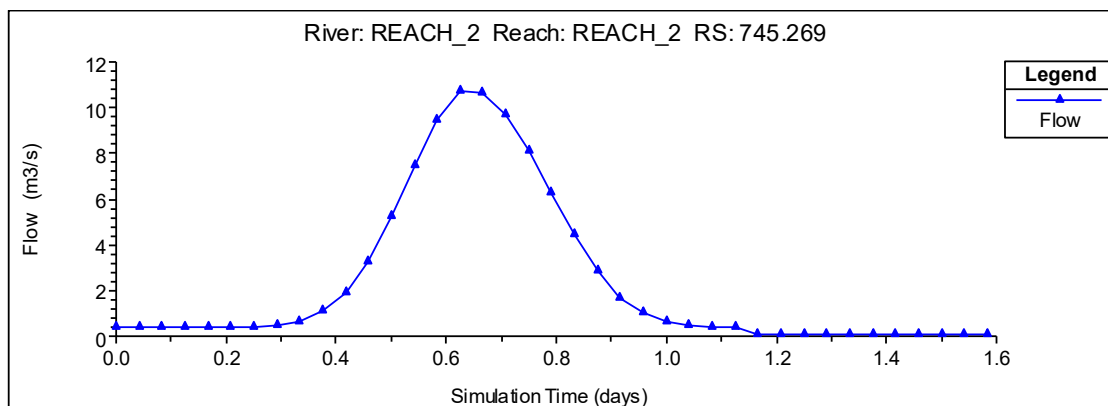


Figure 23: Typical inflow hydrograph Ballysheedy River, Reach 2

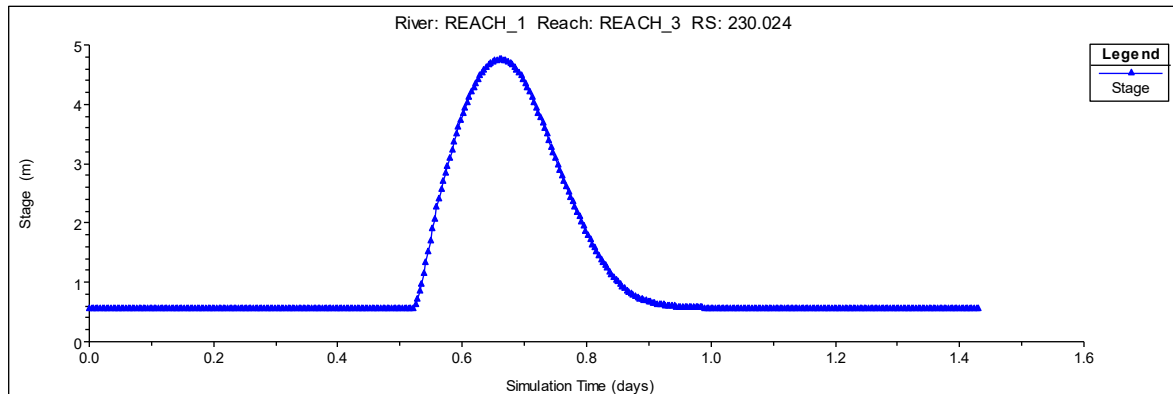


Furthermore, the model contains a downstream boundary which represents the tidal influence of the Shannon Estuary within the Ballinacurra Creek (Reach 3). The tidal stage hydrograph was constructed using a recorded water level profile for the Shannon Estuary.

Peak tidal water levels were derived from several sources and used to scale-up the template profile accordingly. Refer to Section 5.6 for further information. Figure 23 below shows the tidal stage hydrograph used in the model.



Figure 24: Typical tidal stage hydrograph Ballinacurra Creek, Reach 3



## 6.4 Model Calibration

There are no observed water level recordings available to allow hydraulic model calibration. However, a catchment wide hydraulic model was developed under the Shannon CFRAM, which provides information on water levels and flows for the 10-, 100- and 1000-year return period events at a number of locations. This was used to compare the site-specific hydraulic model for both the fluvially and tidally dominated events. Appendix F provides details of this comparison. The newly developed model used in this study calibrates reasonably well to the CFRAMS model.

## 6.5 Anchoring of Hydrology and Hydraulics

### 6.5.1 Insertion of Hydrological Estimation Points

Inflow hydrographs were inserted at the upstream boundaries of the Ballinacurra Creek (Reach 1) and the Ballysheedy River (Reach 2). The result of the addition of these flows was analysed and compared to the design flow estimated for the check flow point at HEP 1.

Lateral inflow was added along the lower reach between HEP1 and HEP3. This represents runoff from the catchment that is connected downstream of HEP3 and was used to anchor the hydrological flow estimates to the hydraulic model.

Table 17 below summarises the comparison of the estimated flows to the flows within the model. This demonstrates that hydrological flow estimates are anchored to the hydraulic model.

Table 17: Comparison of Hydrologically Estimated Flows vs Hydraulic Model Flows

Return Period (Years)	Hydrology	Hydraulic Model		% Diff.
	HEP 1 Peak Flow (m <sup>3</sup> /s)	HEP 1 Peak Flow (m <sup>3</sup> /s)	Lateral Flow Added (m <sup>3</sup> /s)	
10	11.51	11.32	1.41	1.65
100	16.79	16.36	2.41	2.56
1000	21.99	21.3	4.28	3.14

### 6.5.2 Minimum Flows in Hydrograph

Minimum flows were added to certain inflow hydrographs to ensure hydraulic model stability at the start of the run. In the case of the addition of a minimum flow, the flow added was circa 10% of the peak flow of the relevant hydrograph.

### 6.5.3 Coincidence of Design Hydrograph Peaks

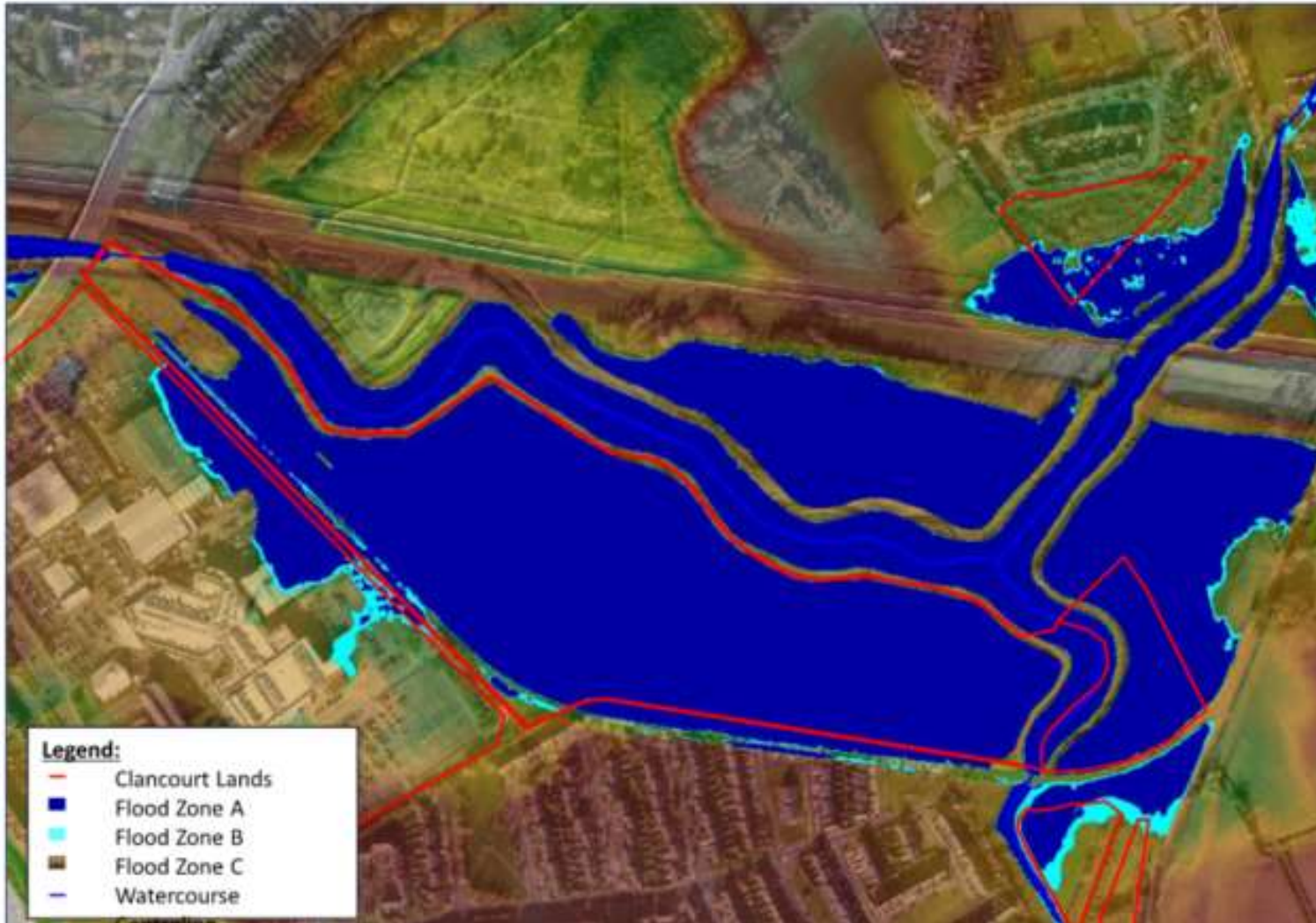
Given the relatively small size of the catchment and the lack of data, it was assumed that the design flow peaks occur simultaneously on all the sub-catchments.

The time axis of all the inflows hydrographs were therefore edited to ensure that the peak flow on all the hydrographs occurred at a model run time of 15hr.

## 6.6 Flood Zone Mapping

Flood zone maps for the area of interest and surrounding lands are presented in Figure 24. These are based on our site-specific model but ignores any existing defences, as per the Flood Risk Planning Guidelines (OPW, 2009).

Figure 25: Flood Zone Map



As evident in Figure 24 above, the area of interest lies within Flood Zone A. Flood risk management guidelines are discussed further in Section 10.2.

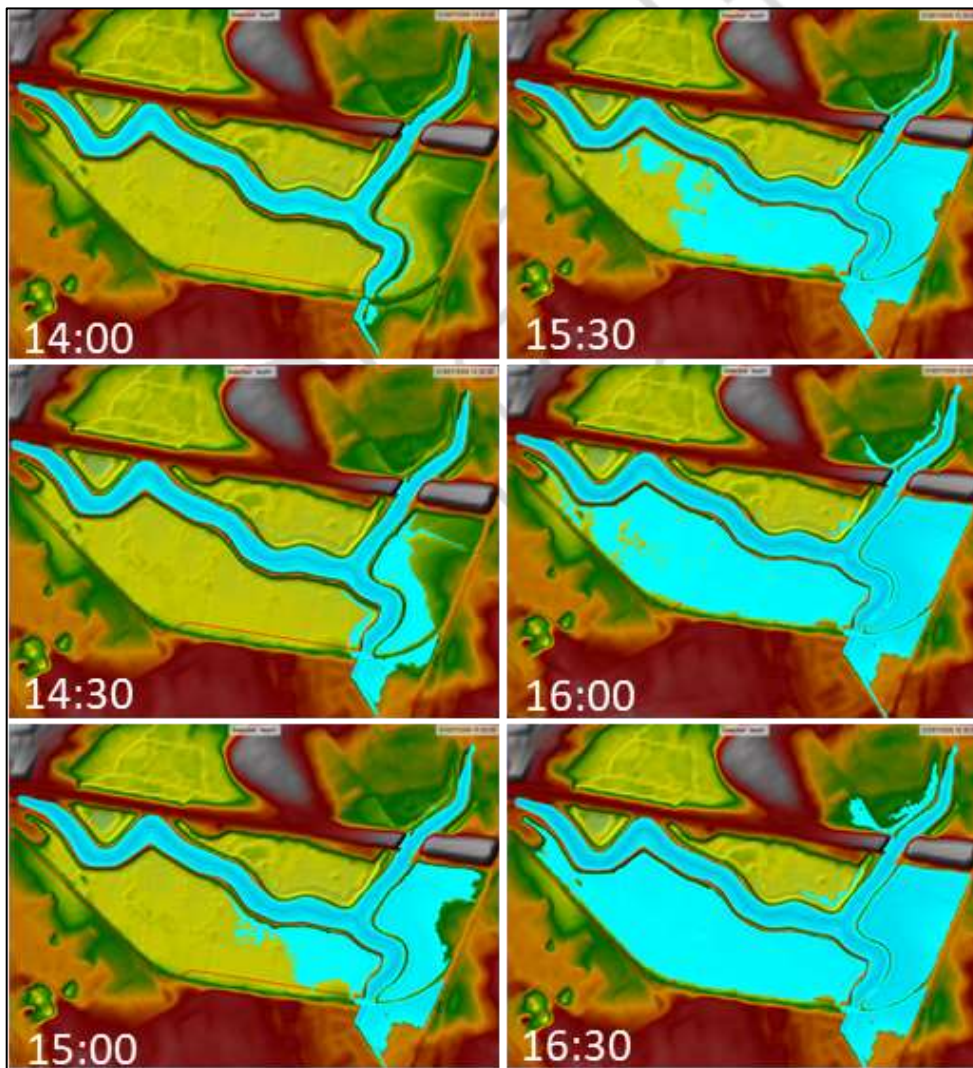
## 6.7 Existing Flood Condition

The subject site is located in a tidally dominated flood risk area that is defended by an existing OPW embankment which offers a high degree of protection.

Modelling results demonstrate that this embankment is overtopped for the 200-year tidal event along the lowest point of its crest, which is located near its eastern site boundary.

The following figure demonstrates the flood propagation for the 200-year tidal event in the existing condition from runtime 14:00 to 16:30.

Figure 26: Flood Propagation Existing Condition – T200



Flood depth within the site is typically around 0.7 to 0.8m with maximum flood depth up to circa 1.2m.

## 6.8 Sensitivity Analysis

Sensitivity testing was carried out as part of the hydraulic analysis. Findings showed that the model is relatively insensitive to the hydraulic loss coefficients. Findings do however show that the flood extents increase with a decrease in Manning’s Roughness. Figures 26 and 27 below present the findings of the sensitivity analysis carried out.

Figure 27: Sensitivity Analysis Results – Culvert Entrance Coefficient

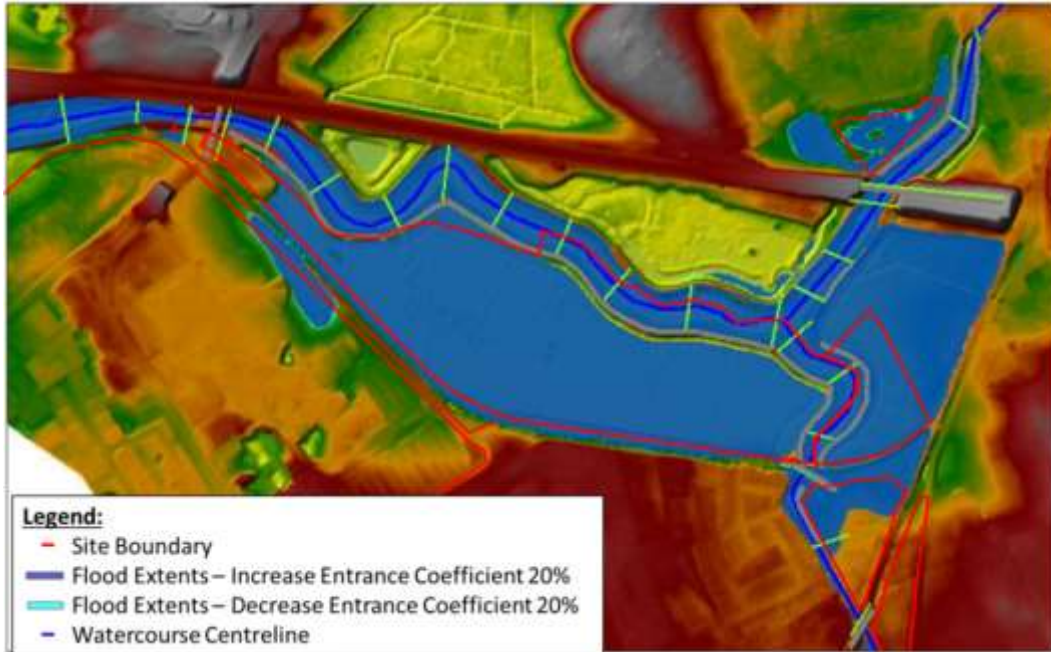
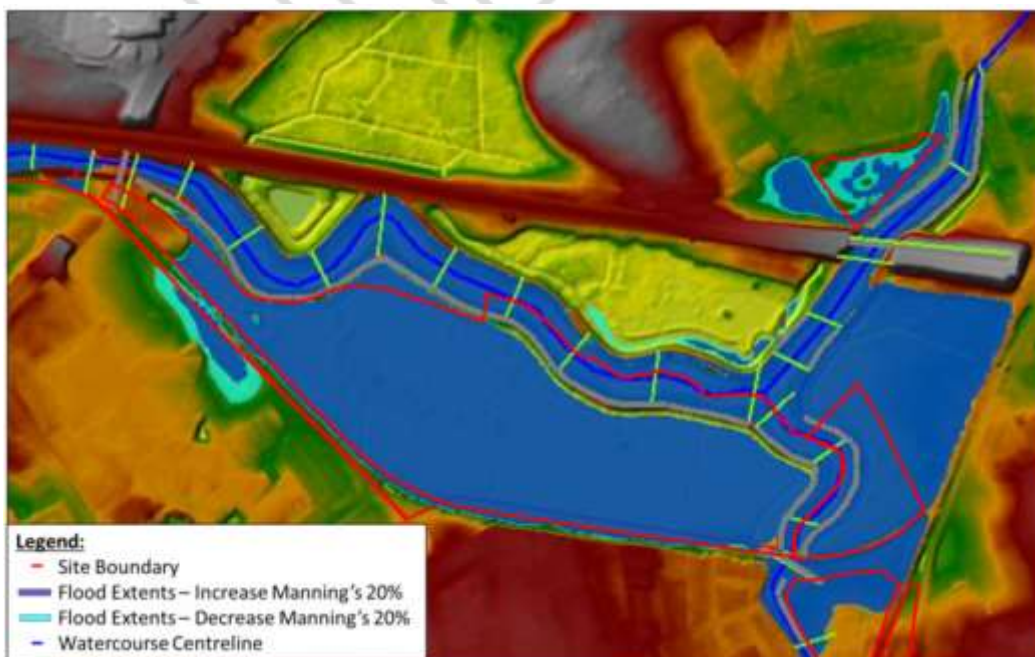


Figure 28: Sensitivity Analysis Results – Manning’s Roughness



## 7 Pluvial Flood Risk

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The urban surface water catchment draining to the Ballinacurra River via the subject lands is described in Section 5.3.3. The subject lands are relatively low-lying at circa 2m OD. During tidal/fluvial events, surface water which cannot drain by gravity due to elevated river levels, is stored within the subject lands. Thus, in developing the subject lands, it will be necessary to provide storage for stormwater run-off when the outfalls are surcharged to a level where discharge is not possible.

To quantify the volume of storage required it is necessary to consider the joint probability of a major urban rainfall event with a high-water level in the Ballinacurra River. As discussed in Section 6.7, floods along the lower river reaches of the Ballinacurra River are dominated by the critical tidal events with little sensitivity to the fluvial flood source. The key considerations to quantify the volume of storage required are:

1. Duration of high river levels (i.e. duration where no-outflow is possible) at high tide
2. Rainfall runoff coinciding with high water level.

### 7.1.1 Duration of high river level (at high tide)

The length of time wherein discharge is not possible is determined by examining the tidal stage hydrograph. In the absence of detailed survey of the existing urban drainage network, a full assessment of the exact level at which stormwater outflow is inhibited cannot be undertaken as part of this study but can be approximated. There are two cases to be considered as follows;

1. Overflow into the subject lands via an access point on the pipeline (note, the flood embankment will prevent backflow from the headwalls). This is considered likely to start to occur at a level of circa 2m OD.
2. In the absence of such an access point (e.g. manhole or grating) via overland flow from the low point in the contributing catchments with an allowance for freeboard of 300mm; i.e. 3.0m OD.

The tidal stage for the 50% and 10% AEPs are provided in Figures 28 and 29. It can be seen from these that the critical duration during which stormwater outflow will be inhibited is between 3 and 5.5 hours depending on the water level considered.

Figure 29: 50% AEP tidal stage hydrograph

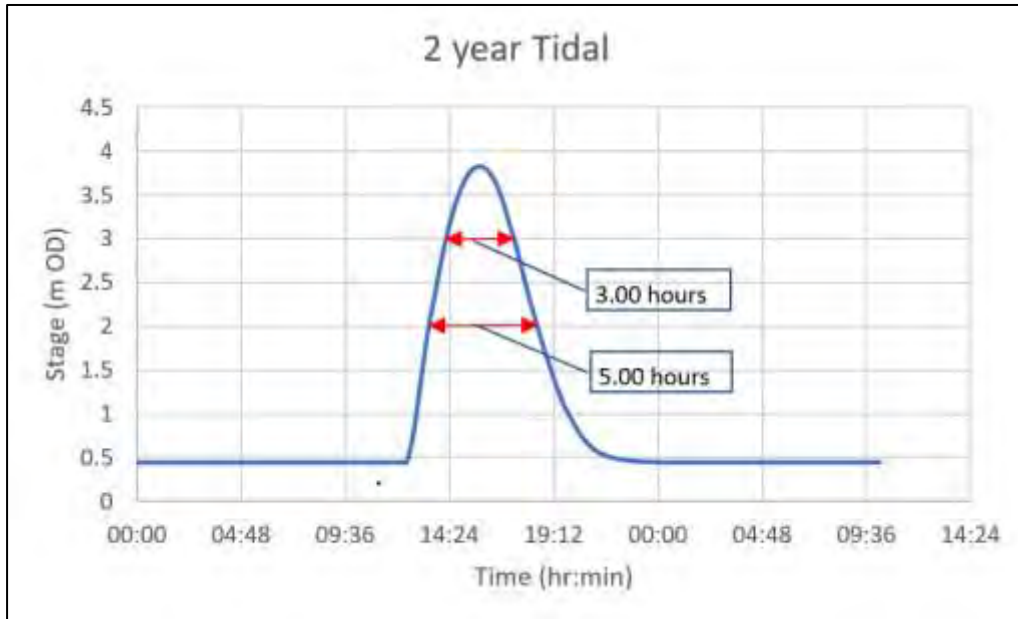
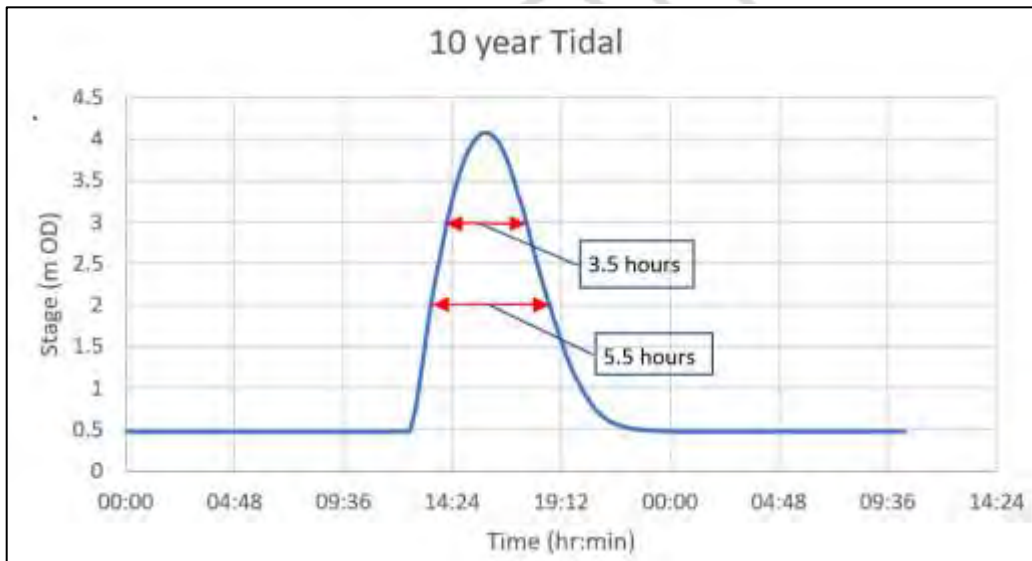


Figure 30 10% AEP tidal stage hydrograph



Any storage solution can be designed to control the spill level of the stormwater network. A level of 2m OD is relatively low given the levels of the catchment (minimum 3.3m OD) and driving head of the stormwater network. A spill level of 3.0m OD is considered achievable as it makes allowance for some driving head from the developed lands and freeboard to the existing development. Thus, the critical duration where flow may need to be stored is likely to be for a period of 3-4 hours.

### 7.1.2 Rainfall-runoff

The Greater Dublin Strategic Drainage Study (GSDSDS) advises that *“In cases where there is a potential for life-threatening situations to develop from rapid inundation due to breach of sea or river defences, then a standard of protection greater than the 1:200-year event should be considered”*. Thus, the following events, resulting in a joint return period of 200 years, are considered:

1. 1 in 2-year rainfall event with a 1 in 100-year tidal boundary
2. 1 in 20-year rainfall event with a 1 in 10-year tidal boundary
3. 1 in 100-year rainfall event with a 1 in 2-year tidal boundary

The table below outlines the average rainfall depths for a range of rainfall durations for the 2-, 10- and 100-year ARI return periods.

