

TOBIN

Derryhinch, Drumman, Derryarkin, Ballybeg
and Toar Bogs – Application for Substitute
Consent

Flood Risk Assessment

September 2026



BUILT ON KNOWLEDGE

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Table of Contents

1.	Introduction	1
1.1	Project Phases	6
1.2	Site Context and History	9
2.	Flood Risk Management Guidance.....	11
2.1	The Planning System and Flood Risk Management Guidelines	11
2.2	The Flood Risk Management Climate Adaption Plan (2019).....	14
2.3	Meath County Development Plan (2021-2027)	14
2.4	Offaly County Development Plan (2021-2027).....	20
3.	Initial Flood Risk Assessment.....	25
3.1	Past Flood Events.....	25
3.2	OPW Preliminary Flood Risk Assessment (PFRA) Study	27
3.3	National Indicative Fluvial Mapping (NIFM) 2020	30
3.4	Catchment Flood Risk Assessment and Management Study.....	34
3.5	OPW Drainage Districts and Arterial Drainage Schemes	34
3.6	Geological Survey Ireland Mapping.....	36
3.7	Site Drainage.....	40
4.	Conclusions	44
4.1	Peat Extraction Phase.....	44
4.2	Current Phase.....	44
4.3	Remedial Phase.....	44
4.4	Flood Risk Summary.....	45

List of Tables

Table 1-1: Watercourses in the Immediate Vicinity	2
Table 2-1: Decision Matrix for Determining the Appropriateness of a Development	12
Table 2-2: Climate Change Adaptation Allowances for Future Flood Risk Scenarios	14

List of Figures

Figure 1-1: Site Location.....	2
Figure 1-2: Site Hydrographic system	3
Figure 1-3: Rathgarrett River Updated Flow Path	4



Figure 1-4: Rathgarrett River Updated Flow Path	5
Figure 2-1: Criteria of the Justification Test	13
Figure 2-2: Allowances based on 100 yr time horizon (Source: Meath CDP 2021-2027: SFRA)	18
Figure 2-3: SFRA Flood Zoning for Derryhinch Site	19
Figure 2-4 Flood Mapping from the Westmeath County Strategic Flood Risk Assessment	24
Figure 3-1: OPW National Flood Information Portal Recorded Past Flood Events	26
Figure 3-2: Indicative Flood Mapping [extract from PFRA Map 251, 252, 233, 234].....	28
Figure 3-3: PFRA Fluvial Flood Extents.....	29
Figure 3-4: National Indicative Fluvial Mapping 2020- Existing Scenario	31
Figure 3-5: National Indicative Fluvial Mapping 2020- Mid-Range Future Scenario	33
Figure 3-6: Arterial Drainage.....	35
Figure 3-7: GSI Mapping of Historic Surface and Groundwater Flood Extents	37
Figure 3-8: GSI Mapping of Karst Features.....	39
Figure 3-9: BnM Drainage Channel layout.....	41
Figure 3-10: Silt Pond design implemented at the Derrygreenagh Bog Group (Source: Bord na Móna IPC Licence Application submitted to the EPA in 1999).....	43

1. INTRODUCTION

TOBIN were appointed by Bord na Móna to undertake a Stage 1 Flood Risk Assessment (FRA) as part of the remedial Environmental Impact Assessment report (remedial EIAR) for a planning application for Substitute Consent, for peat extraction and ancillary activities undertaken at the Derryhinch, Drumman, Derryarkin, Ballybeg and Toar Bogs (herein known as 'the Application Site'; see Figure 1-1). These bogs form part of the Derrygreenagh Bog Group.

For the purposes of the remedial EIAR, the Project is defined under three different timeframes:

- **Peat Extraction Phase:** peat extraction and ancillary activities at the Application Site from July 1988 to the cessation of peat extraction in June 2020 (July 1988 – June 2020).
- **Current Phase:** the management of the Application Site since June 2020 to present day).
- **Remedial Phase:** the activities intended to be carried out at the Application Site into the future.

The Application Site is located south of the M6 motorway and extends across Counties Offaly, Westmeath and Meath. The Application Site, including all individual bog units, covers an area of approximately 2,637 ha.

Section 2.21 of *'The Planning System and Flood Risk Management - Guidelines for Planning Authorities'* (Department of Housing, Local Government and Heritage (DOEHLG) & Office of Public Works (OPW) (2009)¹, states that:

"A staged approach should be adopted, carrying out only such appraisal and or assessment as is needed for the purposes of decision-making at the regional, development and local area plan levels, and also at the site-specific level."

This assessment comprises a Stage 1 'Flood risk identification'. The *'Planning System and Flood Risk Management Guidelines'* (2009) defines the purpose of a Stage 1 assessment as:

"to identify whether there may be any flooding or surface water management issues related a development site that may warrant further investigation at the planning application level".

Accordingly, this Stage 1 assessment has been undertaken to identify any potential sources of flood risk affecting the Application Site and to determine whether further, more detailed flood risk assessment is required.

¹ <https://assets.gov.ie/static/documents/the-planning-system-and-flood-risk-management-guidelines-for-planning-authorities-nov-.pdf>

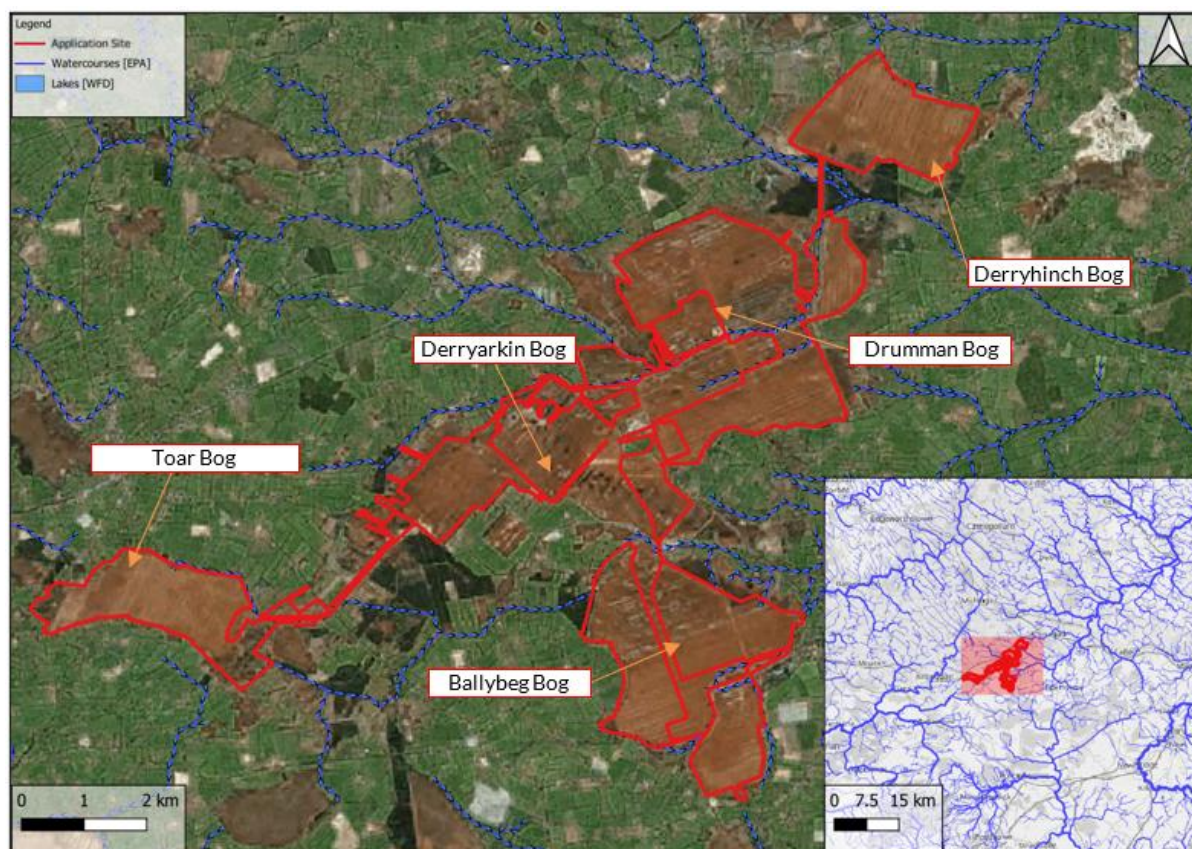


Figure 1-1: Site Location

There are a number of watercourses in the vicinity and throughout the Application Site. Some of the site's boundaries have been defined by these watercourses. A list of the streams and rivers in the surrounding area can be found below along with their relationship to the Application Site:

Table 1-1: Watercourses in the Immediate Vicinity

Water Course Name	Location (nearest bog site)	Relationship to the Site
Rathgarrett River	Toar	Flows along site boundary
Silver River	Toar	Flows outside the site boundary
River Cloneen	Toar	Flows along site boundary
Kiltotan and Collinstown River	Derryarkin	Flows along site boundary & briefly through
River Mongagh (Castlejordan River)	Drumman and Derryhinch	Flows outside, along boundary & through
Unnamed-Stream 1	Derryhinch	Flows through site between Drumman and Derryhinch bog
Unnamed-Stream 2	Drumman	Outside, along boundary & through
River Milltownpass	Derryhinch	Flows through site between Drumman and Derryhinch bog