Table 18: Rainfall depth

Duration (hr)	2-year ARI	10-year ARI	100-year ARI
	depth (mm)	depth (mm)	depth (mm)
2	13.5	23.8	44.2
3	15.45	26.7	49.2
4	17.4	29.6	53
6	20.1	33.6	58.8

Figure 30 below describes the catchment characteristics of the contributing area.

Figure 31: Contributing catchment





The resulting runoff volumes, based on the percentage impermeable areas presented in Figure 30, for the 2-year, 10-year and 100-year ARI were estimated using the Modified Rational Method and presented in Table 19.

Table 19 Rainfall-runoff volumes

Duration (hr)	2-year ARI		10-year ARI		100-year ARI	
	depth (mm)	volume (m3)	depth (mm)	volume (m3)	depth (mm)	volume (m3)
2	13.5	10268	23.8	18102	44.2	33618
3	15.45	11751	26.7	20308	49.2	36965
4	17.4	13234	29.6	22513	53.0	40311
6	20.1	15288	33.6	25556	58.8	44723

As can be seen from the similarity of the tidal stage hydrographs for the 50% and 10% AEP events, the duration for which pluvial outflow is not possible is not sensitive to the tidal return period. As such, to provide a 1 in 200-year standard of protection to the Crescent lands it is recommended that the joint probability event applied to pluvial storage is the 1 in 100-year rainfall event with a 1 in 2-year tidal boundary. Thus, based on Table 19, the required storage volume for the 3-4-hour duration events range from 36,965 to 40,311 m<sup>3</sup>.

This volume is considered to be conservative as it does not account for storage in the pipe network or online storage structures, the discharge which will occur due to driving head at the start and end of the tidal event, and finally, it does not consider routing through the pipe network. Due to the conservative nature of this assessment the lower value is considered most appropriate to inform this preliminary study; i.e. circa 36,965. We detailed design; it is considered likely that a lesser volume may be justifiable.

## 8 Possible Flood Relief Options

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There are several aspects to be considered in the design of the flood relief options as follows:

- Health and safety considerations;
- residual Flood Risk
- Aesthetic considerations;
- Ecological considerations;
- Offsite impacts;
- Practical and financial considerations.

The main flood risk to the subject lands downstream from the railway line is from tidal flooding overtopping the lowest lying section of the existing embankment at its eastern end. This low point is as a result of settlement of the embankment over time from its original design level which would originally have protected the site when first constructed.

A significant volume of flood water is therefore currently stored on the subject lands during the extreme tidal events which would originally have been contained within the defended estuarine channel.

The obvious solution to protecting the main Clancourt site adjoining the Crescent Centre from tidal flooding, is therefore to restore the existing embankment to the 1 in 200year design standard. In doing this, water levels within the channel both adjacent and upstream of the site would rise, versus the current tidal situation, and therefore it is important to assess the extent of any change and ensure that flood risk is not increased elsewhere.

As the existing defences already protect against the 1 in 100-year fluvial event, any increase to the embankment height will not alter the fluvial situation in this reach and so only the tidal situation requires to be assessed.

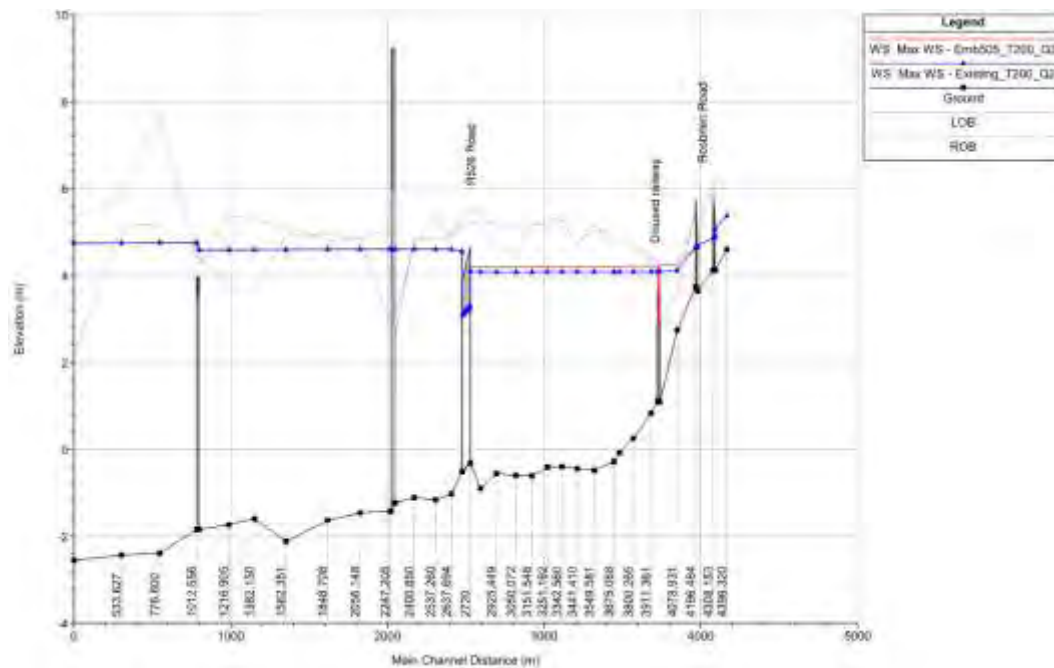
This option is described below.

## 8.1 Flood relief option to facilitate development of Clancourt lands immediately adjoining Crescent S.C.

The hydraulic model was therefore modified to model predicted tidal flood levels if the existing standard of protection of the embankment was restored and to establish if any localised upstream defences were required upstream.

Figure 31 presents the water surface profile in the existing condition in comparison to the option with the increased SoP of the embankment.

Figure 32: Long section showing water surface profile 1 in 200-year coastal event



Modelling results show that raising the existing embankment would increase the 1 in 200-year tidal water level in the Ballinacurra Creek along the subject lands by a maximum of circa 120mm between the R526 bridge and the railway line. This is the reach within Clancourt lands.

The predicted tidal levels are unchanged upstream of the railway line as this is fluviially dominated and not sensitive to the small scale of change in downstream levels.

The 1 in 200-year tide water level is estimated at 4.75mOD along the lower section of the Ballinacurra Creek. The existing embankment is circa 950m long and crest levels range from 3.75mOD along the eastern boundary to 5.30mOD along the north western boundary.

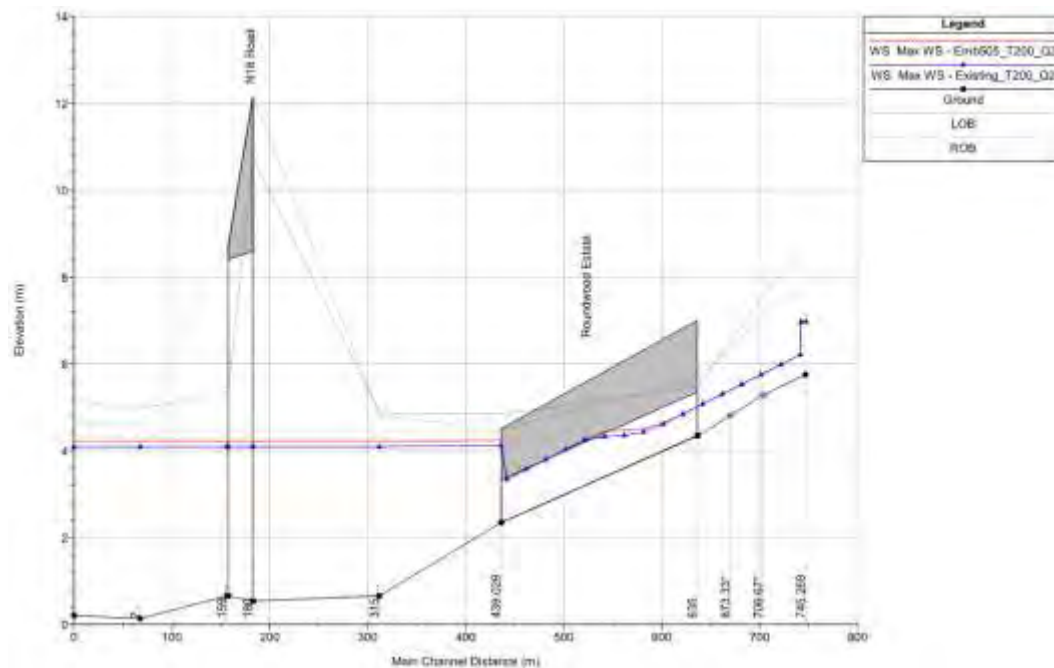
The maximum predicted maximum level in the reach downstream of the disused Irish Cement rail line is estimated at circa 4.2mOD with the embankment raised. A short section between this point and the existing main rail line is slightly higher.

It is estimated that approximately 775m of the embankment would need to be raised to reinstate a consistent design defence level of 5.3mOD. However, a lower

level of circa 4.5mOD would suffice for the majority of the site downstream of the disused railway line.

A similar situation arises on the Ballysheedy Stream whereby there is a slight increase in water levels adjacent to Ballinacurra Gardens before the stream is culverted under Roundwood Estate as shown in Figure 32 below.

Figure 33: Long section showing water surface profile 1 in 200-year coastal event



Raising of the main embankment on the Ballinacurra Creek will also require some local raising of the embankment adjoining Ballinacurra Gardens (which is located on Clancourt Lands).

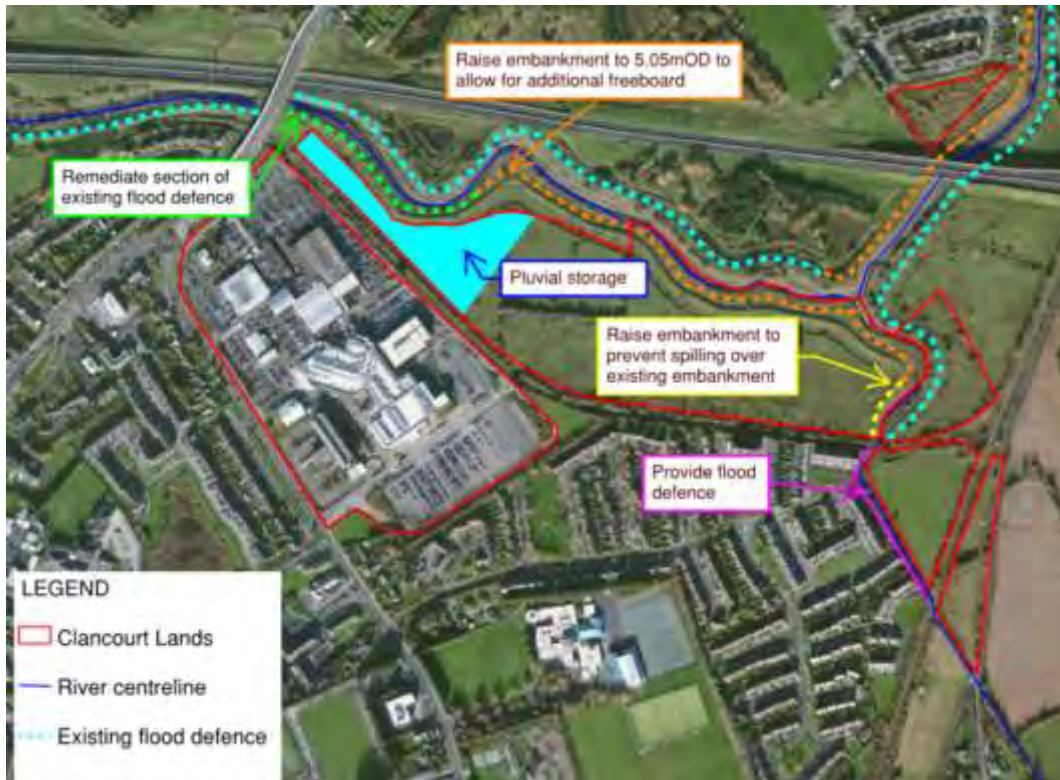
Also, as protection to the Clonmore estate is provided by a domestic blockwork boundary wall, we would also recommend that a more formal defence be constructed here.

All the above work can be completed on lands owned by Clancourt and would not result in an increase in flood risk elsewhere.

In addition to the tidal flood defences, it will also be necessary to retain a sufficient proportion of the lands to store surface water runoff for the periods when the outfall is tidelocked. This is described in detail in Section 8.

All of the works described above are shown in Figure 33 below.

Figure 34 Increasing embankment SoP and construction of flood defence wall



## 8.2 Integration with upstream fluvial defences proposed as part of Shannon CFRAMS

Whilst the approach set out in Section 9.1 can be delivered by works exclusively on Clancourt lands, it does not address the remaining flood risk to lands between the Rosbrien Road and the main Clancourt site which would continue to be at flood risk.

The Shannon CFRAMS did not propose to defend these lands but did propose to defend lands immediately upstream of the Rosbrien Road from fluvial flooding as shown in Figure 35 below.

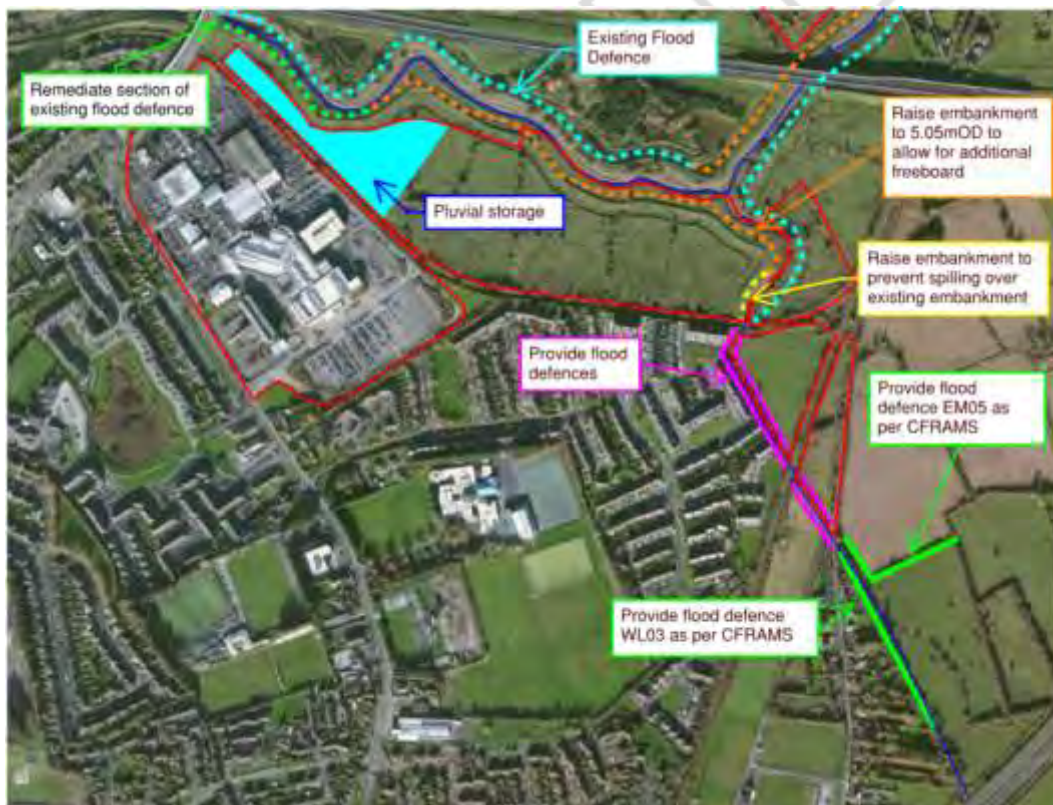
Figure 35 CFRAMS Ballinacurra River – upstream of subject lands.



As the proposed defences on the Clancourt lands address the tidal risk and include defences immediately downstream of the Rosbrien Road, and the Shannon CFRAMS include proposed measures to address fluvial risk immediately upstream, it would be far more efficient to ensure an integrated approach is adopted which addresses both in a fashion which removes all flooding in the vicinity of the railway line and Rosbrien Road.

This would be achieved by Clancourt providing low level defences either side of the Ballinacurra Stream downstream of Rosbrien Road which would essentially tie into the Shannon CFRAMS defences immediately upstream. Containing the flow in the channel here would marginally increase flood levels locally upstream of the Rosbrien Road and would thus require a modest increase in height of the proposed Shannon CFRAMS defences. However, as the watercourse is steep in this location and the proposed defences are low level (circa 800mm), the increase in height required would be very modest and not material change the nature or scale of the required defences. This solution is presented in Figure 35 below.

Figure 36: Integration with upstream defences



Further modelling would be required to accurately design such defences, but from the work completed to date and the understanding now gleaned of the regime and mechanisms, it is evident that the alignment of the proposed CFRAMS works with the recommended works on the Clancourt lands would represent the optimum solution in facilitating the sustainable development of this critical strategic land bank.

## 9 Summary of Proposed Flood Risk Management Strategy and Measures

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The following flood risk management strategy and measures are proposed for the subject lands:

- It is recommended that the recommended tidal defence works on the Clancourt lands are aligned and integrated with the proposed fluvial flood defences measures outlined in the Shannon CFRAMS
- It is proposed that a detailed surface water drainage study is undertaken and that an appropriately sized surface water storage area (or areas) are developed to store excess surface water which cannot drain by gravity when river levels are high. This can also serve as an amenity and biodiversity feature.
- It is proposed to restore the 1 in 200-year standard of protection of the existing OPW flood defence embankment and to construct some low-level flood defences immediately upstream as far as the Rosbrien Road where they would tie into the proposed Shannon CFRAMS defences.
- A detailed seepage analysis should be undertaken to inform a decision on minimum floor levels within the area protected by the embankment.
- Public open space should have appropriately designed side slopes to ensure safe egress from all public amenity areas.
- An Emergency Response Plan should be prepared, which will contain details of safe egress routes during an extreme flood event. Given that flood risk is tidally dominant, sufficient lead time will be available to operate the Emergency Response. Details to be drawn up in conjunction with Planners and Architects.

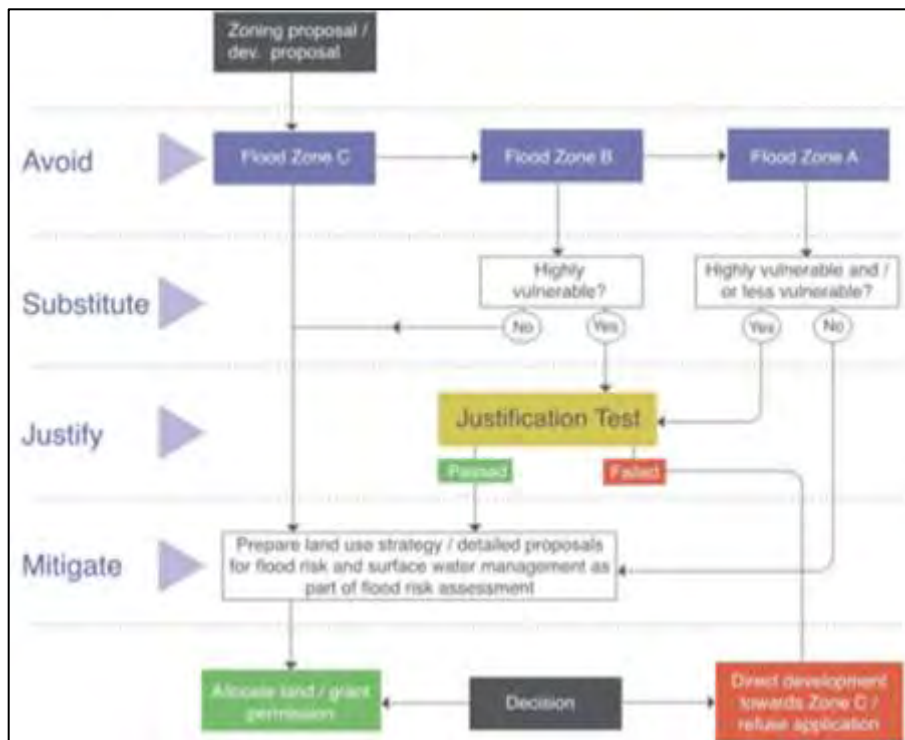


# 10 Application of the Flood Risk Management Guidelines

## 10.1 Sequential Approach

Figure 35 below illustrates the Sequential Approach to be adopted under the ‘Planning System and Flood Risk Management’ guidelines. It should be applied to all stages of the planning and development management process.

Figure 37: Sequential approach



The subject lands lie within Flood Zone A.

It is currently proposed that the site is to consist of a mixed usage including residential development.

Therefore, by adopting the Sequential Approach, completion of the Justification Test is required for the proposed development.

## 10.2 Justification Test

The ‘Planning System and Flood Risk Management’ guidelines indicates the following two criteria which must be met as part of the Justification Test for development management.

### 10.2.1 Justification Test – Item 1

*“The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative development plan, which has been adopted or varied taking account of these Guidelines.”*

### 10.2.2 Justification Test – Item 2

*“The proposal has been subject to an appropriate flood risk assessment that includes:*

- i. The development proposed will not increase flood risk elsewhere and, if practicable, will reduce overall flood risk;*
- ii. The development proposal includes measures to minimise flood risk to people, property, the economy and the environment as far as reasonably possible;*
- iii. The development proposed includes measures to ensure that residual risks to the area and/or development can be managed to an acceptable level as regards the adequacy of existing flood protection measures or the design, implementation and funding of any future flood risk management measures and provisions for emergency services access; and*
- iv. The development proposed addresses the above in a manner that is also compatible with the achievement of wider planning objectives in relation to development of good urban design and vibrant and active streetscapes.”*

As the subject lands are currently not zoned for residential or commercial development it is necessary to complete the Development Plan Justification Test as set out below.

#### Box 4.1: Justification Test for development plans

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

- 1 The urban settlement is targeted for growth under the National Spatial Strategy, regional planning guidelines, statutory plans as defined above or under the Planning Guidelines or Planning Directives provisions of the Planning and Development Act, 2000, as amended.
- 2 The zoning or designation of the lands for the particular use or development type is required to achieve the proper planning and sustainable development of the urban settlement and, in particular:
  - (i) Is essential to facilitate regeneration and/or expansion of the centre of the urban settlement<sup>2</sup>;
  - (ii) Comprises significant previously developed and/or under-utilised lands;
  - (iii) Is within or adjoining the core<sup>3</sup> of an established or designated urban settlement;
  - (iv) Will be essential in achieving compact and sustainable urban growth; and
  - (v) There are no suitable alternative lands for the particular use or development type, in areas at lower risk of flooding within or adjoining the core of the urban settlement.
- 3 A flood risk assessment to an appropriate level of detail has been carried out as part of the Strategic Environmental Assessment as part of the development plan preparation process, which demonstrates that flood risk to the development can be adequately managed and the use or development of the lands will not cause unacceptable adverse impacts elsewhere.

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

This Report is provided to address Question 3 of the Justification Test.

Clancourt's Response to Questions 1 and 2 has been prepared separately by John Spain and Associates Planning Consultants and is included in Appendix G to this report.

## Appendix A

### Long Section of OPW Embankment

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## Appendix B

### Site Photos

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## B Site Walkover Photos – 18/07/2018

Figure 38: Site walkover photo locations



Photo 1: Location A – Crescent Shopping Centre drainage outlet



Photo 2: Location A – Crescent Shopping Centre drainage culvert under railway



Photo 3: Location A – Crescent Shopping Centre drainage outlet



Photo 4: Location A – Crescent Shopping Centre carpark

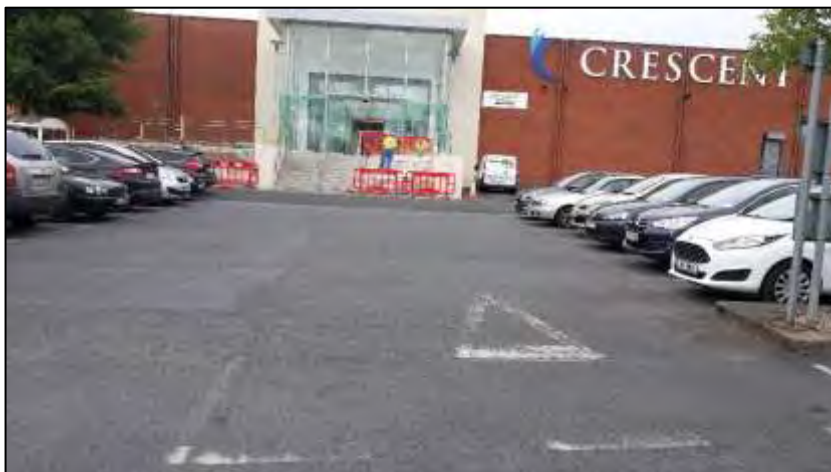




Photo 5: Location A – Railway embankment



Photo 6: Location A – Crescent Shopping Centre Carpark towards Ballinacurra Road



Photo 7: Location A – Crescent Shopping Centre Carpark towards Rosbrien Road



Photo 8: Location A – Railway embankment



Photo 9: Location B – Subject Site towards Rosbrien Road



Photo 10: Location B – Subject Site towards Ballinacurra Road



Photo 11: Location B – Subject Site OPW flood protection embankment



Photo 12: Location B – Drainage culvert exit



Photo 13: Location C – Road crossing (Structure 4315)



Photo 14: Location C – Road crossing (Structure 4315) facing downstream



Photo 15: Location D – Railway crossing (Structure 4200) towards downstream



Photo 16: Location D – Railway crossing (Structure 4200) facing upstream



Photo 17: Location E – Railway crossing (Structure 3965) facing downstream



Photo 18: Location F – Railway crossing (Structure 3965) facing upstream



Photo 19: Location F – OPW flood protection embankment towards subject site



## Appendix C

### Hydrological Flow Estimation

Draft

## C Hydrological Flow Calculations

### 1. Institute of Hydrology Report 124

The rural index flood,  $Q_{\text{bar rural}}$ , was calculated using the method outlined in the IH124 Report.

$$Q_{\text{bar}} = 0.00108 \cdot \text{AREA}^{0.89} \cdot \text{SOIL}^{2.17} \cdot \text{SAAR}^{1.17}$$

A factorial standard error of 1.65 applies to this method.