Water Course Name	Location (nearest bog site)	Relationship to the Site
River Clonfad	Derryhinch	Along Boundary & Through site
Yellow River Yellow(Castlejordan)	Ballybeg	Outside & briefly along boundary
Derryiron tributary	Ballybeg	Through the site
Coolcor Stream	Ballybeg	Along Boundary & Through site
Unnamed-Stream 3 (Coolcor Stream tributary)	Ballybeg	Along Boundary & through
River Bunsallagh	Ballybeg	Outside Boundary

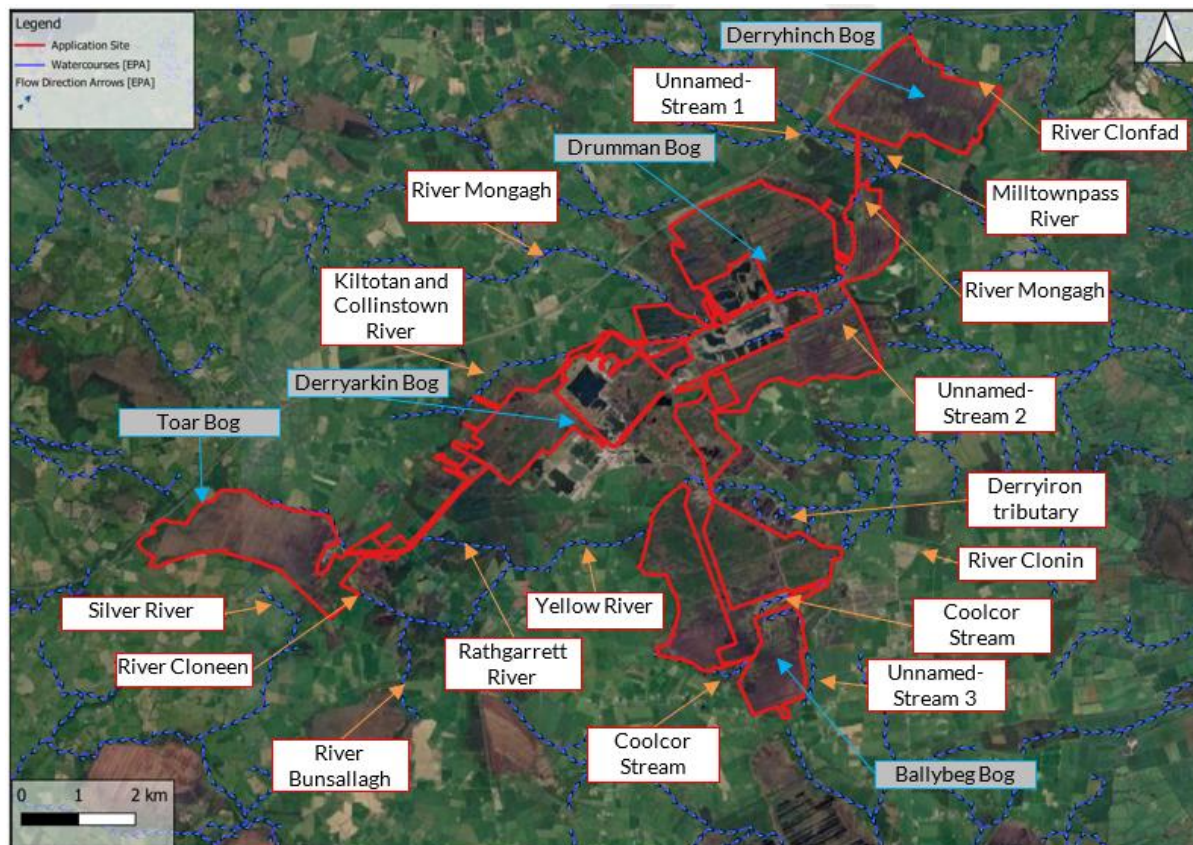


Figure 1-2: Site Hydrographic system

It should be noted that the Rathgarrett River's path was not fully modelled by the Environmental Protection Agency (EPA). A true representation of its path can be found below (see

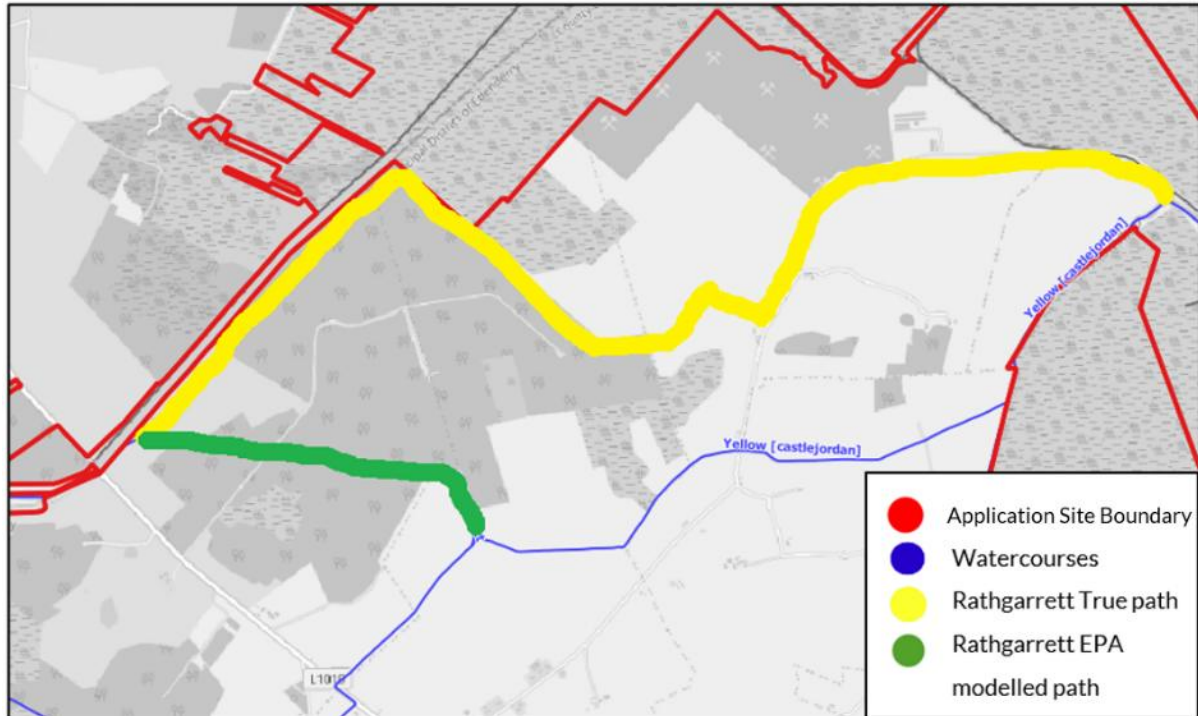


Figure 1-4: Rathgarrett River Updated Flow Path

This update shows that the river flows along a boundary of the site. It does not lead to any further encroachment within the Application Site.

The green section represents the existing mapping of the Rathgarrett River while the yellow section represents the true flow path.

1.1 PROJECT PHASES

As described above, the remedial EIAR has been structured into three distinct timeframes: Peat Extraction Phase, Current Phase and Remedial Phase. A summary of each phase is provided below.

1.1.1 Peat Extraction Phase (1988 – June 2020)

Clearance and drainage activities across the Application Site commenced in 1950, with milled peat extraction beginning in 1958. As described in the remedial EIAR, historical impacts associated with the Peat Extraction Phase have been assessed from 1988 (representing the latest date by which the EIA Directive was transposed into Irish law).

Peat extraction ceased at different times across the five bog units, with Ballybeg Bog being the final unit to cease operations in June 2020. Accordingly, for the purposes of the remedial EIAR, the Peat Extraction Phase is defined as extending from 1988 to June 2020.

During the Peat Extraction Phase, the deepening and maintenance of drainage channels continued beyond 1988 and remained ongoing at each bog until peat extraction ceased. As the areas subject to peat extraction gradually decreased in extent over time, and as the available peat depth correspondingly reduced, the number and extent of drains requiring deepening and maintenance also reduced over time.

The machinery and construction methodologies used for drainage works is described in section 4.4 of chapter 4 of the remedial EIAR.

1.1.2 Current Phase (June 2020 to present day)

In January 2021, Bord na Mona formally announced that industrial peat extraction across all bogs within its landholding had ceased. However, peat extraction at the Application Site had already ended prior to this announcement, with peat extraction ceasing in 2020.

The Application Site still operates under the requirements of IPC Licence P0501-01, and any decommissioning works undertaken with respect to peat extraction and ancillary activities are in accordance with Condition 10 of the IPC Licence, which states that that:

“10.1: Following termination of use or involvement of all or part of the site in the licensed activity, the licensee shall:

10.1.1: Decommission, render safe or remove for disposal/recovery, any soil, subsoils, buildings, plant or equipment, or any waste, materials or substances or other matter contained therein or thereon, that may result in environmental pollution.”

In compliance with Condition 10.1 of the IPC Licence, the license requires the decommissioning of the Application Site by removing, disposing of, or recovering buildings, equipment, waste materials, and other ancillary infrastructure. A key objective of Condition 10 is to ensure that the Application Site is not causing, and is not likely to cause, environmental pollution, and that the site is left in a satisfactory condition such that the licensed lands can be deemed suitable for surrender of the IPC License under Section 95 of the EPA Acts.

To meet these requirements, Bord na Mona identifies all mechanical and infrastructural resources that were installed within the bogs to facilitate the development and extraction

operations. This inventory is then reviewed to identify any items that could potentially result in environmental pollution if left in situ and therefore require removal.