Table 20 below summarises the results from the above analysis for the un-factored scenario as well as the 68% and 95% confidence intervals.

Table 20: IH124 Method -  $Q_{\text{bar urban}}$  results

Site	$Q_{\text{bar urban}} \text{ (m}^3\text{/s)}$		
	Un-factored	68% Confidence	95% Confidence
HEP 1	7.72	12.74	21.03
HEP 2	2.80	4.62	7.62
HEP 3	5.12	8.45	13.95

Flow for the 1 in 100-year return period ( $Q_{100}$ ) was calculated by multiplying the results by the FSR Regional growth curve (1975) growth factor for the 100-year storm. The growth factor used for this event was 1.96. A summary of these results can be seen in Table 21.

Table 21: IH124 Method - Q<sub>100</sub> results

Site	<b>Q<sub>100</sub> (m<sup>3</sup>/s)</b>		
	<u>Un-factored</u>	<u>68% Confidence</u>	<u>95% Confidence</u>
HEP 1	15.11	24.93	41.13
HEP 2	5.47	9.03	16.32
HEP 3	10.02	16.54	27.29

## 2. Flood Studies Report - Six variable equation

The rural index flood, Q<sub>barrural</sub>, was calculated using Equation 8 (Cunnane & Lynn, 1975).

$$Q_{\text{bar}} = 0.00042 \cdot \text{AREA}^{0.95} \cdot F_s^{0.22} \cdot \text{SOIL}^{1.18} \cdot \text{SAAR}^{1.05} \cdot (1+\text{LAKE})^{-0.85} \cdot S1085^{0.19}$$

A factorial standard error of 1.50 applies to this method.

Table 22 below summarises the results from the above analysis for the un-factored scenario as well as the 68% and 95% confidence intervals.

Table 22: FSR 6 Variable Method - Q<sub>bar urban</sub> results

Location	<b>Q<sub>bar urban</sub> (m<sup>3</sup>/s)</b>		
	<u>Un-factored</u>	<u>68% Confidence</u>	<u>95% Confidence</u>
HEP 1	8.08	12.11	18.17
HEP 2	2.55	3.82	5.74
HEP 3	4.28	6.43	9.64

Flow for the 1 in 100-year return period (Q<sub>100</sub>) was calculated by multiplying the results by the FSR regional growth curve; the growth factor for the 100-year storm is 1.96. A summary of these results can be seen in Table 23 below.



Table 23: FSR 6 Variable Method - Q<sub>100</sub> results

Location	Q <sub>100</sub> (m <sup>3</sup> /s)		
	Un-factored	68% Confidence	95% Confidence
HEP 1	15.80	23.70	35.54
HEP 2	4.99	7.48	11.22
HEP 3	8.38	12.57	18.85

### 3. FSSR16 – Unit Hydrograph Method

The unit hydrograph method most widely used in Ireland for ungauged catchments is the FSR triangular unit hydrograph and design storm method. This method estimates the design flood hydrograph, describing the timing and magnitude of flood peak and flood volume (area beneath hydrograph). This method requires the catchment response characteristics (time to peak,  $t_p$ ), design rainstorm characteristics (return period, storm duration, rainfall depth and profile) and runoff/loss characteristics (percentage runoff and baseflow).

The FSSR16 Unit Hydrograph method is a rainfall-runoff model based on procedures set out in the Flood Studies Report (1975) and includes revisions contained in subsequent supplementary reports. The FSSR16 will generate flow hydrographs for design return period events or will simulate runoff during historic events using recorded rainfall and other input data.

A unit hydrograph was constructed using this method for the three HEP's along the watercourses, to determine the 100-year peak flow as well as the time to peak. The subsequent flow hydrographs are shown in Figure 37 to 39.

Figure 39: HEP 1 FSSR16 Q<sub>100</sub> Hydrograph

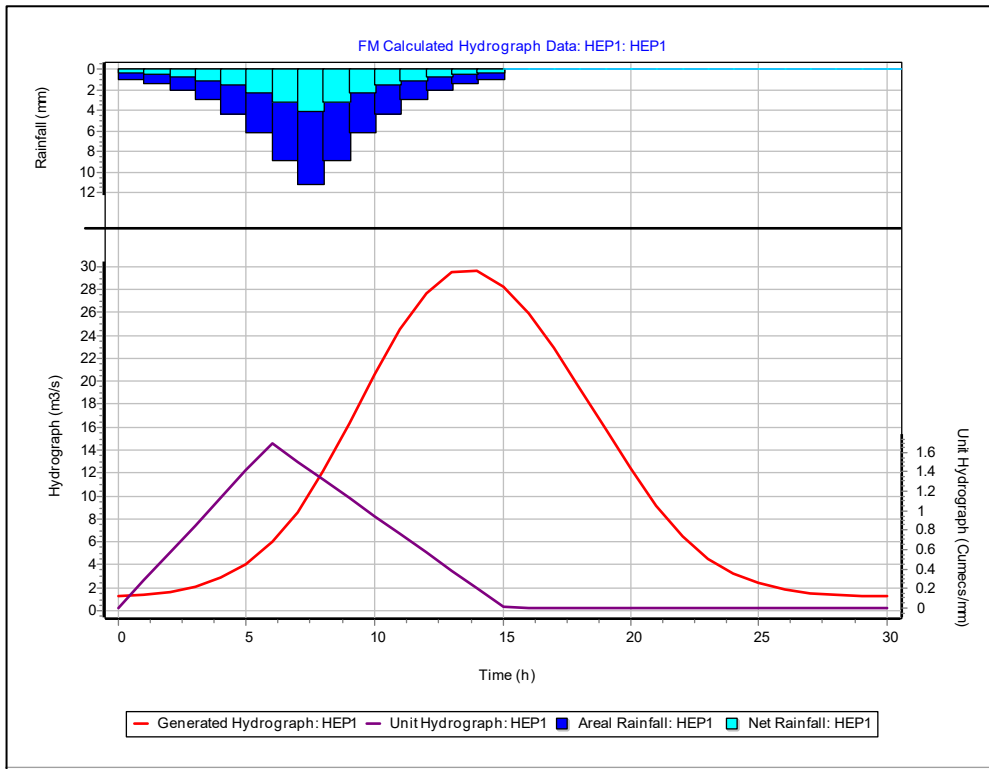


Figure 40: HEP 2 FSSR16 Q<sub>100</sub> Hydrograph

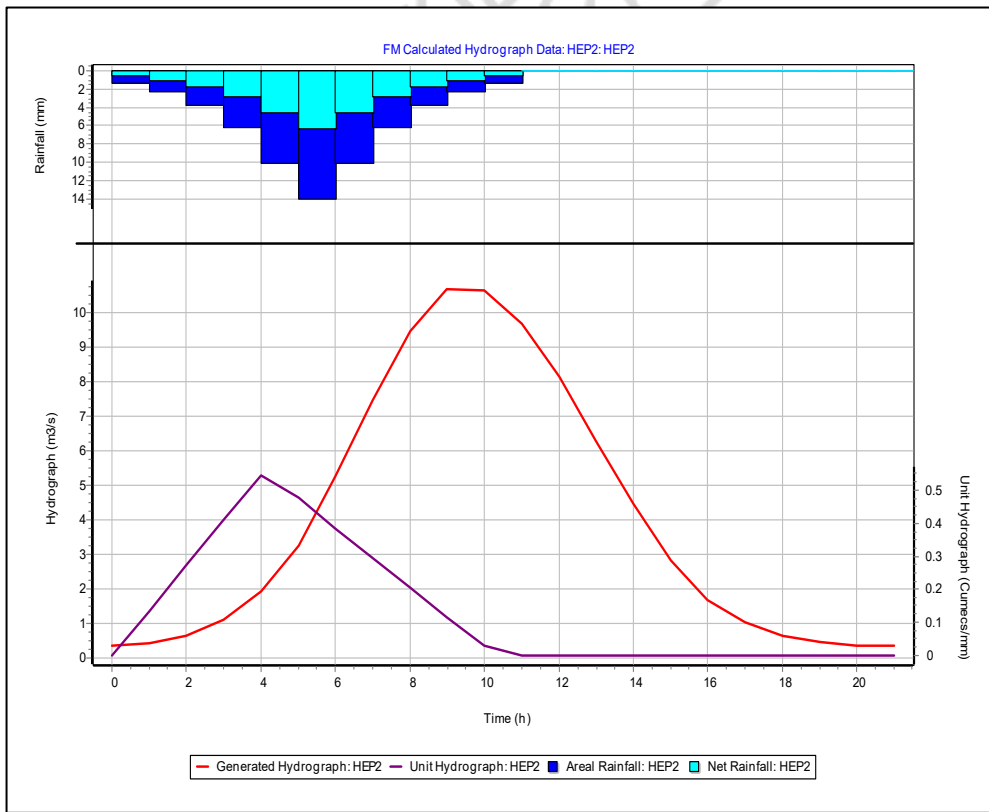
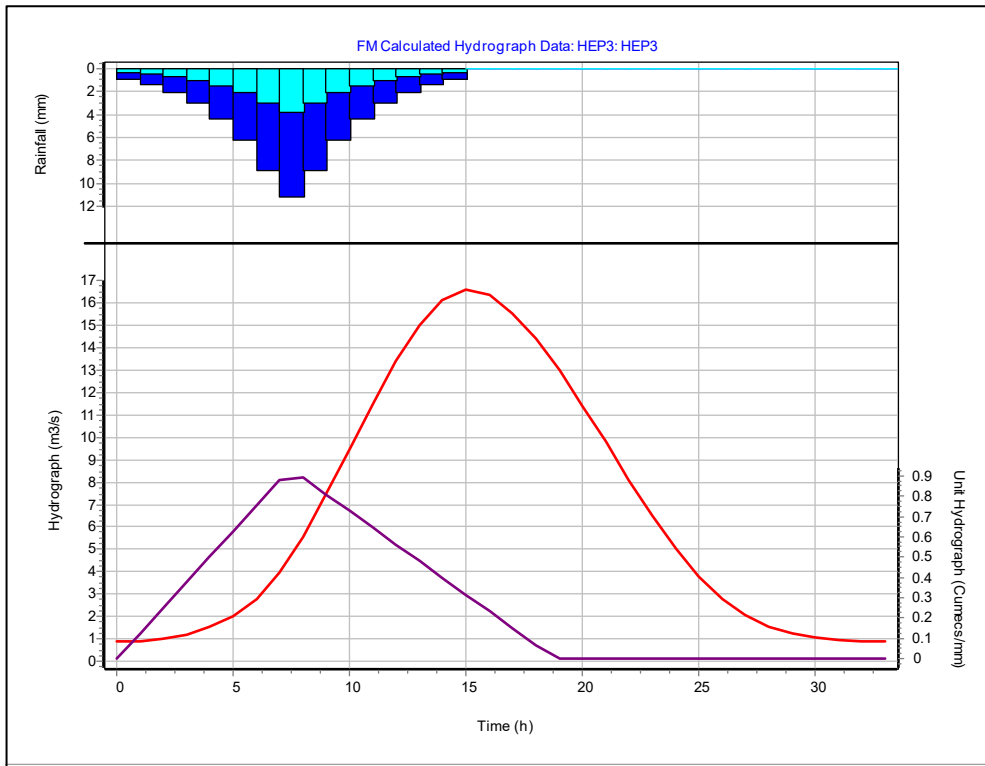


Figure 41: HEP 3 FSSR16 Q100 Hydrograph



A summary of the peak flows from the FSSR16 Unit Hydrograph method can be seen in Table 24.

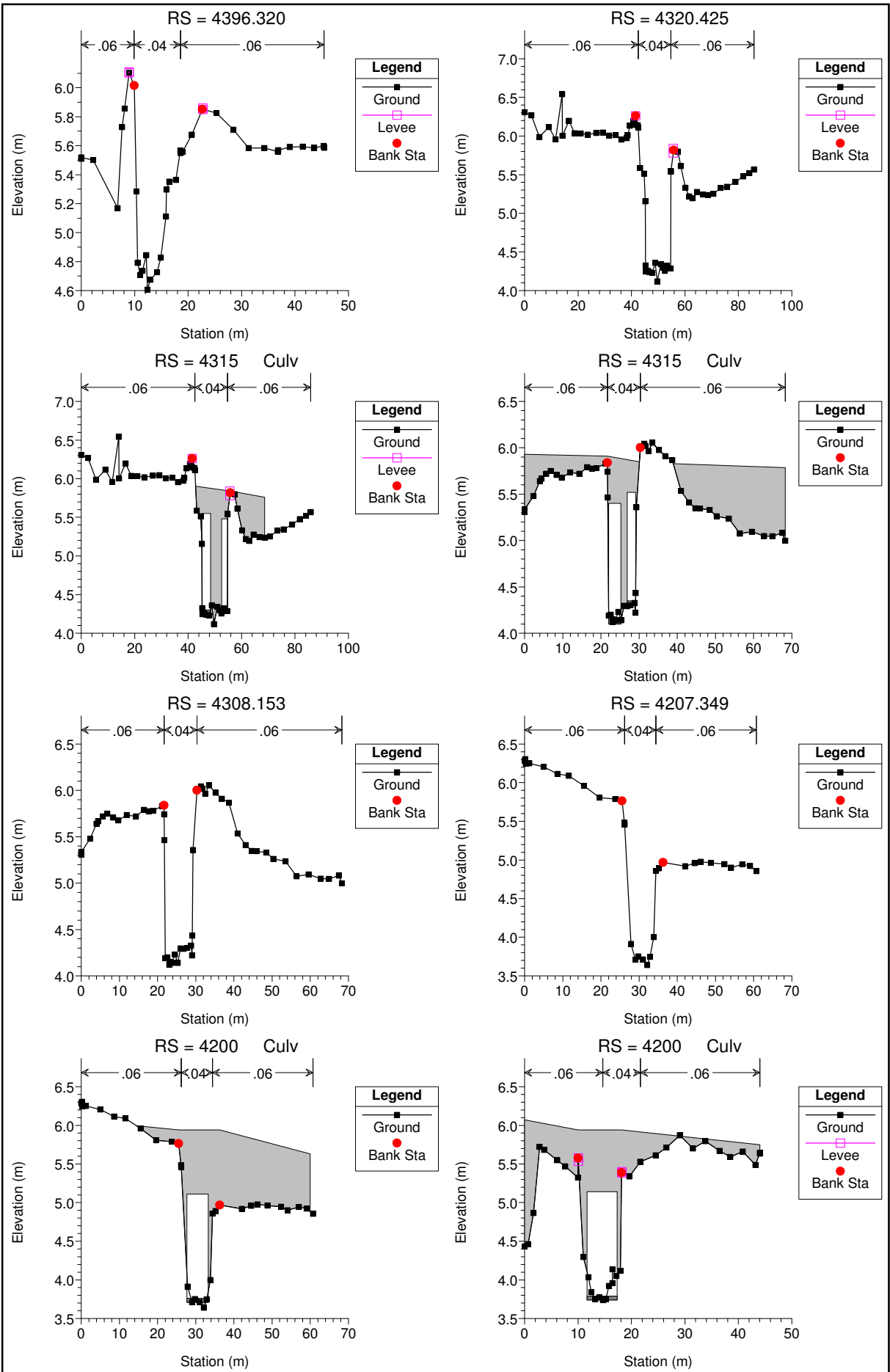
Table 24: Q<sub>100</sub> results

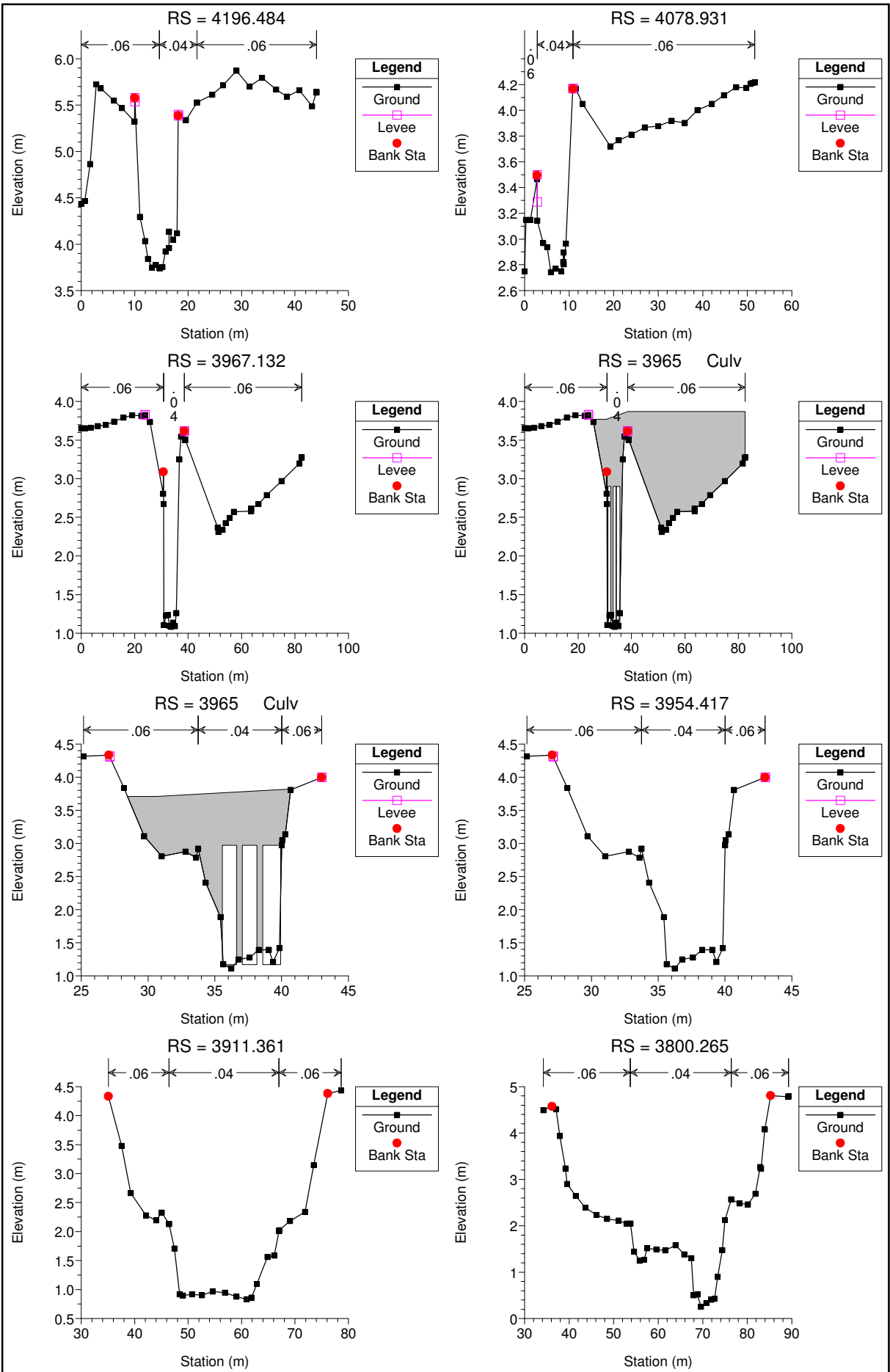
	<b><u>Q<sub>100</sub> (m<sup>3</sup>/s)</u></b>
HEP 1	29.62
HEP 2	10.69
HEP 3	16.60

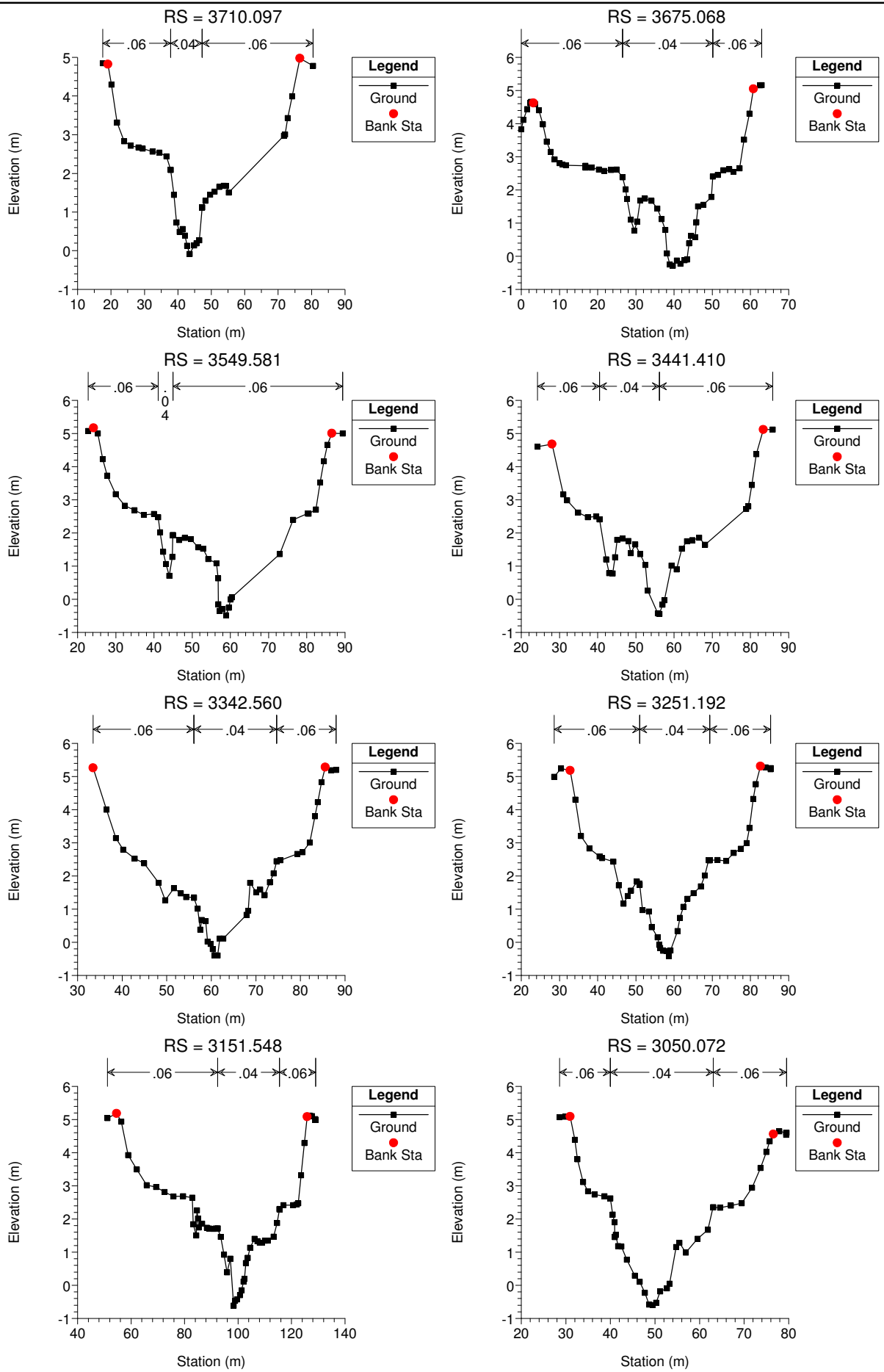
## Appendix D

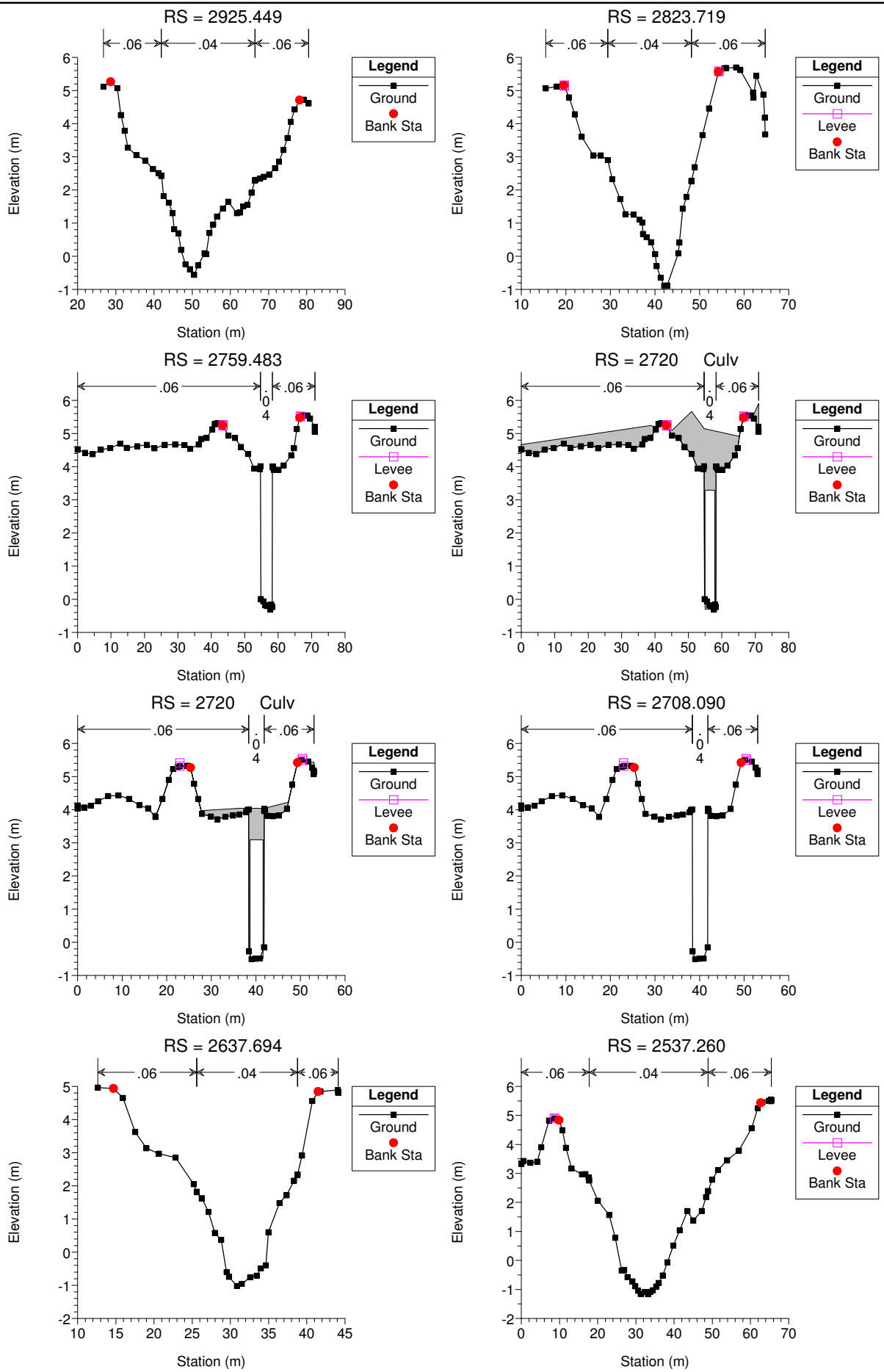
### River Cross Sections

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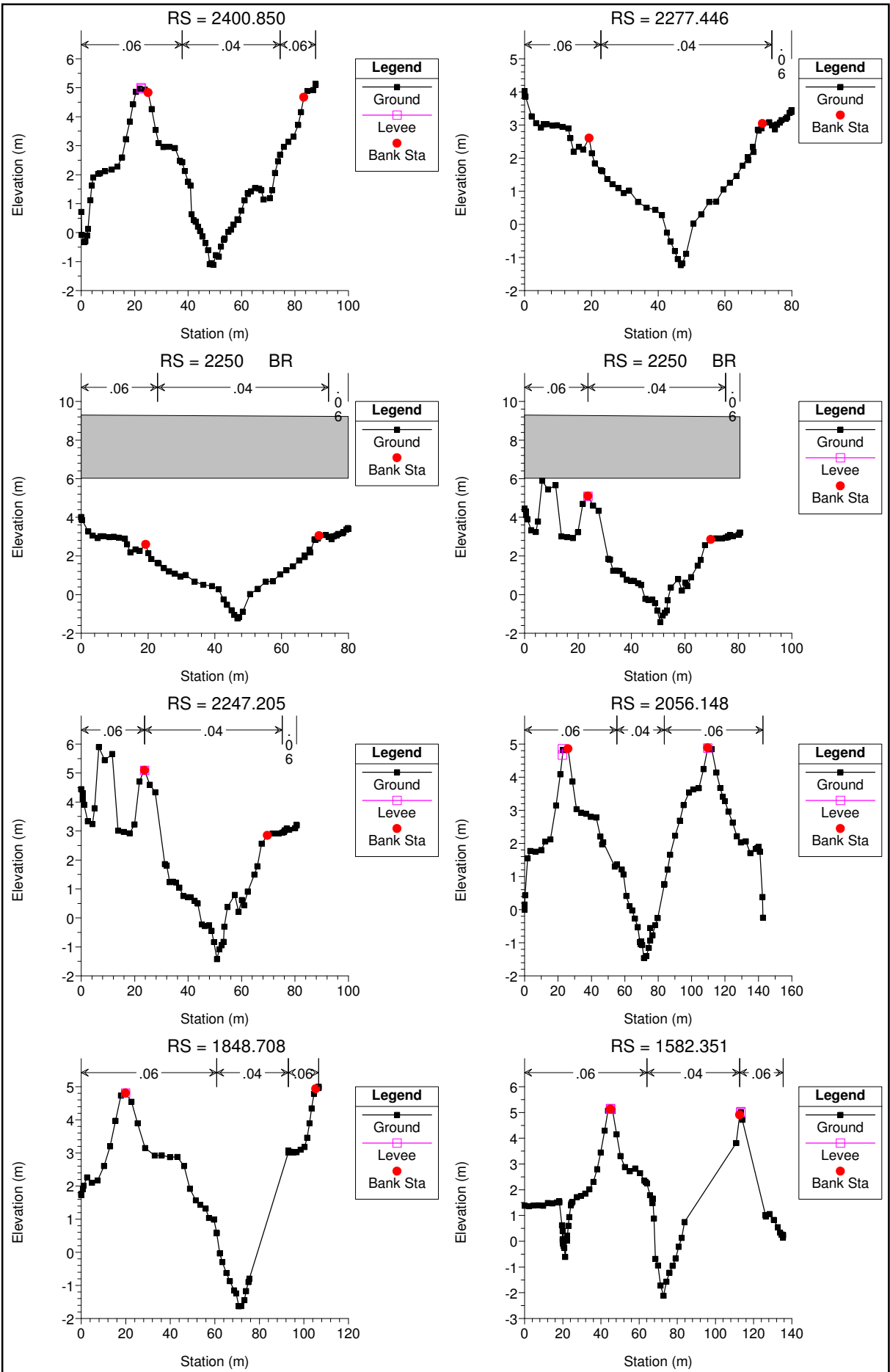


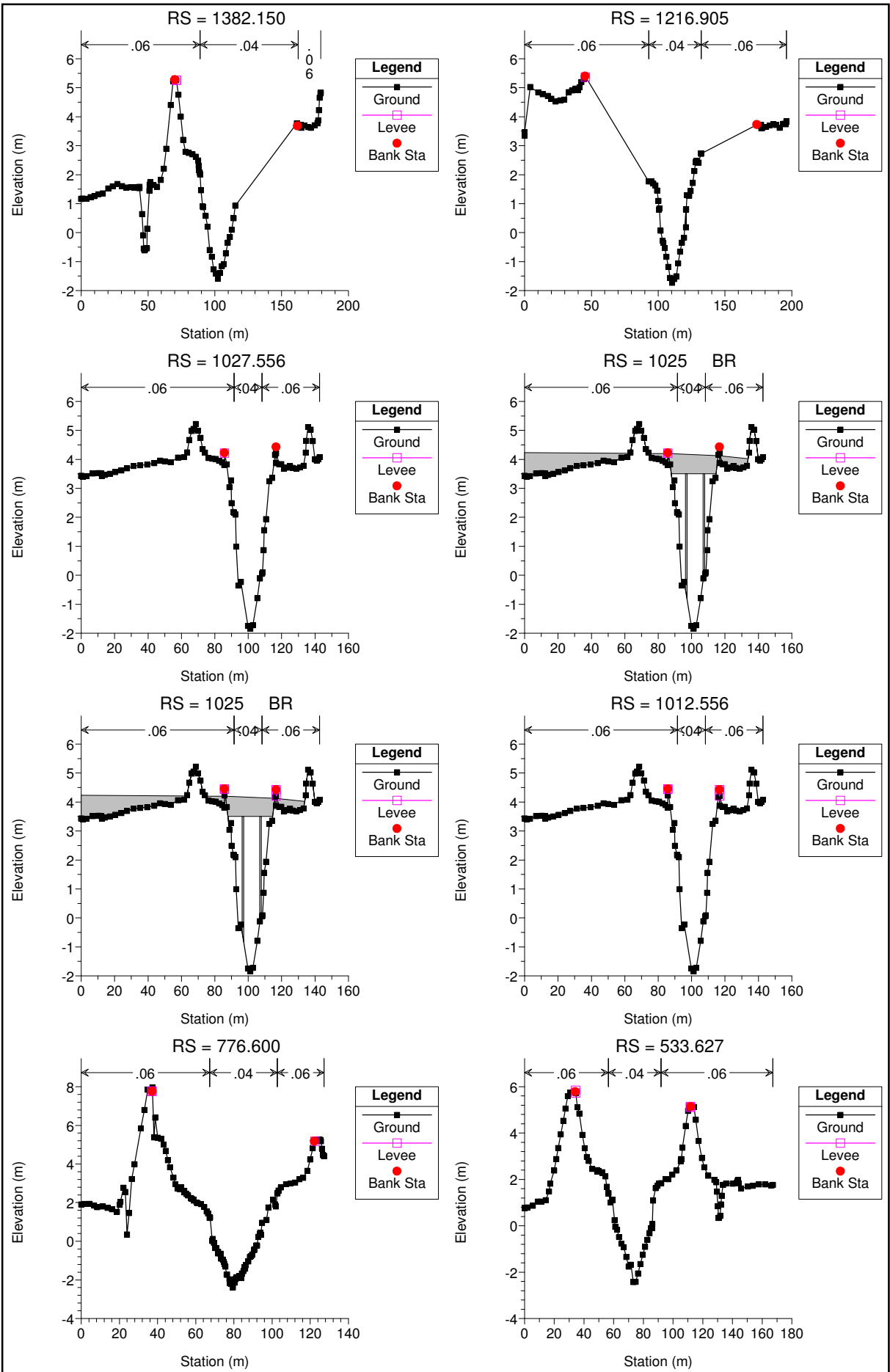


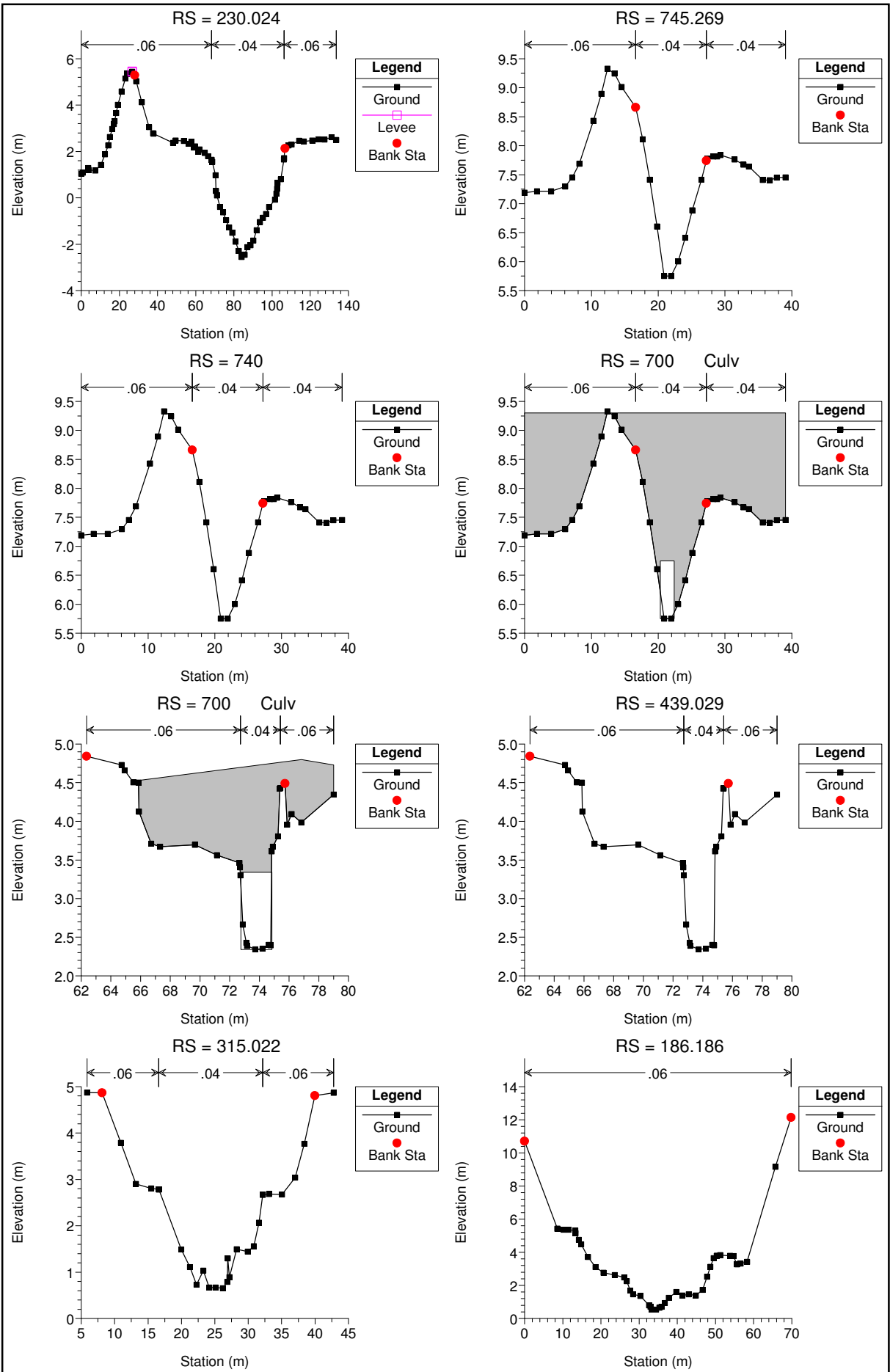


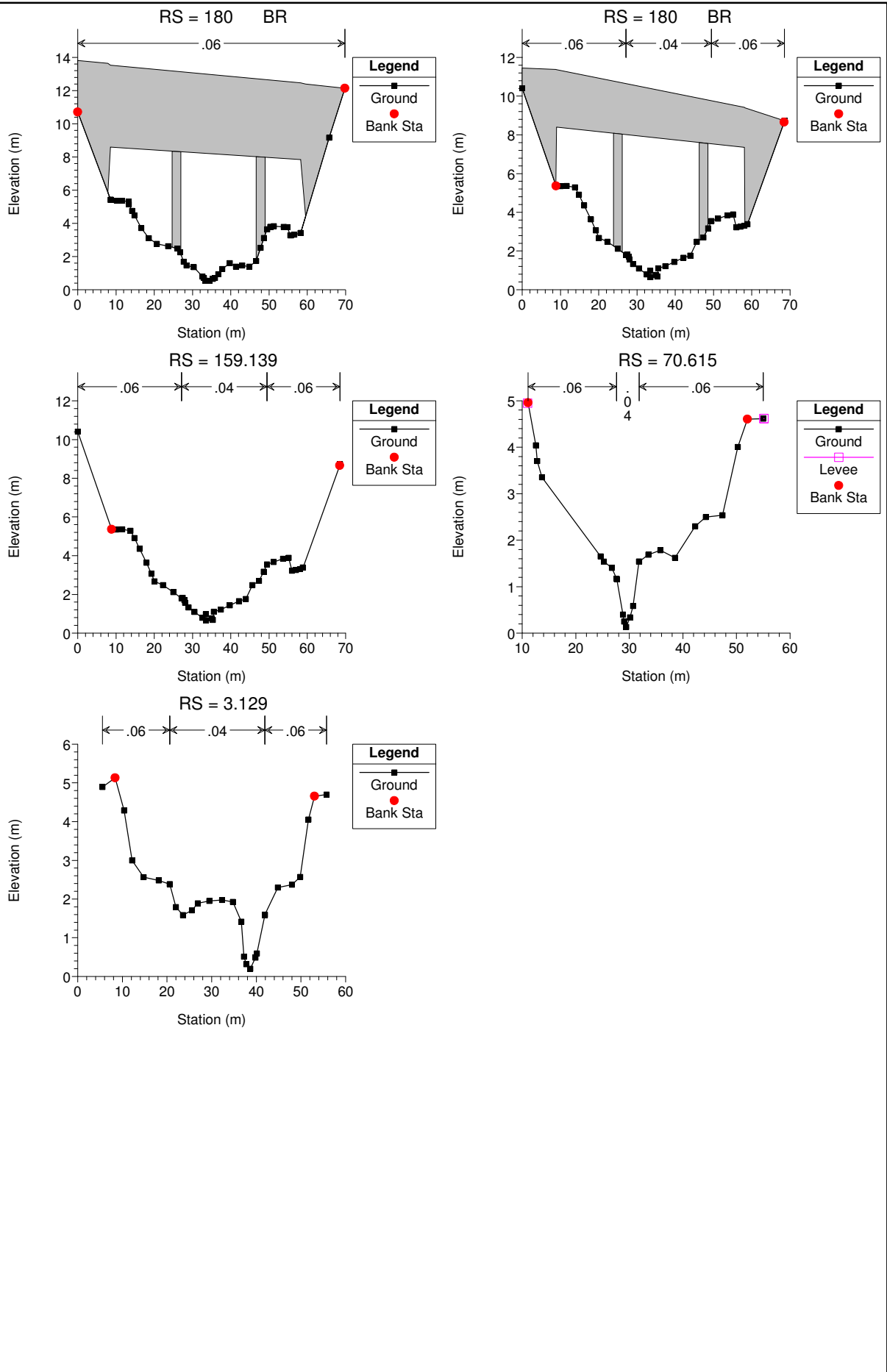












## Appendix E

### Comparison with CFRAM Model

Draft

## E Site-Specific Model

### 4. Fluvially Dominant Scenario

In order to assess the fluvially dominant scenarios, peak flows corresponding to the 0.1%, 1% and 10% Annual Exceedance Probability (AEP) events were combined with an annual tidal flood event.

Target flows from Shannon CFRAM Study HEP locations 24\_1580\_5 and 24\_1718\_4 were initially used to scale the existing hydrographs and set peak inflows for the model. Figures 40 and 41 show the inflow values adopted.

Figure 42: Inflow hydrograph – Ballysheedy River, Reach 2 (Shannon CFRAM Study Hydrology Report)

HEP Reference	Annual Exceedance Probability							
	50%	20%	10%	5%	2%	1%	0.5%	0.1%
24_121_8	0.81	1.1	1.2	1.4	1.6	1.7	1.9	2.2
24_121_9	0.14	0.18	0.21	0.24	0.27	0.30	0.32	0.38
24_1580_5a	2.7	3.5	4.0	4.5	5.2	5.7	6.2	7.4
24_1580_5	0.10	0.13	0.15	0.17	0.19	0.21	0.23	0.27
24_1718_1	0.07	0.09	0.11	0.12	0.14	0.15	0.16	0.19
24_1720_3a	1.9	2.4	2.8	3.1	3.6	4.0	4.3	5.1

**Table B16.18 Preliminary Design Hydrograph Peak Inflows (m<sup>3</sup>/s) at HEP Locations on the N16 Model Extent (Ballinacurra and its tributary Ballynaclogh, and Ballysheedy)**

Figure 43: Inflow hydrograph – Ballinacurra Creek, Reach 1 (Shannon CFRAM Study Hydrology Report)

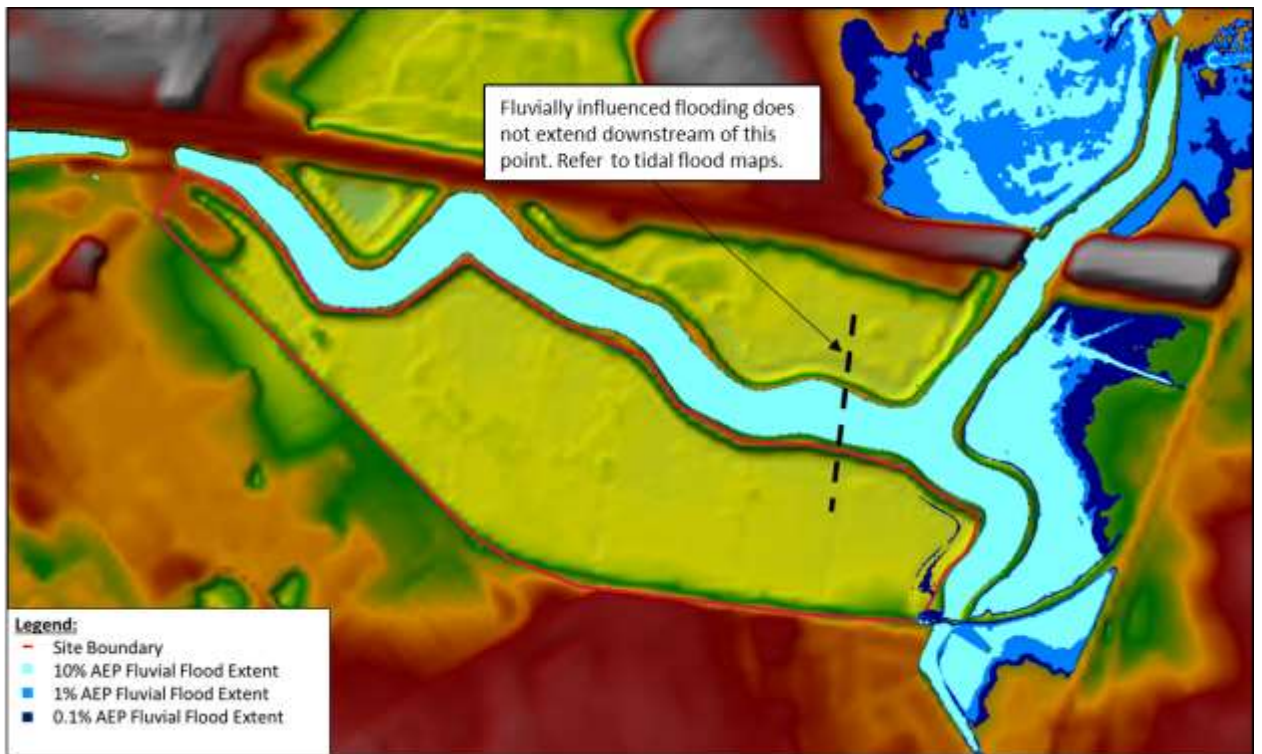
HEP Reference	Annual Exceedance Probability							
	50%	20%	10%	5%	2%	1%	0.5%	0.1%
24_121_9	0.81	1.1	1.2	1.4	1.6	1.7	1.9	2.2
24_121_12	0.95	1.2	1.4	1.6	1.9	2.0	2.2	2.6
24_1580_5	2.7	3.5	4.0	4.5	5.2	5.7	6.2	7.4
24_1580_6	2.8	3.6	4.2	4.7	5.4	5.9	6.4	7.6
24_1718_1	3.5	4.6	5.3	6.0	6.9	7.6	8.2	9.8
24_1718_3	3.7	4.9	5.6	6.4	7.3	8.0	8.7	10.3
24_1718_4	3.8	4.9	5.7	6.4	7.4	8.1	8.8	10.4
24_1720_4	1.9	2.4	2.8	3.1	3.6	4.0	4.3	5.1

**Table B16.9 Target Flows (m<sup>3</sup>/s) at HEP Locations on the N16 Model Extent (Ballinacurra, its tributary Ballynaclogh, and Ballysheedy) – Reach 29, 30 and 31**

As can be seen from the flood extents in Figure 42 below, the results of the site-specific model have a strong correlation to those of the Shannon CFRAM Study found in Section 6.4.

The flood extents for the 1% and 10% AEP events show a slight deviation within Storage Area B due to the overtopping of the hydraulic structure on the Ballinacurra Creek, Reach 1 at River Station 3965. Furthermore, due to the above a slight deviation can be seen in the flood extent for the 0.1% AEP within the site along the eastern boundary.

Figure 44: Site Specific Model - Fluvial Flood Extents



Water levels are comparable and slightly higher to those recorded in the Shannon CFRAM Study; this is evident in the long sections in Figures 43-45 below.