The remaining bog and ancillary infrastructure include any unconsolidated plant, equipment and attachments, waste materials, unused raw materials (e.g. land drainage pipes), remaining peat stockpiles, stockpile coverings, pumps and fuel tanks. Following the cessation of peat extraction, any remaining stockpiled peat at the Application Site was systematically transferred to Ballivor Horticultural Works, Derrinlough Briquette Factory, Lough Ree Power Station, West Offaly Power Station, Cúil na Móna Horticultural Works, Edenderry Power Station, and other third-party horticultural peat customers. Stockpile removal was completed in 2021. Ongoing decommissioning measures at the Application Site, including the removal of industrial railways, are outlined in Table 4-6 of Chapter 4 of the remedial EIAR.

1.1.3 Remedial Phase

Following the conclusion of the decommissioning activities, Bord na Móna are required under Condition 10.2 of the IPC Licence to prepare (to the satisfaction of the EPA) and implement, a Cutaway Bog Rehabilitation Plan.

Bord na Móna have produced a draft Cutaway Bog Decommissioning and Rehabilitation Plan for each of the five bogs within the Application Site (i.e., Derryhinch, Drumman, Derryarkin Ballybeg and Toar Bogs), refer to Appendix 4-3 of the remedial EIAR for details. It is the intention of Bord na Móna to rehabilitate the bogs in a phased approach under the requirements of the IPC Licence.

The key objective of Bord na Mona's peatland rehabilitation is environmental stabilisation. The plans use bespoke interventions designed to firstly stabilise the environment and secondly to rehabilitate the site as much as possible by placing the existing peatland environments on a path towards naturally functioning peatlands.

The rehabilitation of the bogs will support biodiversity e.g., plants, insects, bird and mammals, and the formation of wetland habitats. In addition, peatland rehabilitation will bring a range of benefits to the local community via improvements in the local landscape, and it is also complying with national policies and strategies regarding the reduction of carbon emissions, supporting biodiversity and enhancing water quality. It is anticipated it will take up to 30 years for naturally functioning wetland and peatland ecosystems to fully re-establish.

Each individual bog comprising the Application Site has its own unique history of peat extraction activities and all ancillary works operations; therefore, the most appropriate rehabilitation approach is bog-specific reflecting local ecological and hydrological factors. Consequently, each bog has its own exclusive Cutaway Bog Decommissioning and Rehabilitation Plan.

The intervention measures include drain blocking. This will encourage natural colonisation of cutaway areas and will establish a more suitable hydrological/hydrogeological regime for the development of bog habitats. The details necessary to achieve the aims set out in the Cutaway Bog Decommissioning and Rehabilitation Plans will include the exact locations of the drains to be blocked and any bunds to be constructed. These details are based on the existing habitats present and the topography of the Application Site. This level of detail will only be available once the rehabilitation plan is finalised.

1.1.4 Potential Future Land Use

BnM (formerly Bord na Móna) intends to develop a wind and solar energy project across Derryarkin, Drumman, Derryhinch and Ballybeg Bog, currently known as Derrygreenagh Wind and Solar project. The proposed development is currently at the design phase and is likely to consist of wind turbines, solar photovoltaics and a battery energy storage system. The design of the development will align and integrate with the peatland rehabilitation measures as required under the IPC Licence P0501-01.

BnM has also announced a strategic collaboration with a third party. Subject to separate regulatory and planning consent, the third party intend to develop infrastructure at lands within the Application Site.

Any future development within the Application Site, will be the subject of separate planning applications. Where required, such applications will be accompanied by an Environmental Impact Assessment Report (EIAR), which will assess the likely significant environmental effects associated with the construction, operation and decommissioning of the respective developments, including consideration of the rehabilitation measures being implemented at the Application Site.

1.2 SITE CONTEXT AND HISTORY

1.2.1 Site Location

The Application Site forms part of the Derrygreenagh Bog Group and comprises five bog units including Toar, Derryarkin, Ballybeg, Drumman and Derryhinch Bog.

The Application Site is located between Tyrellspass, Rochfordbridge, Co. Westmeath and Rhode village, Co. Offaly, approximately 2 km east of the village Rochfortbridge and 5 km north of Rhode.

1.2.2 Site Topography

The topography of the Application Site is relatively flat and low lying with the majority of the area within 73 m and 96 m above mean ordnance datum (mOD). Topography at the site has been modified through the peat extraction activities, and all ancillary works and associated drainage works.

The site topography is summarised as follows;

- Toar Bog is between 86-96 mOD;
- Derryarkin is between 76-86 mOD;
- Drumman is between 74-86 mOD;
- Ballybeg is between 73-82 mOD, and
- Derryhinch is between 74-82 mOD.

On a regional scale, the Application Site and its environs are in the Boyne Hydrometric Area and Catchment. The Application Site is relatively flat in most areas with ground slopes predominantly less than 1 degree. The delineation of the catchments and general area of confluence is shown in Figure 9-2, Chapter 9 of the remedial EIAR. The river waterbody types located within the Application Site are primarily slow flowing, lowland streams/drainage channels which flow to the River Boyne. The western and northwestern section of Toar bog are within the River Brosna catchment.