Figure 45: Fluvial events - Site-Specific Model vs CFRAM WL- Long Section Reach 1 - 1

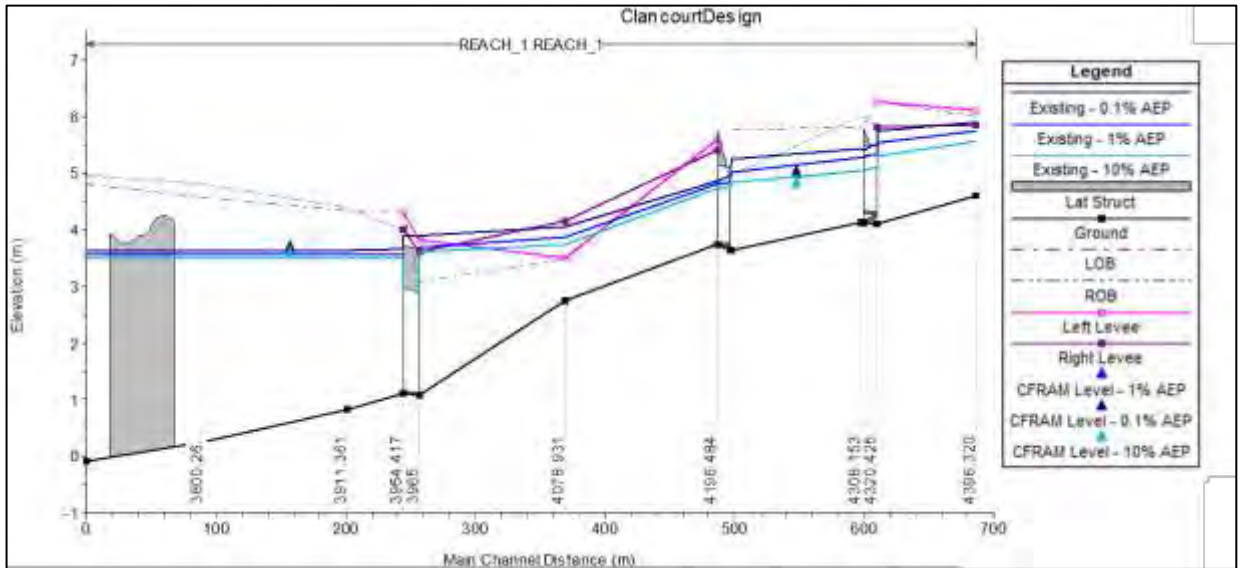


Figure 46: Fluvial events - Site-Specific Model vs CFRAM WL - Long Section Reach 2- 2

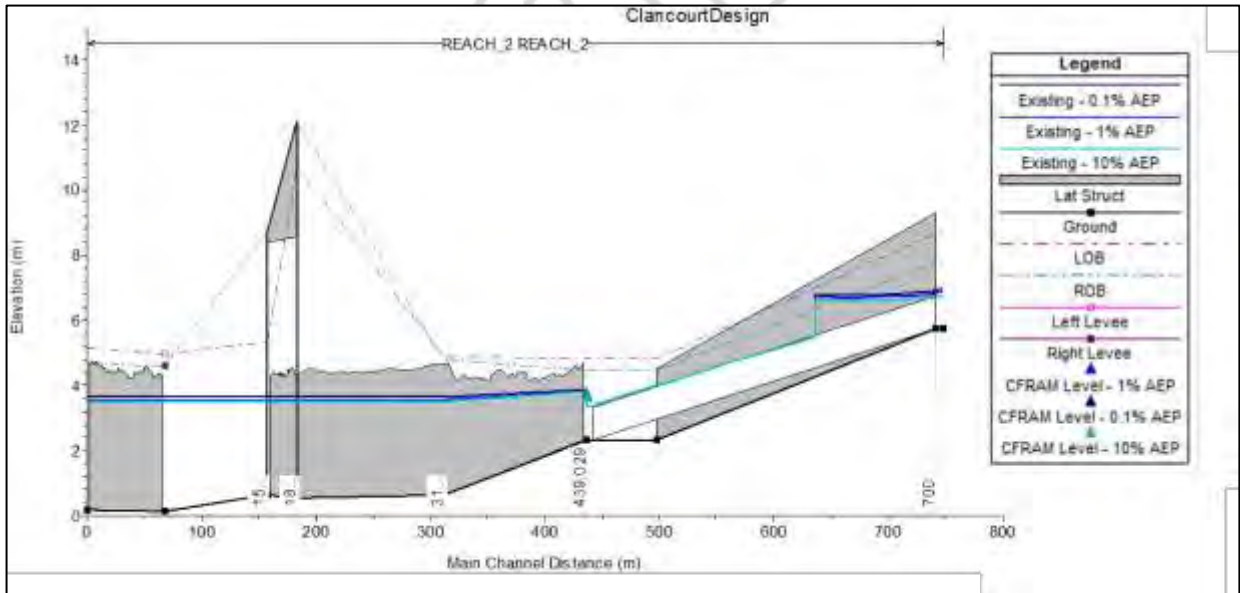




Figure 47: Fluvial events - Site-Specific Model vs CFRAM WL Long Section Reach 1-3

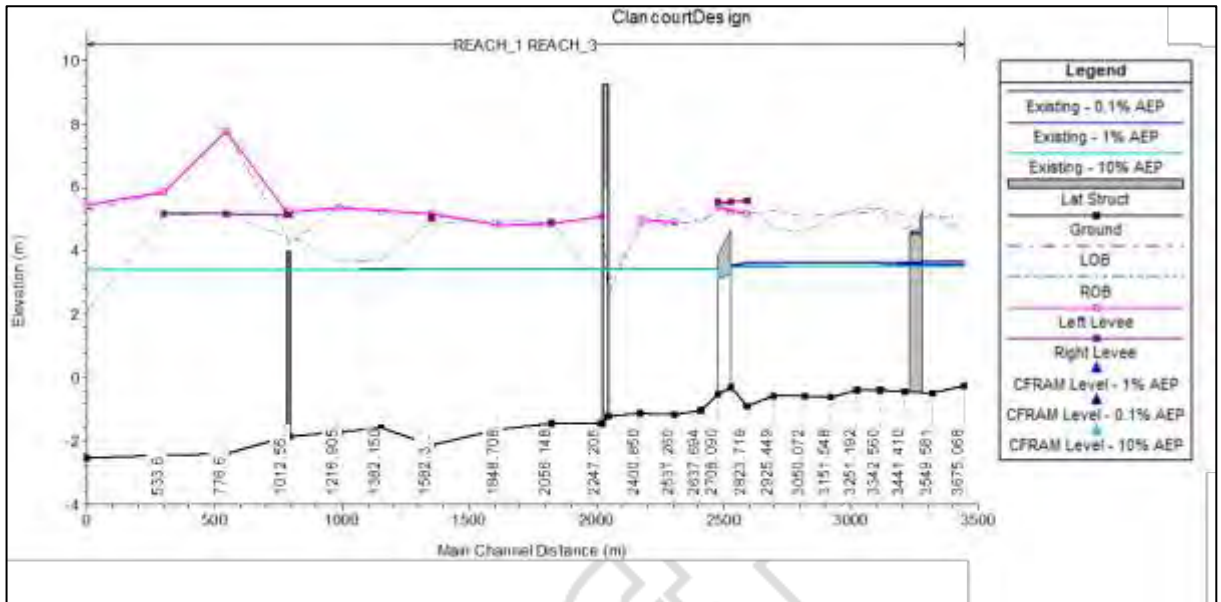


Table 25 shows the comparison of these observed water levels between the site-specific model and the Shannon CFRAM Study. The point closest to the site along Reach 1-1 at main channel distance 156.26m (highlighted below) produced the closest correlation to the CFRAM Study with an average percentage difference of 1.65%. The largest variation compared to the CFRAM Study occurred at the start of Reach 1-1 at main channel distance 548.06, this may be due to model instabilities which occurred at the start of the run.

Table 25: Water level comparison

Location	Water Levels (mOD)								
	10% AEP			0.5% AEP			0.1% AEP		
Main Channel Distance (m)	Site Specific Model	CFRAM	% Diff.	Site Specific Model	CFRAM	% Diff.	Site Specific Model	CFRAM	% Diff.
Reach 1-1									
156.26	3.52	3.59	1.95	3.56	3.64	2.20	3.65	3.68	0.82
548.06	4.94	4.82	2.49	5.15	4.97	3.62	5.36	5.03	6.56
Reach 2-2									
435.90	3.61	3.61	0.00	3.66	3.66	0.00	3.69	3.69	0.00

## 5. Tidally Dominant Scenario

In order to compare the tidally dominant scenario the peak flows corresponding to the 0.1%, 0.5% and 10% Annual Exceedance Probability (AEP) events were combined with an annual fluvial flood event.

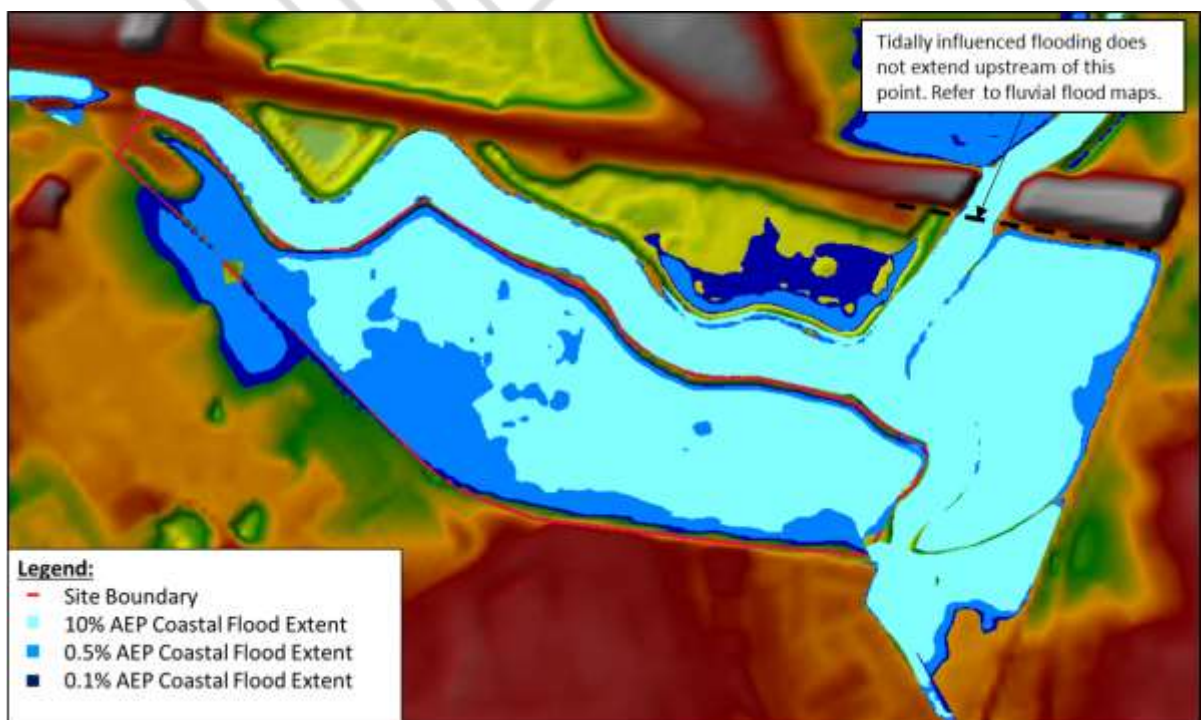
Downstream tidal levels at Node Label 01BLN00413 of the Shannon CFRAM Study were used to scale the existing tidal stage hydrographs.

As can be seen from the flood extents in Figure 46 below, the results of the site-specific model have a strong correlation to those of the Shannon CFRAM Study found in Section 6.4.

The flood extents for the 1% and 10% AEP events show a slight deviation in the following two areas of interest;

- Within the site boundary – the site-specific model indicates a larger flood extent within the site boundary for the 10% AEP. This may be as result of the embankment survey results being provided in 25m intervals which was subsequently used for the weir connection between the watercourse and the site within the model.
- Within the Crescent Shopping Centre carpark - the site-specific model indicates a larger flood extent within the site boundary for both the 10% and 1% AEP's. This is may be as a result of the connection between the site and the carpark by means of a culvert discovered during the site walkover. This connection was subsequently included in the model and thus increasing the extent of flooding within the ca

Figure 48: Site Specific Model - Tidal Flood Extents



Predicted water levels for the site-specific model are slightly lower than those estimated in the Shannon CFRAM Study, this is evident in the long sections in Figures 47-49.

Figure 49: Tidal events - Site-Specific Model vs CFRAM WL - Long Section Reach 1-1

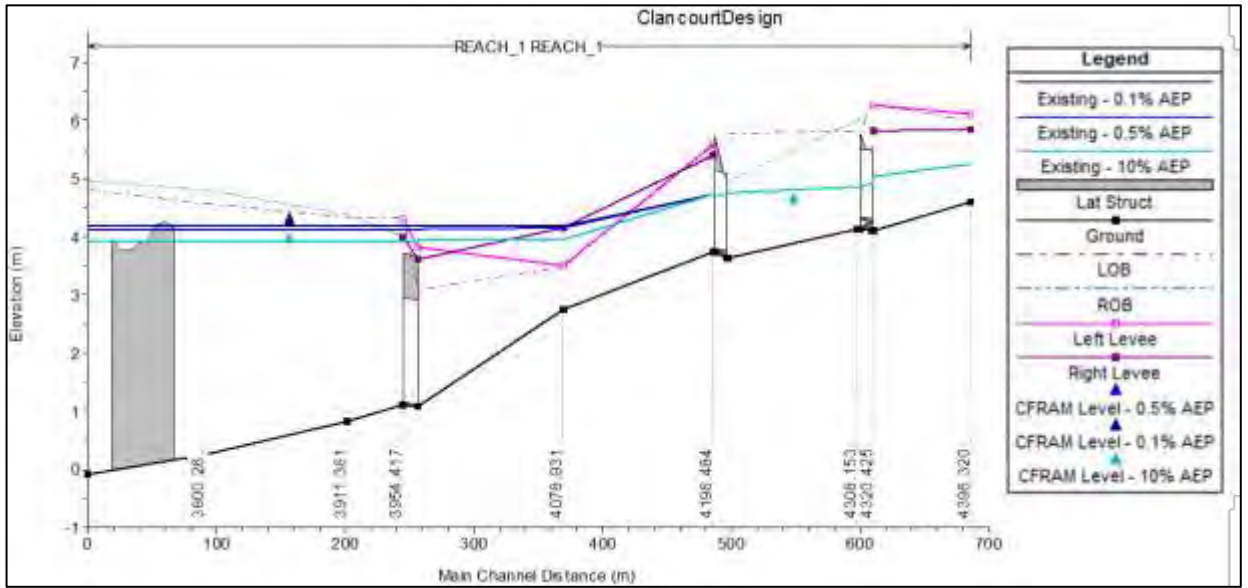


Figure 50: Tidal events - Site-Specific Model vs CFRAM WL - Long Section Reach 2-2

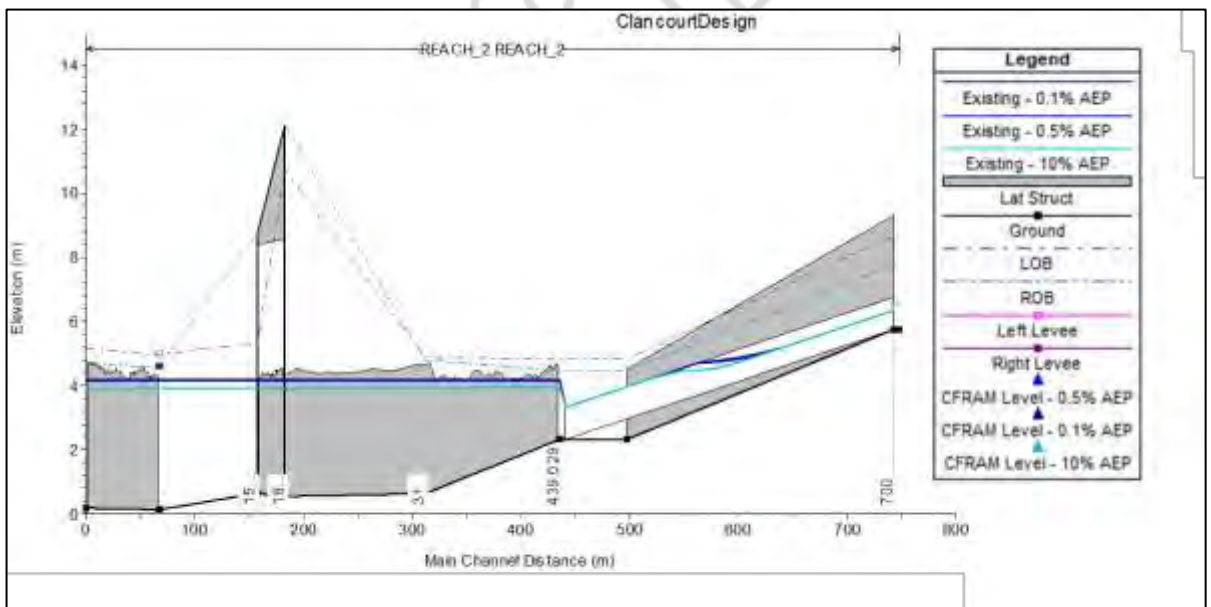


Figure 51: Tidal events - Site-Specific Model vs CFRAM WL - Long Section Reach 1-3

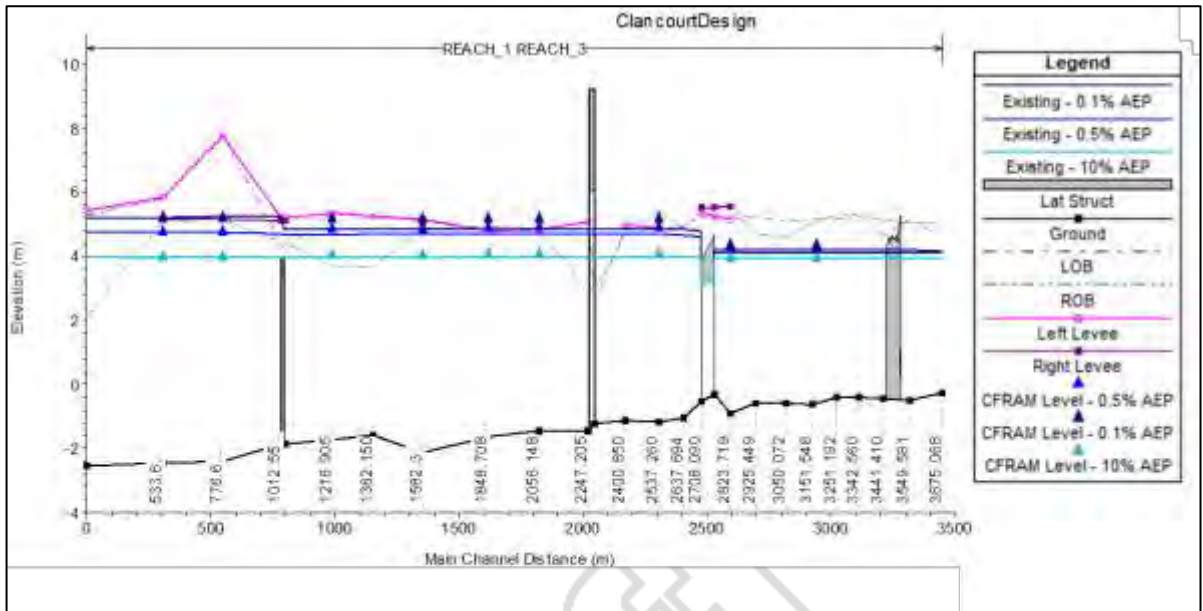


Table 26 shows the comparison of these observed water levels between the site-specific model and those given in the Shannon CFRAM Study. The points closest to the site (highlighted below) produced an average percentage difference of 1.92% when compared to those estimated in the Shannon CFRAM Study.

The site-specific model provides a greater level of accuracy and detail, given the higher level of accuracy of topographical survey data that has been acquired as part of this study. However, overall a very good match to the CFRAM study was achieved.

Table 26: Water level comparison between Shannon CFRAM and Site-Specific Model

Location	Water Levels (mOD)								
Main Channel Distance (m)	10% AEP			0.5% AEP			0.1% AEP		
	Site Specific Model	CFRAM	% Diff.	Site Specific Model	CFRAM	% Diff.	Site Specific Model	CFRAM	% Diff.
Reach 1-1									
156.26	3.93	3.95	0.51	4.15	4.23	1.89	4.19	4.28	2.10
548.06	4.81	4.64	3.66	4.82	4.64	3.88	4.81	4.64	3.66
Reach 1-3									
303.6	3.97	3.97	0.00	4.87	4.74	2.74	5.23	5.22	0.19
546.58	3.97	3.99	0.50	4.87	4.74	2.74	5.24	5.22	0.38
986.88	3.97	4.02	1.24	4.74	4.85	2.27	4.84	5.16	6.20
1352.33	3.97	4.04	1.73	4.74	4.86	2.47	4.84	5.16	6.20
1618.69	3.97	4.06	2.22	4.74	4.87	2.67	4.84	5.15	6.02
1826.13	3.97	4.07	2.46	4.74	4.87	2.67	4.84	5.16	6.20
2307.24	3.98	4.07	2.21	4.74	4.87	2.67	4.85	5.15	5.83
2593.69	3.93	3.93	0.00	4.16	4.27	2.58	4.2	4.36	3.67
2941.17	3.93	3.94	0.25	4.16	4.25	2.12	4.2	4.33	3.00

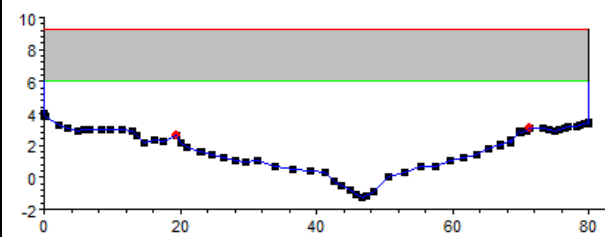
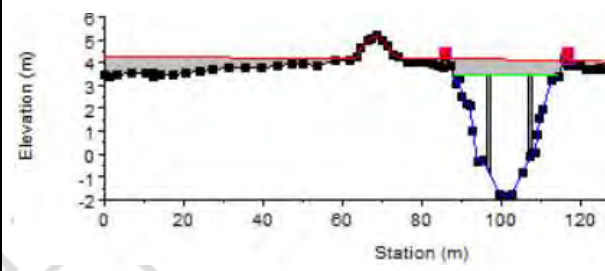
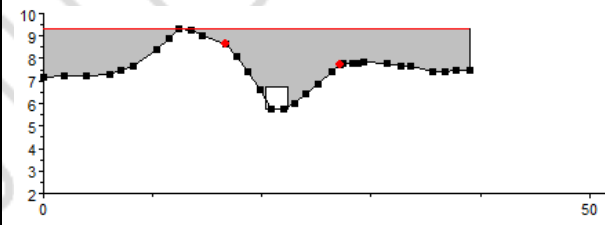
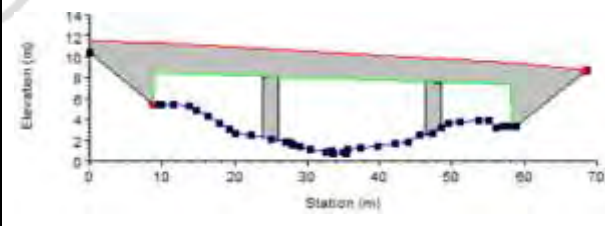
## Appendix F

### Details of Hydraulic Structures

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## F Summary of Hydraulics Structures

River Station	Type	Approx. Opening Dimensions (m)	Width (m)	Cross Section
<ul style="list-style-type: none"> <li>River: Ballinacurra Creek; Reach: Reach 1</li> </ul>				
4315	Culvert	2 x Box Culvert B x h = 3.2 x 1.3 B x h = 2.2 x 1.2	9.8	
4200	Culvert	Box Culvert B x h = 3.2 x 1.3	9.3	
3965	Culvert	3 x Box Culvert B x h = 1.1 x 1.8 B x h = 1.1 x 1.8 B x h = 1.2 x 1.8	12.5	
<ul style="list-style-type: none"> <li>River: Ballinacurra Creek; Reach: Reach 3</li> </ul>				
2720	Culvert	Box Culvert B x h = 3.2 x 1.3	51.3	

River Station	Type	Approx. Opening Dimensions (m)	Width (m)	Cross Section
2250	Bridge	Clear opening, no piers	23.4	
1025	Bridge	2 x Piers Pier width = 0.9 Pier width = 0.9	13	
<ul style="list-style-type: none"> <li>River: Ballysheedy; Reach: Reach 2</li> </ul>				
700	Culvert	Box Culvert B x h = 2.1 x 1.0	300	
180	Bridge	4 x Piers Pier width = 5.0 Pier width = 2.2 Pier width = 2.2 Pier width = 2.0	25	



## **Appendix G**

**Justification Test by John Spain  
and Associates**

Draft

One Albert Quay  
Cork  
T12 X8N6  
Ireland  
www.arup.com

t +353 21 422 3200

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Project title Clancourt, Dooradoyle

Job number

262009

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cc Conor Kenny

File reference

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Prepared by John O'Connor

Date

5 October 2020

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Subject Geotechnical assessment of existing flood defence embankments at Dooradoyle

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## 1 Introduction

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This technical note presents a preliminary geotechnical assessment of a site at Dooradoyle, Limerick, which was undertaken with the following objectives:

- Review the extent of existing geotechnical investigation (GI) data available for the site;
- Preliminary interpretation of ground conditions at the site;
- Consider the geotechnical issues relevant to the flood defence embankments at the site;
- Comment on the feasibility of upgrading the existing embankments in order to provide a robust flood defence.

The assessment has been undertaken based on a desk-study review of the available geotechnical information, together with relevant published material (geological mapping, aerial imagery, historic mapping). The location of the site is shown in Figure 1.

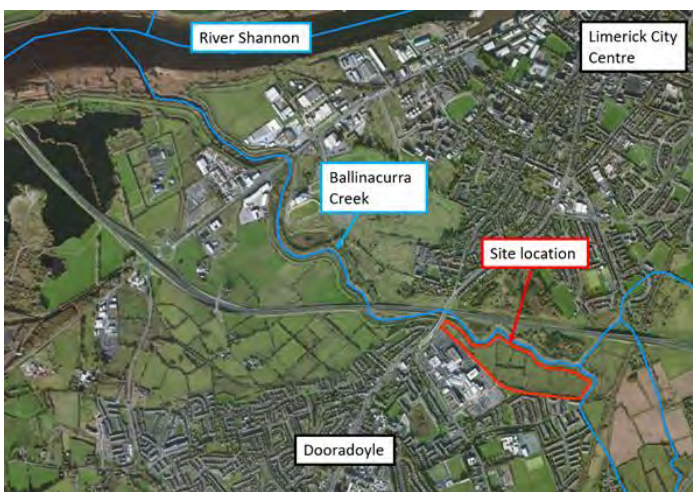


Figure 1: Site location, Google Maps (2020)

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## 2 Ground Investigations

A number of ground investigations have previously been undertaken at the site. These are summarised in Table 1 and their locations shown in Figure 2.

Table 1: Available ground investigations

Title/Project	Contractor	Year	Scope
Report on a site investigation at Crescent Shopping Centre Limerick. Report No. 7978	IGSL	2002	7 No. cable percussion boreholes to a maximum depth of 10m and associated classification testing.
Proposed Gas Pipeline Mungret to Inchmore. Report No: 15289	IGSL	2012	6 No. trial pits 6 No. Cable percussion holes 2 No. rotary follow on to 15m 7 No. window samples to a maximum depth of 5m 10 No. Dynamic Probes to a maximum depth of 5.6m Associated classification, reusability and shear strength testing.
Limerick Southern Ring Road Phase II Site Investigation	Geotech	TBC	Partial data available, full report to be sourced. Included for completeness only, review and conclusions are based on 2002 and 2012 investigations.

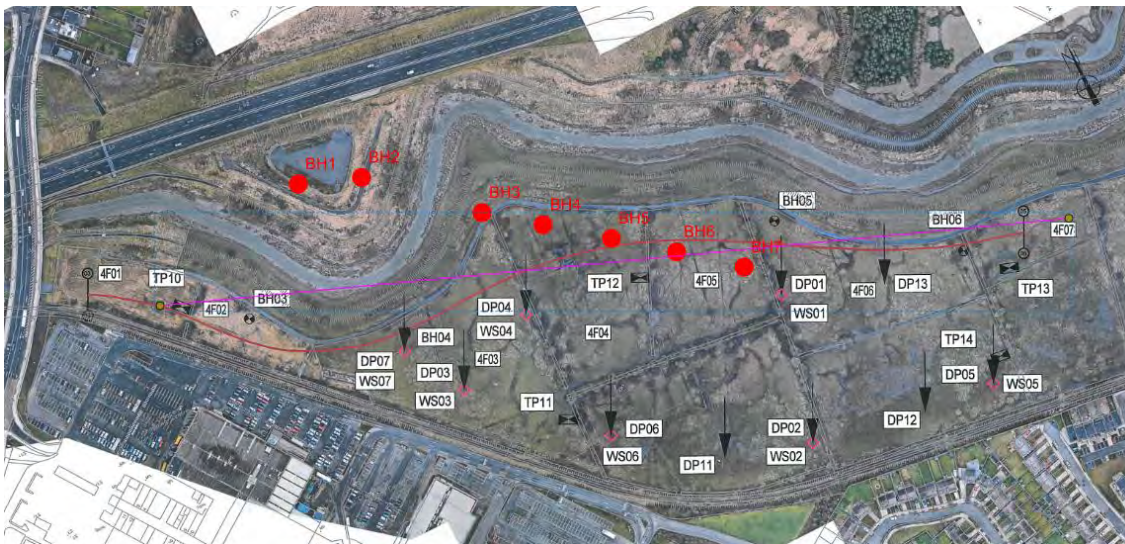


Figure 2: Overlay of approximate 2002 (red) and 2012 (white) exploratory location plan

The GI undertaken in 2002 and 2012 is considered adequate to undertake a geotechnical interpretation to inform a geotechnical assessment of the embankments. It provides a sufficient geographical spread of locations to establish ground conditions across the site. The nature of the field investigations and the associated laboratory testing are also appropriate for this purpose. The spacings of the GI locations is aligned with the recommendations of *EN 1997-2 Geotechnical design – ground investigations and testing*.

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Further targeted ground investigations may be required at design stage in order to provide additional information for detailed design of future upgrades to the existing embankments or design of new flood defence measures, however the available information is sufficient for assessment of the feasibility of upgrading the existing embankments.

## 3 Ground Conditions

---

The investigation data shows ground conditions at the site to comprise topsoil, overlying up to 5m of very soft silts, clays and peats which is underlain by a firm to stiff grey-brown gravelly clay and medium dense to very dense gravel. This is then underlain by strong to very strong Limestone bedrock. Where encountered, rock was at 5m below ground level. These ground conditions are broadly consistent across the site.

Made ground was identified to a depth of 1.9m in TP10 (at the western extent of the site) in the 2012 investigation. Made ground associated with the backfilling of the gas pipeline and its associated haulage routes may be present on the site. Additionally, there may be remnants of historic flood defences on the wet side of the existing embankment based on the topography and historic mapping.

The 2002 and 2012 investigations are consistent in the ground conditions encountered. They are also aligned with the Geological Survey Ireland classification of the site.

## 4 Geotechnical Design Considerations

---

A range of issues will need to be considered in the design of either upgrades to the existing embankments, or construction of new embankments. Among the most critical issues will be:

- Stability;
- Settlement;
- Seepage.

These are discussed below.

### 4.1 Stability

Stability is a key issue in the design of embankments over soft soils, which are present at this site. Potential failure mechanisms include basal failure through the soft layers beneath the embankment, and slip surfaces through the embankment fill material.

For basal failures, undrained conditions are typically critical, with these being experienced during or shortly after construction, after which the factor of safety against instability tends to increase. Therefore, this is not considered a risk for the existing embankments in their current condition, given that they have been in place for a considerable period of time. If additional material is placed to raise the level of the embankments as part of upgrade works, this will impose additional loads, and stability against basal failures will need to be assessed. However, given the likely heights of additional fill, the risk of instability is likely to be low – as the soft soils beneath the existing

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embankment have consolidated over time, the relatively small applied load from additional fill is unlikely to result in failure.

Similar principles apply to new embankments, but the applied load would be considerably greater, as the full height of embankment would need to be taken into account when analysing undrained failures through the soft soils. The risk of this failure mechanism would therefore be higher compared to that for upgrade of the existing embankments.

For failures within the embankment slopes, appropriate slope angles will need to be determined to ensure stability. These will depend on the properties of the embankment material. While information on the material properties of the fill within the existing embankments is not available, it should be noted that the existing embankment slopes appear to be in line with typical slope angles for flood defence schemes. In the event of slopes being over-steep or stability issues being identified, solutions could consist of regrading of slopes, or construction of support berms.

## 4.2 Settlement

Settlement of embankments will require consideration in the design, given the soft soils at the site. This will apply both to the existing embankments if levels are raised, and to new embankments. However, settlements of new embankments can be expected to be greater than those due to raising of the existing embankment levels.

Given that the existing embankments have been in place for a considerable period of time, the underlying soils will have undergone consolidation, with settlement occurring at a decreasing rate over time. Hence settlement due to the loads from the existing fill material would be effectively complete (if embankments have been ‘topped up’ in recent years, some settlement may be ongoing, but this too would decrease over time). Placement of fill material to raise the embankment height will impose an additional load, which will induce settlement. Given the likely fill heights however, this could be addressed by a number of design solutions, such as:

- Surcharging – temporary placement of additional fill to accelerate consolidation, thereby minimising post-construction settlement;
- Over-filling – constructing embankments to a higher level, to ensure future settlement does not compromise the design flood level.

For a new embankment, settlements would be significantly greater than for the upgrade of the existing embankments, as the soft soils would consolidate under the load from the entire embankment. While the above solutions would also apply in principle to a new embankment construction, ground improvement may be required or conjunction, or a longer period would need to be allowed for settlements to reduce to acceptable levels.

Note that given the thicknesses of the soft layers are relatively consistent across the site, locating a new embankment further from the river would not provide an advantage in terms of mitigating settlements.

## 4.3 Seepage

As the site is generally by layers of silts and clays, which are likely to have a low permeability, given the relatively short tidal flood events and the width of the embankments, the risk of seepage

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below the embankment is considered low. As ground conditions are consistent across the site, relocating the embankments further from the river would not provide a benefit in terms of seepage.

Seepage through the embankments would also need to be considered, but again, given the relatively short flood events, is not considered to present a significant risk. While the constituents of the existing embankments are not fully known, given that they have provided a flood defence function in the past, it is likely that they contain some low permeability material. If seepage through the embankment was determined to be an issue, this could be addressed as part of the upgrade works, by incorporating low-permeability fill into the embankment shoulders.

## 5 Conclusions

---

Based on a review of the available information, the following preliminary conclusions can be drawn:

- The existing geotechnical investigation data is adequate to assess the ground conditions of the in situ soils at the site for the purposes of geotechnical assessment of the embankments.
- Upgrading of the existing embankments in order to provide a robust flood defence is considered feasible in terms of the geotechnical aspects.
- Geotechnical issues at the site will include stability, settlement, and seepage. These can be addressed as part of a solution involving upgrade of the existing embankments.
- These issues will also be relevant for construction of new embankments. However, new embankments would present disadvantages in terms of stability and settlement, compared to upgrade of existing embankments.
- Construction costs of new embankments would be greater than those for upgrade of the existing embankments.

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### DOCUMENT CHECKING (not mandatory for File Note)

	Prepared by	Checked by	Approved by
Name	John O'Connor	Ken Leahy	Ken Leahy
Signature			

50 Ringsend Road  
Dublin 4  
D04 T6X0  
Ireland  
www.arup.com

t +353 1 233 4455  
f +353 1 668 3169

Project title Dooradoyle Portland Urban Quarter

Job number

262009

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File reference

Prepared by Daniel Walsh

Date

2 October 2020

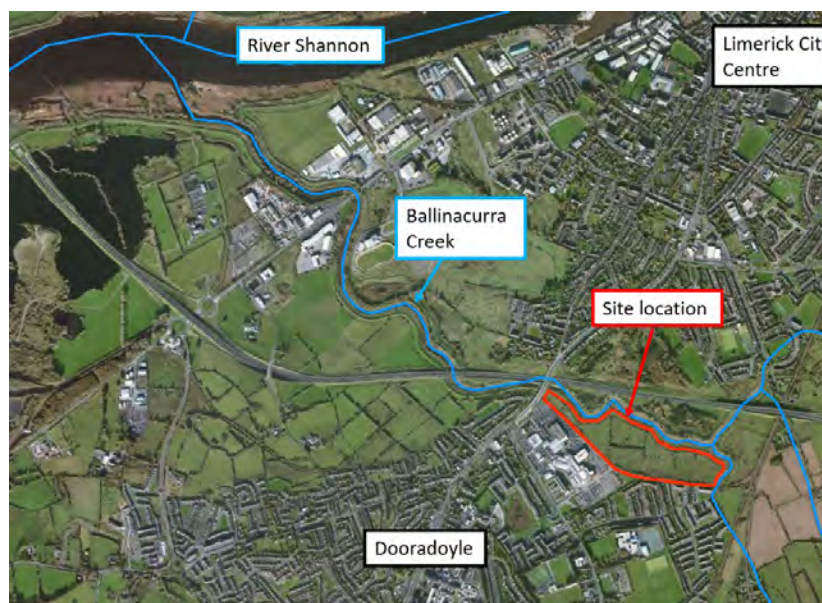
Subject Downstream Breach Strategic Flood Risk Assessment

## 1 Introduction

In response to concerns raised by LCCC in discussions regarding residual flood risk at the subject site, Arup has been commissioned by Clancourt Group to assess the risk of flooding to the subject site adjoining the Crescent Shopping Centre in Dooradoyle, Co. Limerick, from a downstream embankment breach. This file note sets out the methodology and findings of this assessment.

The subject lands, shown in Figure 1, are located in an underutilised area between the existing developed lands in Dooradoyle and the City Centre. The development of these lands is seen as critical in creating a stronger and sustainable linkage of the two areas.

Figure 1: Subject site location



The lands are already protected to a high standard by existing OPW embankments.

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These embankment continue downstream of the site along the Ballinacurra Creek, which in turn join into embankments along the River Shannon.

Flood risk to the site has been analysed in detail in a separate Flood Risk Assessment report. The aim of this file note is to assess the vulnerability of the subject site to tidal flooding from an embankment breach downstream along the Ballinacurra Creek or River Shannon.

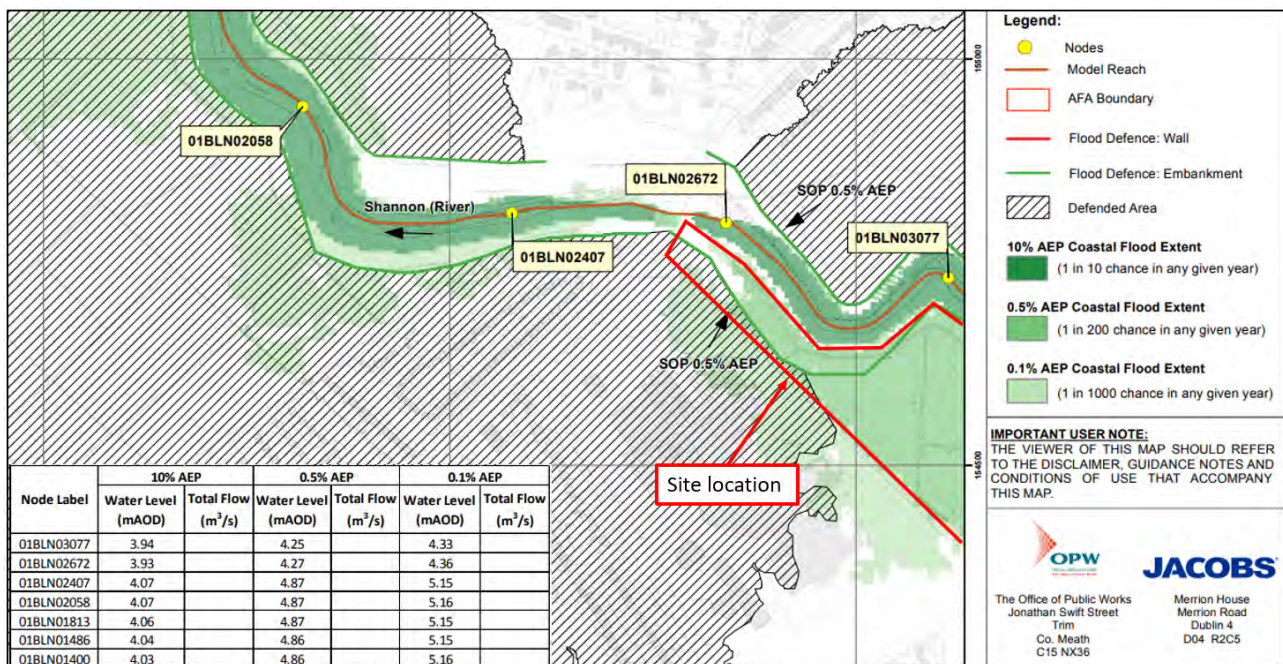
## 2 Assessment of Present-Day Risk

The following methodology has been undertaken to assess whether there is a flow path to the subject site in the unlikely event that a breach occurs downstream of the site:

1. Establish the relevant extreme tidal levels
2. Review existing intermediate topography to establish potential flow paths
3. Consider potential intermediate storage volumes and thresholds at which a breach could result in flood waters reaching the site.

Figure 2 below shows an extract from the Catchment Flood Risk Assessment and Management (CFRAM) study tidal flood extent map directly west of the site. The 0.5% Annual Exceedance Probability (AEP) tidal level is 4.87mOD at node 01BLN02407 just downstream of the R526 road and the subject site. This return period is the normal standard for flood relief design. It is noted that this level of 4.87mOD is higher than further upstream on the Ballinacurra Creek as the tidal flow is throttled by a culvert under the R526, resulting in lower water levels upstream immediately adjacent to the subject site where the equivalent 0.5% AEP flood level is 4.27mOD. Therefore, to assess the risk of downstream breach, it is appropriate to consider the higher level of 4.87mOD which dominates the downstream reach and could be a source to potential flow paths to the site from a downstream breach.

Figure 2: Extract from CFRAM Coastal Flood Extent Map (Map no. S2526LIK\_EXCCD\_F1\_31)



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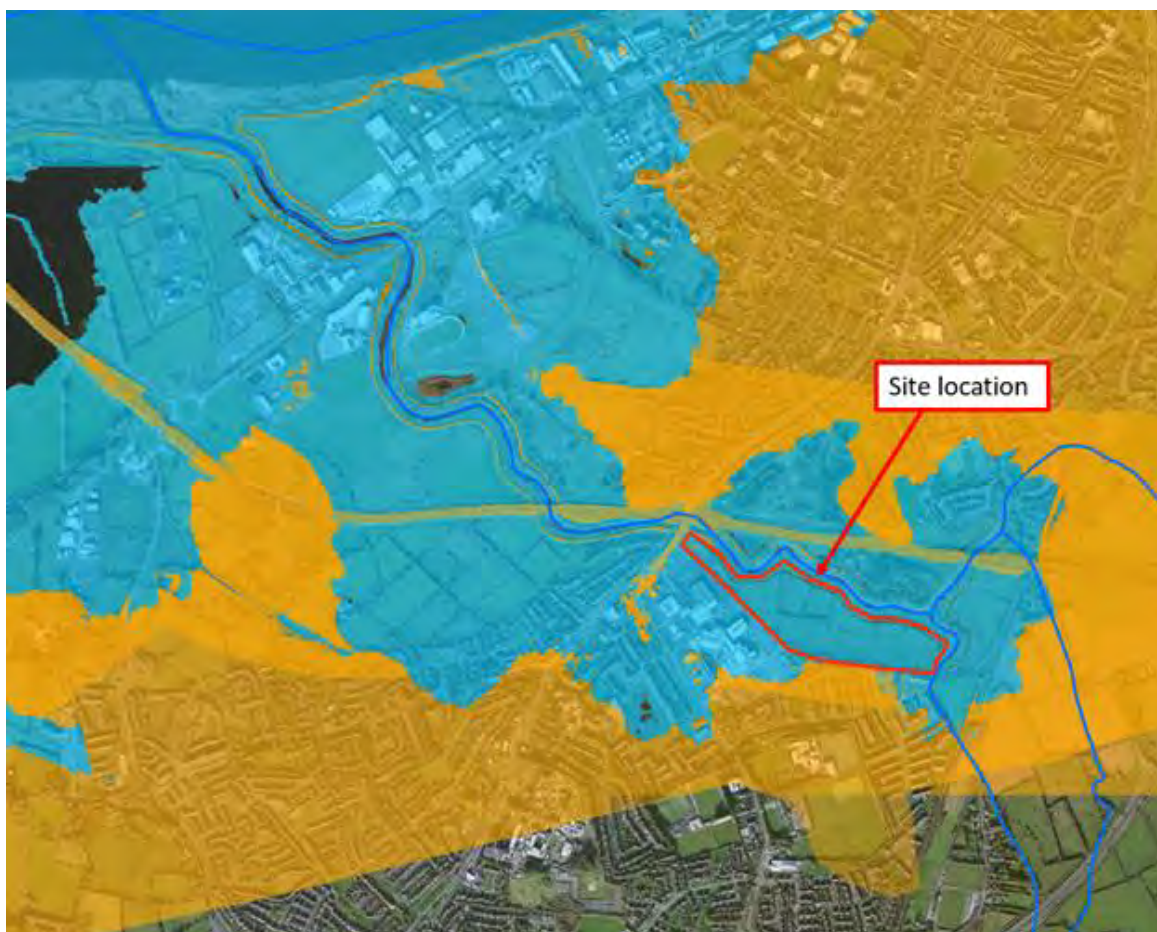
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In order to assess potential flow paths to the subject site, the 0.5% AEP tidal level was projected onto topographic data. Publicly available Lidar data from the OPW and TII was obtained for this purpose.

Figure 3 below shows this Lidar data overlaying satellite imagery in the vicinity of the site. The symbology of the Lidar data has been edited so that any land below the 0.5% AEP (200-year return period) tidal level presents as blue, and any land above that level is identified in orange.

Figure 3: 0.5% AEP Tidal Flood Level topographic projection



As can be seen, naturally high ground to the south and east, together with the elevated N18 to the north act as barriers to overland flow and means that potential flow paths to site are limited to the western fringes only. Furthermore, any potential flow path from the Shannon to the southwest is prevented by higher ground further west.

Therefore, the only potential flow path from the west is limited to the scenario of a breach of the short section of the Ballinacurra Creek where it is south of the N18 and west of the R536. This is approximate 480m in length.

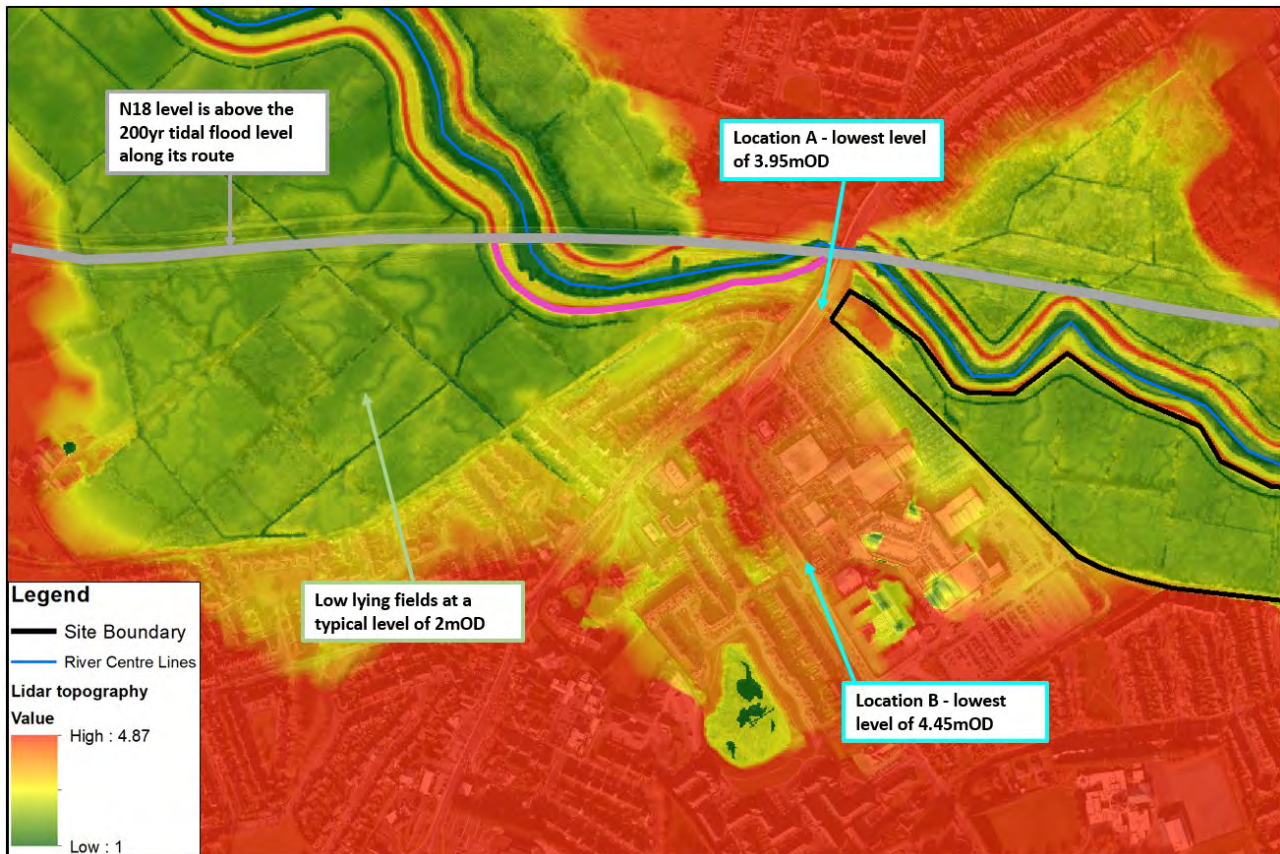
This stretch of embankment is highlighted pink in Figure 4 which provides a zoomed in view of this critical area to the west of the subject site.

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Figure 4: Topography west of subject site



In this figure, the same Lidar data is shown graduated to demonstrated ground levels ranging from 1mOD to the 0.5% AEP tidal level of 4.87mOD. The higher N18 carriageway is highlighted in grey for emphasis.

Figure 4 shows that the topography here rises in the direction of the subject site. Therefore, if a breach were to occur, flood water would first flow westward to the lower lying fields. In order for flood water to reach the subject site, these fields would have to first fill to a depth of 2m before spilling into the site. Therefore, an embankment breach would have to occur in conjunction with a very extreme flood in order to generate sufficient volume and head for flood waters to reach the site, during the peak of the tidal cycle.

More detailed inspection of the Lidar data shows that there are only two locations where this could potentially occur; these are labelled Location A and B in Figure 4.

At Location A, the lowest level is 3.95mOD. The 10% AEP (10-year return period) CFRAMS tide level here is 4.07mOD. A level of 3.95mOD is interpolated to equate roughly to a 20% AEP (5-year return period) event. This means that flood flow could only begin to reach the subject site if a breach coincided with the peak of at least a 5 year event. As this flow route is immediately adjacent to the subject site, some very minor regrading at the western boundary of the site would eliminate this flow path and would logically be done as part of any upgrade works to the embankment in this area.

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This leaves Location B as the only other flow path to the subject site, which cannot be addressed through works on the subject site. The lowest level here through the Crescent Shopping Centre is 4.45mOD, which equates approximately to a 2% AEP (50-year return period) event. Therefore, for this mechanism to occur, a breach would need to occur with a tidal event sufficiently greater than a 1 in 50 year event to fill up all of the lower lying lands to the west.

In summary, downstream breach risk to the site is limited to one 480m length of embankment and even then only in the most extreme and infrequent events. The downstream breach flood risk to the site is determined to very remote.

Whilst detailed breach analysis could be undertaken to further quantify such risk, this is not considered warranted at this stage given that evidence presented above is persuasive in demonstrating the remoteness of the risk.