1.2.3 Site History

Drainage first occurred on the Application Site in 1950. Before peat extraction began, the Application Site's topography is estimated to have ranged between 82– 97.5 mOD, based on point data derived from 6-inch OSI maps (see Section 8.3.2 of Chapter 8 of the remedial EIAR).

The primary land-use change associated with the peat extraction and ancillary activities occurs during the initial drainage of the bog in advance of peat extraction. Constructed drainage ditches drain the upper surface of the bog by lowering the local peat water table. After the Application Site was drained, vegetation was removed from the bog surface, leaving only bare peat fields between the drains. Around this time and in the years that followed, ancillary features were also constructed including railway lines, workshops, welfare facilities and peat loading facilities.

During the Peat Extraction Phase of the Project, only minimal land use change occurred which predominantly related to minor annual topographic changes caused by ongoing peat extraction and ancillary activities. While peat extraction was ongoing it was not possible to rehabilitate the underlying peatland.

The timing of the installation of drainage and initiation of peat extraction varied across the Application Site. Clearance and drainage work across the Application Site began in 1950, and the land bank would have experienced a relatively abrupt change in land cover with the commencement of peat extraction in 1958.

Peat extraction within the Application Site has been regulated by the EPA under IPC Licence Registration No. P501-01 since 2000. Prior to this date, the Bord Na Móna had been completing environmental monitoring and control measures at the Application Site. These control measures were upgraded and enhanced in accordance with IPC Licence conditions from May 2000. The Application Site also have Surface Water Management Plans which define how compliance with the IPC Licence is achieved.

Peat extraction at the Application Site ceased in June 2020. Following cessation of peat extraction, the site drainage system has continued to operate under the same drainage systems as during the Peat Extraction Phase i.e. field drains, main drains, silt ponds and discharge outlets etc. During decommissioning and rehabilitation activities continue to be monitored in accordance with IPC Licence conditions.

Drainage from the bogs is regulated by the shallow (low gradient) nature of the drainage, and by routing all bog drainage via field drains, main drains, headland drains, then from silt ponds to outfalls, with final discharge to natural watercourses. Therefore, existing discharge volumes from the Application Site to nearby surface watercourses will be comparable to surface water discharges during the Peat Extraction Phase (1988-2020).

2. FLOOD RISK MANAGEMENT GUIDANCE

This Stage 1 Flood Risk Assessment was carried out in accordance with the following flood risk management guidance documents:

- The Department of Housing, Local Government and Heritage (DOEHLG) & Office of Public Works (OPW) (2009), *The Planning System and Flood Risk Management Guidelines for Planning Authorities*
- Department of Public Expenditure and Reform (DPER) and Office of Public Works (OPW) (2019) *Flood Risk Management Climate Change Sectoral Adaptation Plan*
- Offaly County Development Plan (2021 – 2027)
- Meath County Development Plan (2021 – 2027)
- Westmeath County Development Plan (2021 – 2027)

2.1 THE PLANNING SYSTEM AND FLOOD RISK MANAGEMENT GUIDELINES

The Planning System and Flood Risk Management Guidelines for Planning Authorities (PSFRM Guidelines) were published in 2009 by the Office of Public Works (OPW) and Department of the Environment, Heritage, and Local Government (DoEHLG). Their aim is to ensure that flood risk is considered in development proposals and the assessment of planning applications.

2.1.1 Flood Zones and Vulnerability Classes

The PSFRM Guidelines discuss flood risk in terms of three flood zones (A, B, and C), which correspond to areas of high, medium, or low probability of flooding, respectively. The extents of each flood zone are based on the Annual Exceedance Probability (AEP) of various flood events.

The PSFRM Guidelines also categorise different types of development into three vulnerability classes based on their sensitivity to flooding. The PSFRM guidelines state that land used for the extraction of peat is classified as “less vulnerable”. The development is therefore appropriate in Flood Zone B or C (low probability of flooding i.e., less frequently than 1% AEP event).

Table 2-1 shows a decision matrix that indicates which types of development are appropriate in each flood zone and when the Justification Test (see Section 2.1.2) must be satisfied. The annual exceedance probabilities used to define each flood zone are also provided.