## 3 Consideration of Climate Change Scenarios

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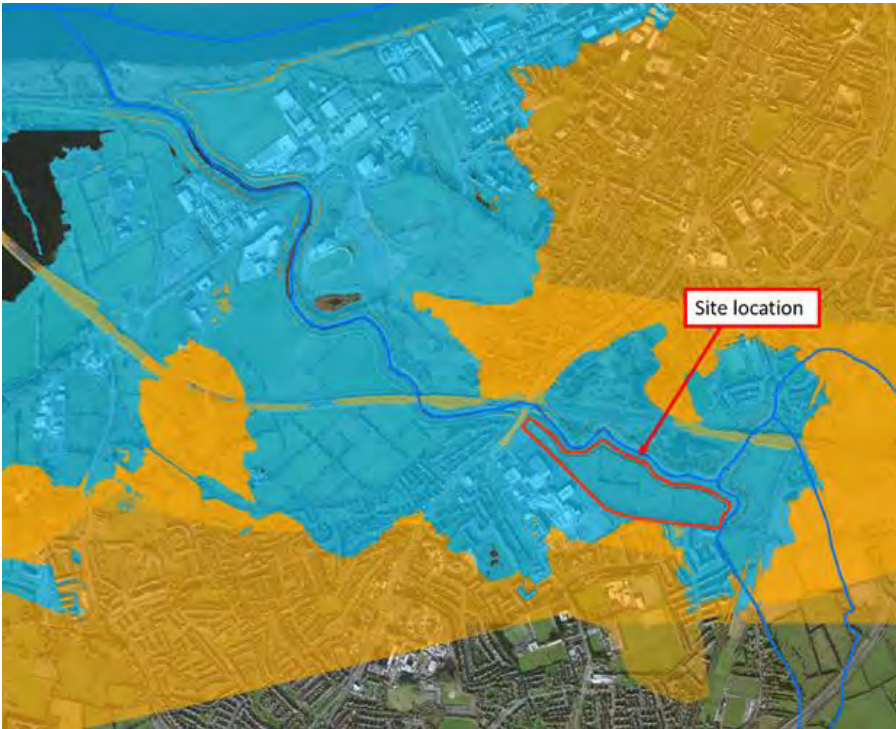
In a future Climate Change scenario, the OPW recommends a 500mm sea level rise for the Mid-Range Future Scenario (MRFS). Figure 5 shows the Lidar data edited so that any land below the 0.5% AEP MRFS tidal level of 5.37mOD again presents as blue, and any land above that level presented as orange. It is evident that the only flow paths to the site from a downstream breach in this event are the same as those identified earlier, at the western boundary of the site. The only change is that a very short length of the N18 is below the MRFS, meaning that in the most extreme future events, a breach further downstream could weir over the N18. However, in this future scenario, so much property immediately adjacent to the Shannon would be at risk that either the existing embankments would need to be significantly raised upgraded (and thus reducing the breach risk) or a tidal barrier in the estuary would be needed. This scenario is sufficiently far in the future that it should not unduly influence any decision making at present.

Figure 5: 200yr MRFS Tidal Flood Level topographic projection

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## 4 Conclusion

Using publicly available topographic data and information from the CFRAM study, it was possible to undertake a preliminary assessment of the risk to the site from a downstream breach in the flood defence embankments.

The downstream breach risk to the site is limited to one 480m length of embankment. If such a breach were to occur, the site is only susceptible to flooding in the most extreme and infrequent events, and even then, a number of low-lying fields to the west would first need to fill to a depth of over 2m before water could flow to the site. This is extremely unlikely. A small amount of regrading at the western boundary of the site would eliminate one of only two such overland flow paths. The other would require a tidal event in excess of a 50-year return period before water could enter the site.

Taking this all into account, the risk to the site from a downstream breach is very remote and does not warrant further detailed breach modelling.

### DOCUMENT CHECKING (not mandatory for File Note)

	Prepared by	Checked by	Approved by
Name	Daniel Walsh	Ken Leahy	Ken Leahy
Signature			



h w p l a n n i n g

## **Submission to Draft Limerick Development Plan 2022 - 2028**

Provision for Enterprise & Employment Expansion to  
Accommodate Future Strategic Growth Opportunities

**Client IDA Ireland**

September 2021

**Connecting people.**  
**Connecting places.**

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# 01 Introduction

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## 01.1 Submission Purpose

This submission has been prepared on behalf of IDA Ireland. It has been prepared in response to Limerick City and County Council's invitation for submissions to the Draft Limerick Development Plan 2022 -2028 (Draft DP). This submission is in response to the Council's draft employment policies and zoning objectives for the Limerick City and Environs area which will form part of the Limerick Development Plan 2022-2028.

Our client is currently actively seeking a new employment node for greenfield manufacturing FDI in the Limerick region arising from the fact that the established locations of Raheen Business Park and the National Technology Park (NTP), Castletroy have limited remaining capacity and potential to support new greenfield manufacturing. While this is acknowledged in Section 4.7.2 of the Draft DP and additional adjoining lands have been zoned for employment, our client has reviewed these and conclude that they are not suitable for their requirement for a campus style strategic employment hub based on a combination of constraints including size, flood risk, archaeological sites and extensive residential ribbon development as discussed in detail in Section 3.2 of this submission. While these lands may provide some opportunities for small to mid-scale projects, they will not address the longer-term strategic need for a significant landbank for larger scale manufacturing FDI of the type and scale required to provide sustainable and high value employment to underpin Limerick's projected future population growth as set out in the National Planning Framework (NPF) and Southern Regional Spatial and Economic Strategy (RSES).

Given this, IDA Ireland request that the Council acknowledges this strategic requirement in the employment policies and objectives of the Limerick Development Plan 2022-2028 by zoning lands of appropriate scale to cater for the future development of a new strategic employment location to meet the needs of the mid-west region. From their review IDA Ireland considers the strategic employment locations should be proximate to existing employment clusters, facilitate compact growth and sustainable travel and should be of a scale to support high tech manufacturing.

## 01.2 Submission Context

IDA Ireland previously made a submission to the Stage 1 Development Review highlighting the shortage of suitable employment zoned lands to meet their requirements. Our client welcomes the publication of the Draft DP and consider it represents a critical juncture in the future growth of Limerick City and Environs and would like to once again draw the Council's attention to this issue. The policy context for the area has evolved significantly since the merging of Limerick City and County in 2014, with the NPF targeting population growth for Limerick City and Suburbs of between 47,000 and 56,000 in the period to 2040



and the RSES identifying the Limerick City Metropolitan Area as a priority growth area and setting out to support growth of at least 50% for by 2040 to enable it to achieve its potential to become a city of scale. The Draft DP acknowledges that this future growth is dependent on a range of factors, central amongst which are indigenous enterprise, foreign direct investment and innovation.

IDA Ireland is the state agency with responsibility for winning Foreign Direct Investment (FDI) for Ireland. These investments cover a broad spectrum of activities including manufacturing, research development & innovation (RD &I). This is in addition to business services and results in significant capital investment and employment creation by multinational client companies in Ireland.

In 2019 IDA client company expenditure in the Irish economy included €15.1 bn on payroll, €7.4 bn on services, €2.7 bn on materials and €7.4 bn on capital investment. IDA's strategic focus is to maximise the impact of FDI across Ireland's economy and society. Having regard to this they propose to target 76 investments for the Mid-West region<sup>1</sup> in the period 2021 to 2024<sup>2</sup>. A number of factors are crucial in continuing to attract and grow this type of FDI, with access to suitable and cost-effective property solutions and a supportive business environment with associated infrastructure, being principal considerations. Based on the above the IDA plans to acquire additional strategic sites for future development in order to ensure a robust value proposition for clients.

The strategic location of Limerick at a mid-point on the Atlantic Economic Corridor and its gateway position to the south-west as well as its connections to Dublin, underpin its potential to attract a significant quantum of employment. Over the past decade, employment growth in the Limerick City region has been significantly underpinned by major FDI investments in the Lifesciences and large-scale manufacturing sectors. Limerick city is now recognised as a global cluster location of choice for advanced manufacturing including both Lifesciences and semiconductor manufacturing. Multinationals such as Analog Devices, Johnson and Johnson Visioncare Ireland, Edwards Lifesciences Ireland, Cook Medical, Stryker Corporation and Regeneron Pharmaceuticals, employ in excess of 5,000 in the city region.

It is clear that, to achieve the NPF targets for population growth, Limerick's future employment profile will rely heavily on its ability to capitalise on the success of the established cluster of Lifesciences and related manufacturing sectors and attract new greenfield manufacturing investment. Fundamental to achieving this will be the availability of sufficient zoned, serviced and accessible land in strategic locations that will ultimately provide a compelling location option for multinationals in the mobile FDI marketplace. The availability of land zoned for industrial and enterprise development in advance of demand is a key element of IDA's strategy to attract foreign direct investment to Ireland and to facilitate employment growth in Limerick and the Mid-West region commensurate with projected population increase. The development of identified lands can then be plan-led over a medium-term horizon in collaboration with national agencies and local planning authorities.

IDA Ireland have reviewed the Draft DP in the context of availability of suitable lands in the Limerick Metropolitan Area to address this requirement, in recognition of the fact that the established locations of Raheen Business Park and the National Technology Park (NTP), Castletroy have limited remaining capacity and potential to support new greenfield

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<sup>1</sup> Including Limerick, Tipperary and Clare

<sup>2</sup> IDA 2021 Strategy, "Driving Recovery and Sustainable Growth 2021-2024"

manufacturing. We consider that the proposals in the Draft DP with the zoning of adjoining lands at these locations does not meet this strategic greenfield requirement, Based on this, our client requests that the Council zones more appropriate lands to make provision for strategic employment growth opportunities at appropriate sites.

### **01.3 Submission Request**

- *IDA Ireland requests the support of Council to facilitate and support the development of a new, appropriately scaled, Strategic Employment Location.*

## 02 Summary of Policy Context

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Appendix 1 provides a detailed review of relevant national and regional policies, as well as economic and employment strategies which are summarised below.

The planning policy context in Limerick has been rapidly evolving in recent years since the merging of Limerick City and County in 2014, with the publication of the National Planning Framework in 2018 and the release of The Regional Spatial and Economic Strategy (RSES) for the Southern Region, the draft Limerick Shannon Metropolitan Area Strategic Plan (MASP) and the Draft Limerick Shannon Metropolitan Area Transport Strategy (LSMATS). The NPF set the scene for a rapid expansion of the City's population over the coming two decades with a target of population growth of between 47,000 and 56,000. The NPF notes the need for ambition in the Limerick Metropolitan Area:

*"This requires growing and diversifying the City's employment base and attracting more people to live in the City, both within the City Centre and in new, accessible green-field development areas".*

The RSES has further expanded on these growth objectives and outlines guiding principles in terms of strategic employment growth. MASP Objective 12 specifically refers to the sustainable development of specifically IDA initiatives such as the subject proposal in which it states that:

*"It is an objective to seek investment in the sustainable development of initiatives of IDA Ireland and Enterprise Ireland in strengthening enterprise assets, fostering competitive locations and conditions for enterprise growth in the Limerick Shannon Metropolitan Area".*

A number of common themes have emerged among all policies namely:

- The need to ensure that there is a strong coordination between land use and transport planning, with significant job locations being located in proximity to public transport with provision for cycling and walking connectivity from existing residential areas.
- Ensuring that identified locations for strategic employment are infrastructure-led.
- That traditional models of delivering employment lands need to be revisited with an approach that is orientated towards placemaking and meeting the needs of the modern workforce.
- Areas for growth and smart specialization should be further explored, as well as the potential to partner with existing third level and healthcare institutions to achieve synergies.
- Encouraging the growth of clusters and co-location of Small and Medium size Enterprises (SMEs) with Multi National Corporations (MNCs) to enhance mutual benefits to both.

In its new strategy '*Driving Recovery and Sustainable Growth 2021 – 2024*', IDA Ireland sets out its plans to acquire additional strategic sites for future development in the Mid-West region, with an overall target of attracting 76 investments for the region.

# 03 Key Planning Considerations

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## 03.1 IDA Ireland Strategic Site Requirements

IDA Ireland have been looking for some time to acquire a site to develop a new campus for the high-tech industrial sectors. Site selection criteria would focus on the availability of utilities such as electricity capacity, gas and broadband and transport infrastructure in terms of proximity to a Bus Connects high frequency route, park and ride facility, served by cycle and pedestrian infrastructure or benefitting from a rail link as indicated in the LSMATS to support a modal shift away from the increasingly car-based commuting pattern. The current IDA client organisations tend to be technology or Lifesciences based with relatively low levels of associated transport of goods. Most IDA client organisations develop mobility management plans with their employees and welcome the opportunity to encourage their staff to adopt sustainable travel modes.

Proximity to other strategic employment locations is also of key importance ie Raheen Business Park, the National Technology Park, Ballysimon Industrial Estate or Annacotty Industrial Estate and accessibility to the University of Limerick (UL). This contributes towards the attractiveness of the site as a potential new growth area in an employment cluster, that can benefit from the associated synergies, knowledge diffusion and capacity building between the various elements.

In addition to physical infrastructure the scale of the available landholding is a key consideration. The requisite size of the new campus is a function of the scale of land required by the prospective FDI clients that IDA Ireland are targeting. In general, these are projects of scale requiring extensive land areas. Accordingly, the current IDA requirement is for the identification of one or more landbanks, in the range of 50 to 100 hectares, capable of hosting a cluster of compatible large-scale industries of international scale in a low-density campus setting.

## 03.2 Existing and Proposed Employment Provision

### 03.2.1 EXISTING PROVISION

The RSES states in Table 3 that there is 71 hectares of capacity in the National Technological Park (NTP), 57.5 hectare of capacity in Raheen Business Park and c. 54.6 hectares of capacity in Ballysimon. On closer review we consider that there is more limited capacity remaining in the NTP to attract, host and sustain large scale industrial development investment <sup>3</sup>, this is exacerbated by the Draft DP proposal to dezone 35 hectares of land in NTP due to flood risk and attenuation concerns in the southern section of the site (ref Econ 013). Furthermore, as outlined below there are limited remaining unreserved lands at Raheen Business Park and Ballysimon.

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<sup>3</sup> The IDA also note that some of limited remaining NTP lands are prone to flooding and require mitigation works

In relation to Ballysimon, while the RSES considers 54.6 hectares of lands are available, significant lands have been subsequently dezoned due to flood risk. IDA Ireland's review of the Draft DP concludes that of the existing zoned lands only c. 16 hectares remain in an unfragmented area, outside a flood zone, suitable for development as a strategic site. In addition we note that this is predominantly in the ownership of Irish Water who have been granted permission for the development of a National Laboratory on these lands, which represents phase 1 of their masterplan for the development of the site (planning ref 19/514). The lack of zoned capacity is underlined in the Castletroy Local Area Plan noted in 2019 that 'it is highly likely that there will be a significant pressure in this area for large-scale employment and residential growth during the lifetime of the new plan'.

### 03.2.2 PROPOSED PROVISION - OVERVIEW:

While Figure 3.1 indicates that there is a range of areas zoned for employment use across 38 land parcels in the Draft DP, the vast majority of these are small, fragmented sites with only 4 sites with an area of 30 hectares or greater, of a scale that when aggregated could be able to meet the IDA Ireland size criteria of between 50 to 100 hectares. Two smaller sites in Ballysimon, comprising 16 hectares and 24 hectares have been added to this list as they are over 30 hectares when viewed in combination. These sites over 30 hectares in area are identified with a yellow circle in Figure 03.1 and listed in Table 03.1. They are located in lands to the west of Raheen Business Park (no. 35, 36 and 38), to the south of Dock Road (no. 20) and in Ballysimon (no. 13, 14) and are considered further below.

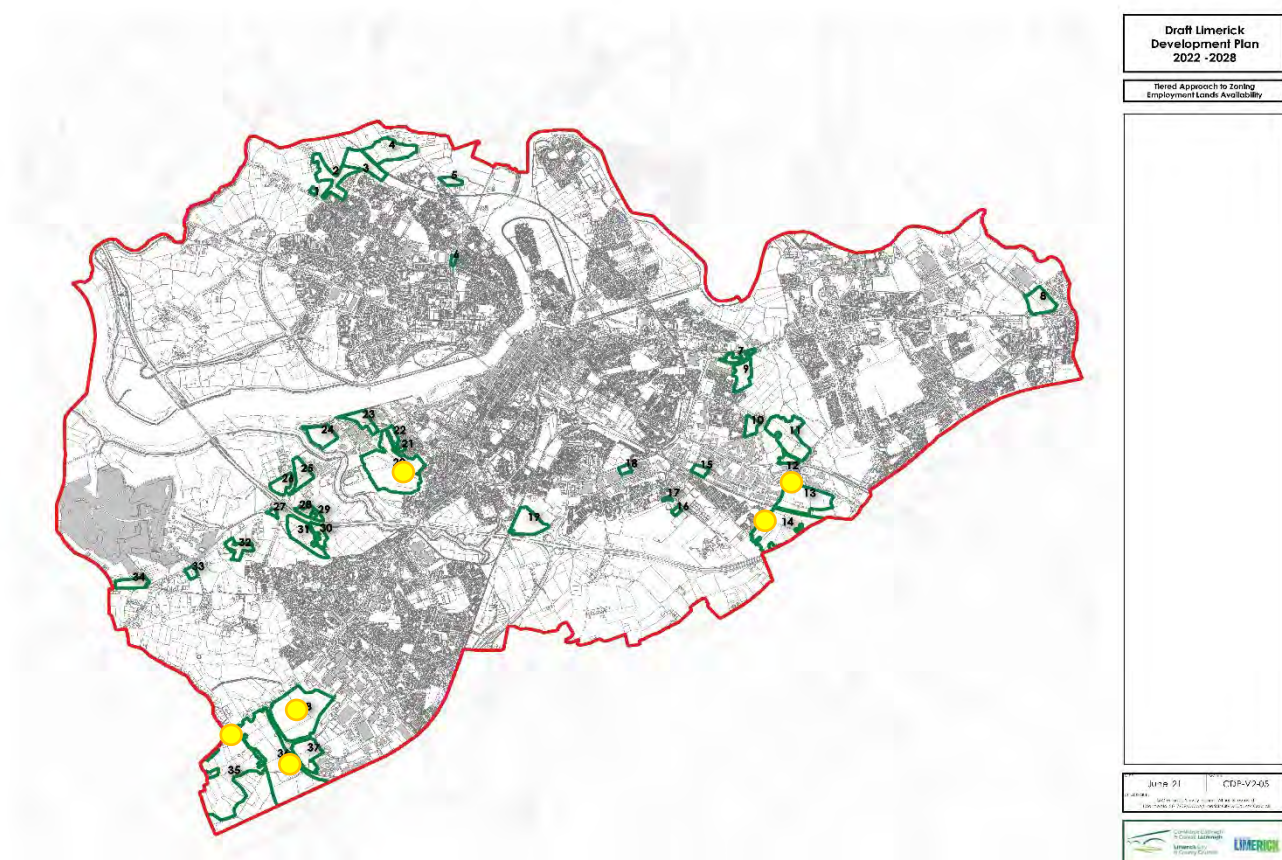


Figure 03.1 Draft DP Volume 2 Map 5 – Employment Land Zoning

Site No.	Zoning	Hectares	Comment	Location
13	Employment & Enterprise	16		Ballysimon
14	Employment & Enterprise	24	Extension of existing services required	Ballysimon
20	Employment & Enterprise	33.47	Objective for Site Specific Flood Risk Assessment	Dock Road
35	High Tech/ Manuf.	46.68	Extension of existing services required	West of Raheen Business Park
36	High Tech/ Manuf.	48.25	-Ancillary uses/ Attenuation areas in flood zone –Specific Objective for Flood Risk Assessment	West of Raheen Business Park
38	High Tech/ Manuf.	33.12		West of Raheen BP

Table 03.1 Larger Landparcels Identified for Potential Employment - Extract from Section 1.3.2 - Volume 2 Draft DP page 16

### 03.2.3 DOCK ROAD

The Dock Road land parcel (no. 20 in Figure 03.1), at 33.47 hectares falls below our client's 50 to 100 hectares requirement. Alongside this the suitability of the site is undermined by its location entirely within a Flood Zone A area, by the presence of a national monument site within the land and by the site being within 175m of the Lower River Shannon SAC.

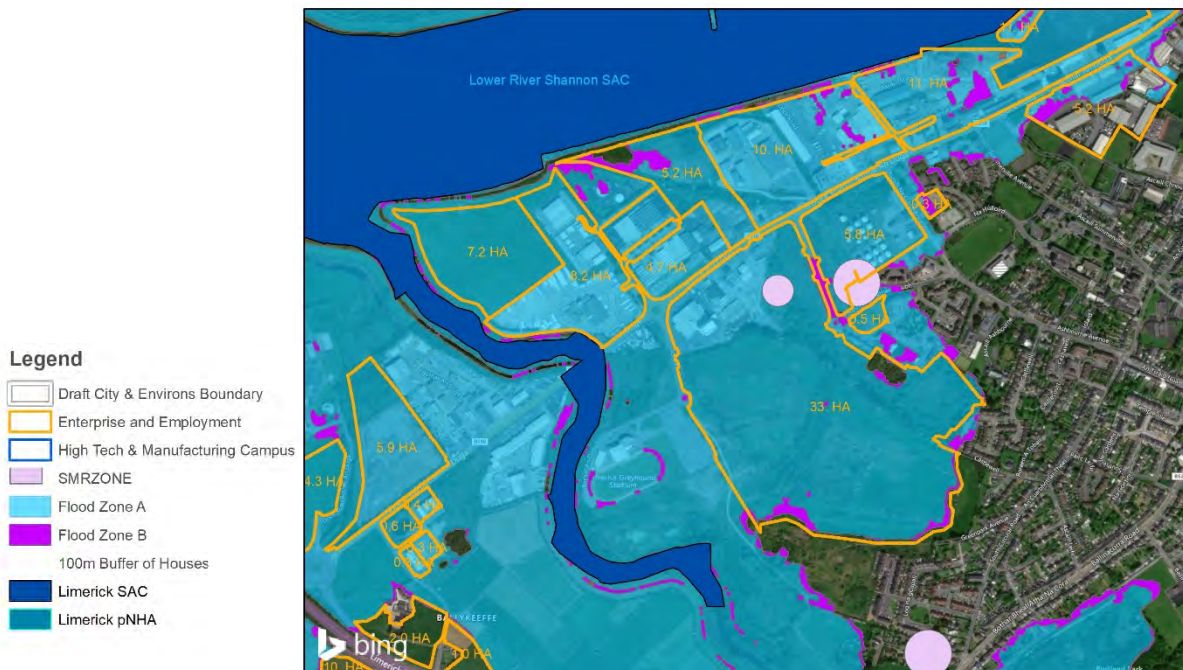


Figure 03.2 Dock Road Enterprise and Employment Zoning



### 03.2.5 BALLYSIMON

As noted in Section 3.2.1 above the existing 16 hectares (comprised of the 12 hectare and part of the 36 hectare parcel in Figure 03.4) of unfragmented zoned lands that are not within a flood zone (identified as 13 in Figure 03.1) are predominantly earmarked for development by Irish Water. The Draft DP proposes to zone an additional 24 hectares of lands for employment use (identified as 14 in Figure 03.1).



Figure 03.4 Ballysimon Enterprise and Employment Zoning

However, the development of these lands is also compromised by a number of factors including the permitted residential development for 52 no. housing units in adjacent land to the west. This in conjunction with the existing residential development to the south and east, a rail line to the north for which a buffer would be required and the national monument located within the site, in conjunction with its size limitation, all undermine the site's suitability for strategic employment development.

Based on our client's review they conclude there are no lands of a suitable scale zoned in the Draft DP that could support IDA Ireland's plans to acquire a 50 – 100 hectare site to develop a new campus for the high-tech industrial sectors.

### 03.2.6 ALTERNATIVE LOCATION

The Local Authority are asked to consider alternative locations with lands of a scale of 50-100 hectares to support a new campus for high tech industrial sectors that would support clustering and compact growth in proximity to existing employment hubs.

IDA would welcome the opportunity to work with TII and the Limerick City and County Council in preparing a more detailed Strategic Transport Assessment to address the specific development proposals, an approach that is recommended in the Spatial Planning and National Roads Guidelines for Planning Authorities.



OPR Criteria	Assessment
Regional Spatial and Economic Strategy	<p>Section 19(2) of the Planning and Development Act 2000 (as amended) requires that a local area plan shall be consistent with any Regional Spatial and Economic Strategy (RSES) that applies to the area of the plan.</p> <p>As noted in Section 1.3.1 the RSES seeks to achieve sustained, resilient growth through inter alia the principles of clustering, knowledge diffusion and capacity building. The strategic employment location of Ballysimon offers the opportunity for cluster growth with the nearby existing Ballysimon strategic Employment areas, the NTP, and the University of Limerick (U.L.). Alongside this, it presents an opportunity to leverage knowledge diffusion and capacity building with U.L.</p> <p>Furthermore, the location is in line with the RSES guiding principles for Local Authorities in terms of identifying locations for strategic employment development based on the following:</p> <ul style="list-style-type: none"> <li>▪ The location is in proximity to U.L. and the NTP – existing technology and innovation poles.</li> <li>▪ It would allow the expansion of existing nearby enterprises located in the NTP (c. 3km) or Raheen Business Park (c. 5km) which are already at capacity or nearing capacity.</li> <li>▪ It benefits from excellent infrastructure in the form of telecoms, electricity, gas and proximity to an international airport.</li> <li>▪ It is adjacent to public transport and cycling routes and set to benefit from significant further investment in both (ref LSMATS).</li> </ul> <p>The Strategic Employment Location of Ballysimon is in line with the objectives of the MASP as it would adhere to the guiding principle to '<i>activate strategic employment locations to complement existing employment hubs in the city centre and near third level institutes</i>'. The sustainability of the location is in line with the MASP objectives 12 and 13 in relation to the sustainable development of IDA Ireland and Enterprise Ireland initiatives and strategic employment locations in general.</p> <p>Based on the above we consider that the proposal is consistent with the policy objectives of the RSES.</p>
Transport & Accessibility	<p>The strategic employment location is set to benefit from the proposed enhancements to sustainable transport in the draft LSMATS.</p>

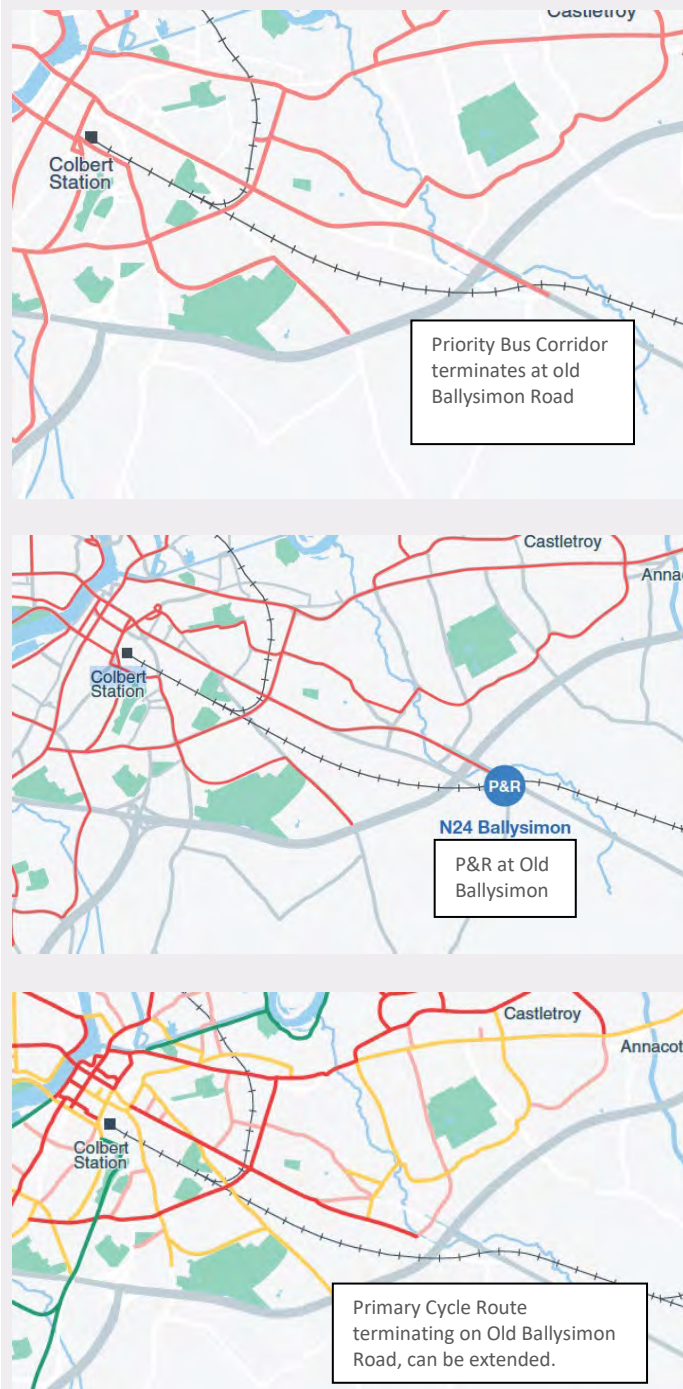


Figure 03.5 LSMATS Proposed Connectivity Enhancements

Planning authorities are required to have regard to the section 28 Spatial Planning and National Roads Guidelines (2012) (SPNRG) in the performance of their functions under the Planning Acts, Section 2.7 – ‘Development at National Road Interchanges or Junctions’ in relation to zoning changes from agriculture to enterprise and employment where such development could generate significant additional traffic with potential to impact on the national road.

A suite of sustainable travel measures have been proposed in the LSMATS to address current capacity constraints at the Ballysimon junction through modal shift. The proposed measures range from adjacent BusConnects routes, Park and Ride facilities, cycle lane and pedestrian route upgrades and the consideration of a future rail station.

As identified in previous traffic studies the volume of traffic generated by IDA clients, predominantly modern technology and Lifesciences industries is relatively low in comparison with retail warehousing uses, with many IDA clients opting to develop Mobility Management Plans for their employees. The location is highly accessible by alternative modes of travel, with good pedestrian, cyclist and public transport links.

The Ballysimon Strategic Employment Location is served by the 220KW Kilonan Substation and adjacent to the existing Strategic Employment area in Ballysimon and would represent a growth to this cluster, facilitating expansion of existing organisations located there and allowing continued FDI development the Limerick area. Alongside this, it would address the emerging trend with respect to planning for development of energy intensive industry. Therefore, the land is of strategic importance which would support its rezoning and be consistent with the criteria set out in section 2.7.

Furthermore, MASP Policy Objective 8 includes the following as part of a list of strategic road infrastructure - to upgrade the Childer's Road/ Ballysimon Road in Limerick City to accommodate bus and cycle facilities and further enhance the public transport provision and sustainable travel options of the site. Thus, enhancing the existing public transport provision. The protection of a future alignment of a national road is not at issue in this case.

#### Climate Change & Flood Risk

While several of the alternative sites in the area are susceptible to flood risk, there are significant lands in the Ballysimon Strategic Employment Location which are not considered to be prone to flooding.

# 04 Conclusion

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IDA Ireland welcomes this opportunity to make a submission on the employment policies and objectives contained within the Draft Limerick Development Plan 2022 -2028 (Draft DP). Our client and the Council are aligned in the goal to support the growth of employment and enterprise in the Limerick Metropolitan area. We concur with the Council's assessment that the future growth, resilience and competitiveness of Limerick's economy is dependent on, inter alia, indigenous enterprise and foreign direct investment.

However, based on our assessment we query the Council's opinion that

*Elsewhere in the Environs, Raheen Business Park, the National Technology Park and the proposed Northside Business Campus are identified as Strategic Employment Locations under the MASP. These strategic locations offer the capacity to cater for investment that require greenfield or brownfield sites, access to an international airport and third level graduates.*

IDA Ireland proposes to target 76 investments for the Mid-West region<sup>4</sup> in the period 2021 to 2024<sup>5</sup>. Access to suitable and cost-effective property solutions and a supportive business environment with associated infrastructure will be fundamental to the realisation of this. However, IDA Ireland consider that the established strategic employment locations have limited remaining capacity and potential to support new greenfield manufacturing. They are therefore currently actively seeking a new employment node for greenfield manufacturing FDI in the Limerick region, of a scale between 50 and 100 hectares.

Having reviewed the proposed additional employment zoning contained within the Draft DP, our client concludes that none of the existing or proposed zoned sites are suitable for their requirements for a strategic employment campus based on size or the presence of constraints as discussed in detail in Section 3.2 of this submission.

In view of this IDA Ireland request that the Council acknowledges this strategic requirement in the employment policies and objectives of the Limerick Development Plan 2022-2028 by making provision for a new, suitably scaled, Strategic Employment Location.

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<sup>4</sup> Including Limerick, Tipperary and Clare

<sup>5</sup> IDA 2021 Strategy, "Driving Recovery and Sustainable Growth 2021-2024"

# 05 Appendix 1 Policy Context

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The following section examines the proposal in the context of relevant national and regional policies, as well as economic and employment strategies.

The planning policy context in Limerick has been rapidly evolving in recent years with the publication of the National Planning Framework in 2018 and the release of The Regional Spatial and Economic Strategy (RSES) for the Southern Region, the draft Limerick Shannon Metropolitan Area Strategic Plan (MASP) and the Draft Limerick Shannon Metropolitan Area Transport Strategy (LSMATS). The NPF set the scene for a rapid expansion of the City's population over the coming two decades. The RSES has further expanded on these growth objectives and outlines guiding principles in terms of strategic employment growth. A number of common themes have emerged among all policies namely:

- The need to ensure that there is a strong coordination between land use and transport planning.
- Ensuring that identified locations for strategic employment are infrastructure-led.
- That traditional models of delivering employment lands need to be revisited with an approach that is orientated towards placemaking and meeting the needs of the modern workforce.
- Areas for growth and smart specialization should be further explored, as well as the potential to partner with existing third level and healthcare institutions to achieve synergies.
- Encouraging the growth of clusters and co-location of Small and Medium size Enterprises (SMEs) with Multi National Corporations (MNCs) to enhance mutual benefits to both.

## 05.1 National Policy

### 05.1.1 PROJECT IRELAND 2040: NATIONAL PLANNING FRAMEWORK

The National Planning Framework (NPF) envisages that by 2040 there will be an extra 1 million people living in the country with the majority of this growth expected to occur within Ireland's five main cities. Table 4.1 in the NPF targets population growth for Limerick City and Suburbs of between 47,000 and 56,000. The proposed development is supported by a number of National Policy Objectives which relate to the establishment of strategic employment locations in the 5 main cities, these including NPO 10a and 10b.

#### *National Policy Objective 10a*

*Regional and Local Authorities to identify and quantify locations for strategic employment development in the cities identified in Table 4.1.*

### *National Policy Objective 10b*

*Regional and Local Authorities to identify and quantify locations for strategic employment development, where suitable, in urban and rural areas generally.*

The NPF emphasizes that in considering jobs growth and economic development, Local Authorities should be agile in responding to new and unexpected opportunities for enterprise development to accommodate development prospects that emerge with strong locational drivers that do not apply to the same extent elsewhere.

The NPF also identifies several National Strategic Outcomes, which set out to secure the alignment of the NPF and the National Development Plan (NDP). These include:

- ***National Strategic Outcome 4 - High-Quality International Connectivity:***
- ***National Strategic Outcome 5 – Sustainable Mobility:** This sets out to establish public transport and sustainable mobility choices at the at the core of employment creation.*
- ***National Strategic Outcome 6 –A Strong Economy Supported by Enterprise, Innovation and Skills:** Again, this sets out to support entrepreneurship and build competitive clusters, by “creating places that can foster enterprise and innovation and attract investment and talent. It can be achieved by building regional economic drivers”; the NPF notes that delivering this outcome will require the co-ordination of growth and place making with investment in world class infrastructure and digital connectivity.*

Section 3.4 of the NPF which considers that future growth in the Mid-West area of the Southern Region will be based on:

*“Leveraging national and international connectivity, higher education capacity and quality of life to secure strategic investment. This must be underpinned by sustainable employment and housing development, focused on the broader Limerick-Shannon Metropolitan area.”*

The NPF notes the need for ambition in the Limerick Metropolitan Area:

*“This requires growing and diversifying the City’s employment base and attracting more people to live in the City, both within the City Centre and in new, accessible green-field development areas”.*

The importance of identifying sites for strategic employment is emphasized in with Section 4.4. of the NPF which recognizes that employment is driven by market forces including scale, accessibility, innovation supported by higher education institutions and quality of life.

*“At an urban scale, in cities and towns generally, it is important to identify locations where enterprises can access competitively priced development lands, utilities and commercial properties to the highest standards available internationally.”*

The Framework establishes that the approach to supporting strategic employment growth at regional, metropolitan and local level should include considerations of:

- *Current employment location, density of workers, land-take and resource/ infrastructure dependency, including town centres, business parks, industrial estates and significant single enterprises.*
- *Locations for expansion of existing enterprises.*
- *Locations for new enterprises, based on the extent to which they are people intensive (i.e. employees/ customers), space extensive (i.e. land), tied to resources, dependent on the availability of different types of infrastructure (e.g. telecoms, power, water, roads, airport, port etc.) or dependent on skills availability.*
- *Locations for potential relocation of enterprises that may be better suited to alternative locations and where such a move, if facilitated, would release urban land for more efficient purposes that would be of benefit to the regeneration and development of the urban area as a whole, particularly in metropolitan areas and large towns.*

### **05.1.2 FUTURE JOBS IRELAND 2019**

The 2019 Government strategy is based around the recognition that policy requires a shift away from focusing simply on quantity of jobs to quality jobs that will be resilient into the future. The document outlines five pillars of emphasis in respect of this:

- 1. Embracing Innovation and Technological Change*
- 2. Improving SME Productivity*
- 3. Enhancing Skills and Developing and Attracting Talent*
- 4. Increasing Participation in the Labour Force*
- 5. Transitioning to a Low Carbon Economy*

Among the deliverables included in Pillar 2, Improving SME Productivity include:

*“Encourage the growth of clusters where enterprises can grow and help each other and deepen linkages between foreign and Irish owned businesses”*

### **05.1.3 EIRGRID – SHAPING OUR ELECTRICITY FUTURE**

Another key national policy document is the new Eirgrid strategy (*‘Shaping our Electricity Future’* – currently out for consultation). One of the key emerging approaches is based on encouraging large energy demands (ie large industry & data centres) to regional locations where grid capacity exists (rather than the Dublin/eastern region where there is no capacity and major grid investment is required).

## **05.2 Regional Policy**

### **05.2.1 REGIONAL SPATIAL AND ECONOMIC STRATEGY FOR THE SOUTHERN REGION 2020**

The Economic Strategy outlined in the RSES is based around a vision for the region to enable sustainable, competitive, inclusive and resilient growth. In relation to global challenges such as Brexit, the strategy indicates that:

*“it is important that the Region sustains what we have in the immediate term, transforms our enterprise base for longer term resilience while managing potential vulnerabilities.”*

The RSES seeks to achieve the above vision through the following economic principles:

- Smart Specialisation
- Clustering
- Placemaking for enterprise development
- Knowledge Diffusion, and
- Capacity Building

The RSES includes Guiding principles for Local Authorities in terms of identifying locations for strategic employment development including:

- Identifying location of technology and innovation poles (ICTs and universities) as key strategic sites for high-potential growth of economic activity.
- Identifying locations for expansion of existing enterprises.
- Securing locations for new enterprises, based on availability of employees/customers, land, tied to resources, dependent on the availability of different types of infrastructure (e.g. telecoms, power, water, roads, airport, port etc.) or dependent on skills availability.
- Exploring potential relocation of enterprises that may be better suited to alternative locations and where such a move, if facilitated, would release urban land for more efficient purposes that would be of benefit to the regeneration and development of the urban area as a whole, particularly in metropolitan areas and large towns.
- Within large urban areas locations, identifying where significant job location can be catered for through infrastructure servicing and proximity to transport interchanges, particularly public transport.
- An assessment of the phasing of development in association with the planned delivery of water and wastewater services, extension or provision of public bus services to the location and provision of new or improved cycling and walking connectivity from existing residential areas.
- Focus on areas that would address employment blackspots/legacies.
- Support existing sectoral and location-based strengths and synergies with existing employers

### **05.2.2 LIMERICK SHANNON METROPOLITAN AREA STRATEGIC PLAN (MASP)**

The RSES contains the Limerick Shannon MASP which includes a section on Employment and Enterprise listing key employment locations. Limerick is described in the MASP as 'Ireland's most connected fulcrum, with strategic access to all other regional urban centres'<sup>6</sup>. Figure 2.1 is extracted from the MASP and indicates the strategic employment

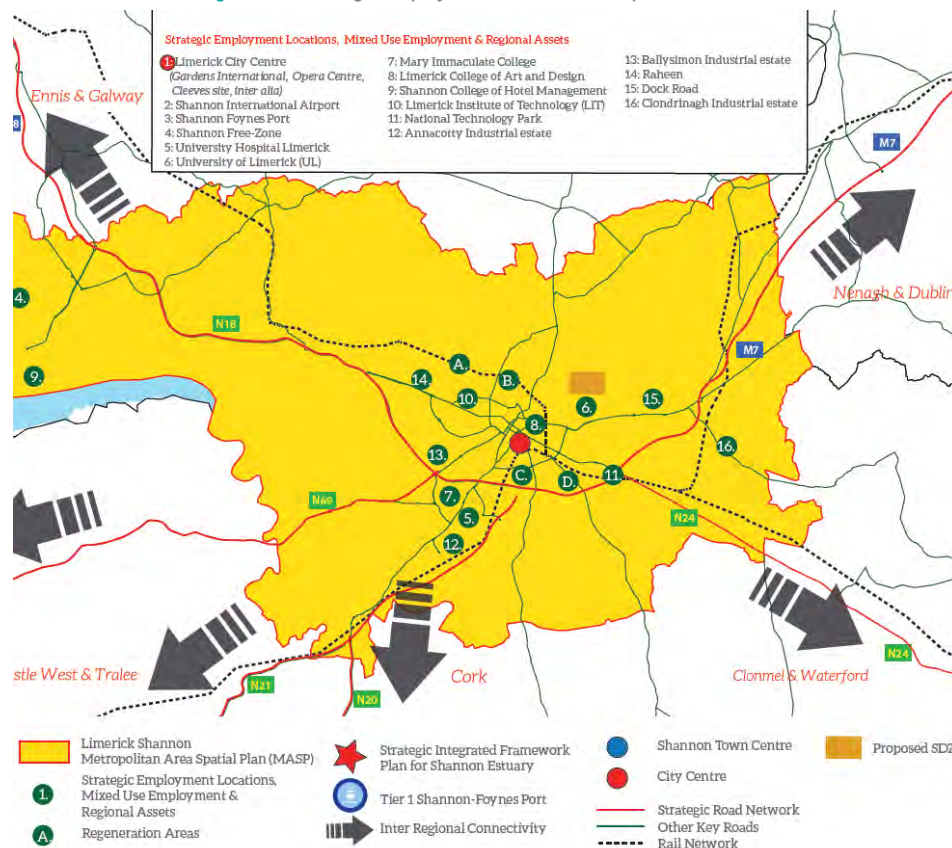
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<sup>6</sup> Section 8 of the Limerick Shannon MASP, RSES



locations. It should be noted that this figure appears to have been erroneously labelled, with the names in the legend not corresponding to the locations indicated in the map.

Figure 05.1 Strategic Employment Locations as Depicted in the Limerick Shannon MASP



The RSES states in Table 3 that there is 71 hectares of capacity in the NTP and 57.5 hectare of capacity in Raheen Business Park.

Section 3.2 of the Limerick Shannon MASP sets out a number of guiding principles to underpin future growth. These include:

*“Employment density in the right places – Re-intensify employment in Limerick City and Shannon and activate strategic employment locations to complement existing employment hubs in the city centre and near third level institutes.”*

MASP Objective 12 specifically refers to the sustainable development of specifically IDA initiatives such as the subject proposal in which it states that:

*“It is an objective to seek investment in the sustainable development of initiatives of IDA Ireland and Enterprise Ireland in strengthening enterprise assets, fostering competitive locations and conditions for enterprise growth in the Limerick Shannon Metropolitan Area”.*

Similarly, MASP objective 13 is supportive of the sustainable development of future strategic employment locations:

*“It is an objective to support the sustainable development of identified and future Strategic Employment Locations and to ensure the delivery of associated infrastructural requirements subject to the outcome of environmental assessments and the planning process”.*

### **05.2.3 DRAFT LIMERICK / SHANNON METROPOLITAN AREA TRANSPORT STRATEGY (LSMATS) 2040**

The LSMATS recognizes that there is localized congestion on the grade separated junction of the M7/M18 and the Ballysimon Interchange. The LSMATS acknowledges that traffic congestion will inevitably rise with future growth if the current car dependence in the area is not addressed. The objective of the strategy is therefore to manage congestion to achieve an effective, sustainable and efficient transport system.

## **05.3 Other Strategies**

### **05.3.1 DRIVING RECOVERY AND SUSTAINABLE GROWTH 2021 – 2024 (IDA IRELAND)**

IDA Ireland's ambition, as outlined in its new strategy, is to capitalise on opportunities to provide multinational corporations (MNC) with solutions to the challenges they face in a difficult global environment, partnering with existing clients to safeguard and enhance their mandates in Ireland, while also attracting the next generation of leading-edge MNCs in their core sectors of focus. IDA has placed sustainable growth at the centre of its strategy, in line with Government policy, international consensus, clients' vision, and the demands of citizens. IDA will seek growth that meets the needs of the present without compromising the ability of future generations to meet their own needs, while fostering an inclusive, sustainable, and resilient economy and society. The strategy is framed through five interlinked pillars of Growth, Transformation, Regions, Sustainability and Impact, specifically:

- 1) Win 800 total investments to support job creation of 50,000 and economic activity*
- 2) Partner with clients for future growth through 170 RD&I and 130 training investments*
- 3) Win 400 investments to advance regional development*
- 4) Embrace a green recovery with 60 sustainability investments*
- 5) Target a 20% increase in client expenditure in Ireland to maximise the impact of FDI*

The strategy refers to the importance of linkages between FDI clients and SMEs such as Value Chain linkages, strategic partnerships, labour mobility and demonstration effects. Geographic proximity is cited as one of the key enablers for developing these linkages or "diffusion channels" as they are referred to.

IDA Ireland will deliver an Advanced Building Solution in Limerick over 2021-2024, in addition to completing construction on an Advanced Manufacturing Centre in July 2021. Further upgrade works, and investment are planned for IDA Parks in the region to ensure a robust value proposition for clients, and IDA plans to acquire additional strategic sites for future development. Overall, a target of 76 investments for the region has been set over the lifetime of the strategy.

### **05.3.2 POWERING THE REGIONS: ENTERPRISE IRELAND REGIONAL PLAN 2019**

Enterprise Ireland classifies Limerick, Tipperary and Clare as the Mid-West Region. Among the objectives for the Mid West region the following are specific to Limerick:

- *Develop Limerick's Digital Collaboration Centre for the film Industry and new product development for connected autonomous vehicles. Drive the Mid West to become Ireland's lead location for the autonomous mobility sector in Ireland creating 422 jobs.*
- *Foster engagement between the regions Higher Education Institutions (HEIs), SMEs and innovative start-ups.*
- *Support 900 co-working spaces in the Mid-West #Worksmartchallenge*
- *Leverage University of Limerick, Limerick IT, IT Tralee, the LEOs and key stakeholders in the Mid West to develop a robust pipeline of start-ups.*

## PROPOSED MOTIONS

- 1) *That the lands adjoining the Dooradoyle District Centre (incorporating the Crescent Shopping Centre) outlined in red on Figure 1 below be zoned as follows:*

*Change site outlined in red from Zoning Objective: “Semi Natural Open Space” to Zoning Objective “Enterprise and Employment”*



**Figure 1: Lands adjoining the Crescent Shopping Centre**

- 2) Add an objective to Chapter 4 (A Strong Economy) as follows:

### Dooradoyle District Centre and Dooradoyle Urban Quarter:

- To promote the continued development of lands comprising Dooradoyle District Centre and adjoining lands as a Strategic Employment Location through the delivery of additional employment uses (primarily office) in a phased manner in conjunction with retail, retail services and supporting development.
- To promote improvements to connectivity, signage and permeability within the wider area including pedestrian and cycle facilities linking to Portland Park and provide for the link road from Dooradoyle Road to Rosbrien Road
- To promote the re-investment, upgrade and expansion of the retail and services provision at the Dooradoyle District Centre
- To facilitate the early upgrading of the existing flood defence infrastructure, thus ensuring the long-term flood protection of the wider lands in Dooradoyle in a manner compatible with any future City Wide Flood Relief Scheme.
- Any application on lands at risk of flooding to be accompanied by a Site Specific Flood Risk Assessment which shall demonstrate that any development does not result in additional significant flood risk in the area and does not impede the future delivery of a wider flood relief scheme for Limerick.

- An overall framework plan / masterplan is to be prepared for the lands in advance or as part of any application for a portion of the currently undeveloped lands

3) The Dooradoyle District Centre and the adjoining lands be designated in the Development Plan as a strategic employment location in Chapter 4 (A Strong Economy) with significant potential for expansion.

### **Rationale**

The Dooradoyle area represents a strategically located parcel of lands providing a gateway to the city on an important public transport corridor within the built-up area of the southern suburbs of Limerick. The Dooradoyle District Centre and adjoining lands, extending to over 30 hectares, represent a strategically important large scale under-developed site within the inner suburbs with potential to be further developed at the heart of a comprehensive mixed-use Urban Quarter. The existing Crescent Shopping Centre alone already employs nearly 1,500 workers, and when fully built out the total site area has the capacity to accommodate in the order of 2,000 additional employees (additional jobs mainly in offices, technology and support services). Dooradoyle District Centre is therefore considered to be a Strategic Employment Location and has the potential for a significant intensification of employment. The designation as a Strategic Employment Location would ensure compliance with higher tier plans and Section 28 Guidelines.

The lands are sequentially favourable for development, being located on the transition of the City and Southern Environs and comprise a significant infill site, which will be in accordance with national planning objectives for consolidated compact urban growth. The river, N18 and disused rail line historically have provided a physical barrier to permeability in the area which may be addressed as part of the comprehensive development of the lands. Development of the lands on the old boundary of the City and County Council's would be representative of the new single Authority approach to the sustainable and appropriate development of Limerick.

The development of the lands would further utilise existing infrastructure such as public transport and services.

Additionally with reference to the submission on the draft Development Plan by Irish Rail to the provision of a commuter rail station at Dooradoyle and forthcoming publication of LSMATS setting out the future sustainable transport.

Therefore, these lands should be identified as a key opportunity site for Limerick City and to give effect to such a designation, there is a requirement to have the lands appropriately zoned.

The provision of *Enterprise and Employment* lands at this location will provide additional choice of land for companies and investment as an attraction to investment in Limerick in the short term having regard to the existing infrastructure including services, high quality bus services and pedestrian and cycle facilities.

Enterprise and Employment uses are classed as less vulnerable uses under the Flood Risk Guidelines and a suite of documentation is included as Appendices to this rationale, including:

- Appendix 1 – Dooradoyle Urban Quarter Strategic Flood Risk Assessment Summary Report
- Appendix 2 – Plan Making Justification Test
- Appendix 3 – Strategic Flood Risk Assessment

- Appendix 4 – Geotechnical Analysis
- Appendix 5 – Downstream Breach Assessment
- Appendix 6 – IDA Submission on Draft Development Plan

It is further noted that the IDA submission on the draft Development Plan contends sufficient employment lands to attract inward employment investment are not provided for by the draft Development Plan. The proposed amendments will help address this concern.

The IDA has indicated in its submission it is targeting 76 investments for the mid west region between now and 2024. Thus, more lands are needed immediately and not at the next development plan in a number of years time, or there is risk of lost investment in the County.