Table 2-1: Decision Matrix for Determining the Appropriateness of a Development

Flood Zone: (Probability)	Annual Exceedance Probability (AEP)	Highly Vulnerable	Less Vulnerable	Water Compatible	
A (High)	<u>Fluvial & Pluvial Flooding</u> More frequent than 1% AEP	Justification Required	Test	Justification Test Required	Appropriate
B (Medium)	<u>Coastal Flooding</u> More frequent than 0.5% AEP	Justification Required	Test	Appropriate	Appropriate
	<u>Fluvial & Pluvial Flooding</u> 0.1% to 1% AEP				
C (Low)	<u>Coastal Flooding</u> 0.1% to 0.5% AEP	Appropriate		Appropriate	Appropriate
	<u>Fluvial, Pluvial & Coastal Flooding</u> Less frequent than 0.1% AEP				

2.1.2 Justification Test

Any development being considered in an inappropriate flood zone (as determined by Table 2-1) must satisfy the criteria of the Justification Test outlined in Figure 2-1 (taken from the PSFRM Guidelines).

**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 2-1: Criteria of the Justification Test

2.2 THE FLOOD RISK MANAGEMENT CLIMATE ADAPTION PLAN (2019)

The Flood Risk Management Climate Change Sectoral Adaptation Plan was published in 2019 under the National Adaptation Framework and Climate Action Plan. This plan outlines the OPW's approach to climate change adaptation in terms of flood risk management.

This approach is based on a current understanding of the potential impacts of climate change on flooding and flood risk. Research has shown that climate change is likely to worsen flooding through more extreme rainfall patterns, more severe river flows, and rising mean sea levels.

To account for these changes, the Adaptation Plan presents two future flood risk scenarios to consider when assessing flood risk:

- Mid-Range Future Scenario (MRFS)
- High-End Future Scenario (HEFS)

Table 2-2 indicates the allowances that should be added to estimates of extreme rainfall depths, peak flood flows, and mean sea levels for the future scenarios.

Table 2-2: Climate Change Adaptation Allowances for Future Flood Risk Scenarios

Parameter	Mid-Range Future Scenario (MRFS)	High-End Future Scenario (HEFS)
Extreme Rainfall Depths	+ 20%	+ 30%
Peak River Flood Flows	+ 20%	+ 30%
Mean Sea Level Rise	+ 0.5 m	+ 1 m

For the purpose of this flood risk assessment, the development has been assessed against the Mid-Range Future Scenario as it represents a likely future scenario.

2.3 MEATH COUNTY DEVELOPMENT PLAN (2021-2027)

The current Meath County Development Plan (CDP) 2021-2027 was adopted on 22 September 2021 and came into effect on 3 November 2021. Chapter 9 outlines Meath County Council's strategy for Environmental Infrastructure.

Section 6.10.2 outlines Meath County Council's approach to flood risk management and sets out the following key policies:

INF POL 18 To implement the "Planning System and Flood Risk Management –Guidelines for Planning Authorities" (DoEHLG/OPW, 2009) through the use of the sequential approach and application of Justification Tests for Development Management and Development Plans, during the period of this Plan.

INF POL 19 To implement the findings and recommendations of the Strategic Flood Risk Assessment prepared in conjunction with the County Development Plan review, ensuring climate change is taken into account.

INF POL 20 To require that a Flood Risk Assessment is carried out for any development proposal, where flood risk may be an issue in accordance with the "Planning System and Flood Risk Management –Guidelines for Planning Authorities" (DoEHLG/OPW, 2009). This

assessment shall be appropriate to the scale and nature of risk to and from the potential development and shall consider the impact of climate change.

INF POL 21 *To consult with the Office of Public Works in relation to proposed developments in the vicinity of drainage channels and rivers for which the OPW are responsible.*

INF POL 22 *To retain a strip of 10 metres on either side of all channels/flood defence embankments where required, to facilitate access thereto.*

INF POL 23 *To consult, where necessary, with Inland Fisheries Ireland, the National Parks and Wildlife Service and other relevant agencies in the provision of flood alleviation measures in the County.*

INF POL 24 *To ensure that flood risk management is incorporated into the preparation of Local Area Plans in accordance with 'The Planning System and Flood Risk Management -Guidelines for Planning Authorities (2009)'.*

INF POL 25 *To have regard to the recommendations of the Fingal East Meath Flood Risk Assessment and Management Study (FEMFRAMS) and the Eastern Catchment Flood Risk Assessment and Management Study (CFRAMS).*

INF POL 26 *To undertake a review of the 'Strategic Flood Risk Assessment for County Meath' in light of the completed flood mapping which has been developed as part of the Eastern Catchment Flood Risk Assessment and Management (CFRAM) Study.*

INF POL 27 *To liaise with the Office of Public Works in relation to proposed developments in the vicinity of drainage channels and rivers for which the OPW are responsible, prior to the making of determinations/assumptions on surface water management proposals.*

INF POL 28 *To consult with the Office of Public Works in relation to proposed developments which include the construction, replacement or alteration of a bridge or culvert and to require that the developers obtain consent from the OPW under Section 50 of the EU (Assessment and Management of Flood Risks) Regulations 2010 and Section 50 of the Arterial Drainage Act 1945, where appropriate.*

INF POL 29 *To facilitate the provision of new, or the reinforcement of existing flood defences and protection measures where necessary and in particular to support the implementation of flood schemes being progressed through the planning process during the lifetime of the Plan. The provision of flood defences will be subject to the outcome of the Appropriate Assessment process. It is an objective of the Council.*

The objectives contained within Chapter 6 of the Meath CDP 2021-2027 are as follows:

INF OBJ 14 *To require the use of SuDS within Local Authority Developments and other infrastructural projects in accordance with the Greater Dublin Regional Code of Practice for Drainage Works.*

INF OBJ 15 *To require the use of SuDS in accordance with the Greater Dublin Regional Code of Practice for Drainage Works for new developments (including extensions).*

INF OBJ 16 *To ensure that all new developments comply with Section 3.12 of the Greater Dublin Regional Code of Practice for Drainage Works V6 which sets out the requirements for new developments to allow for Climate Change.*

INF OBJ 17 *To ensure that all new commercial developments provide on-site petrol/oil interceptors and silt traps as per Section 20 of the Greater Dublin Regional Code of Practice for Drainage Works V6.*

INF OBJ 18 *To ensure that new developments provide for the separation of foul and surface water drainage networks within application site boundaries.*

INF OBJ 19 *To ensure that developments permitted by the Council which involve discharge of wastewater to surface waters or groundwaters comply with the requirements of the EU Environmental Objectives (Surface Waters) Regulations and EU Environmental Objectives (Groundwater) Regulations.*

INF OBJ 20 *To implement the Planning System and Flood Risk Management-Guidelines for Planning Authorities (DoEHLG/OPW 2009) or any updated guidelines. A site-specific Flood Risk Assessment should be submitted where appropriate.*

INF OBJ 21 *To restrict new development within floodplains other than development which satisfies the Justification Test, as outlined in the Planning System and Flood Risk Management Guidelines 2009 for Planning Authorities (or any updated guidelines).*

INF OBJ 22 *To ensure flood relief measures are suitably designed to protect the conservation objectives of Natura 2000 sites, and to avoid direct or indirect impacts upon qualifying interests or Natura 2000 sites.*

INF OBJ 23 *To protect and enhance the County's floodplains, wetlands and coastal areas subject to flooding as "green infrastructure" which provide space for storage and conveyance of floodwater and ensure that development does not impact on important wetland sites within river/stream catchments.*

INF OBJ 24 *To identify existing surface water drainage systems vulnerable to flooding and develop proposals to alleviate flooding in the areas served by these systems in conjunction with the Office of Public Works.*

INF OBJ 25 *To require the use of SuDS to minimise and limit the extent of hard surfacing and paving and require the use of sustainable drainage techniques where appropriate, for new development or for extensions to existing developments, in order to reduce the potential impact of existing and predicted flooding risks.*

INF OBJ 26 *To discourage the use of hard non-porous surfacing and pavements within the boundaries of rural housing sites.*

2.3.1 Land Use Zoning

The Application Site is not located within any specific land use zoning designations identified in the Meath CDP (2021-2027).

2.3.2 Strategic Flood Risk Assessment for Meath CDP (2021 – 2027)

A Strategic Flood Risk Assessment (SFRA) was prepared by JBA Consulting in 2019, in accordance with the Planning System and Flood Risk Management Guidelines for Planning Authorities (DoEHLG and OPW, 20009), to inform the preparation of the Meath CDP (2021-2027). The SFRA sets out the following requirements in relation to FRAs for the proposed developments:

- Flow paths through the site and areas of surface water storage should be managed to maintain their function and without causing increased flood risk elsewhere
- Compensatory storage is to be provided to balance floodplain loss as a result of raising ground levels within Flood Zone A. The storage should be provided within the flood cell and on a level for level basis up to the 1% level.
- In a defended site, compensatory storage is not required, but the impact of removing the net reduction in floodplain storage should be assessed, and any impacts to existing development mitigated for the 0.1% event or a breach of these defences.
- A site is considered to be defended if the standard of protection is equal or beyond the 1% AEP (within which a freeboard of at least 300mm is included) The FFL of the proposed development needs to take into account the impacts of climate change and other residual risks, including the 0.1% event, unless this has also been incorporated into the defence design. This may be assessed through breach analysis, overtopping analysis or projection of levels from the channel inland.
- For less vulnerable development, it may be that a finished floor level as low as the 1% AEP level could be adopted, provided the risks of climate change are included in the development through adaptable designs or resilience measures. This approach should reflect emergency planning and business continuity to be provided within the development. It may reflect the design life of the development, the proposed use, the vulnerability of items to be kept in the premises, the occupants and users, emergency plan and inclusion of flood resilience and recovery measures.

Table 3-4 of the SFRA (JBA Consulting, 2019) prepared to assess the Meath CDP (2021-2027) provides recommended climate change allowances for a 100-year assessment horizon. These allowances are consistent with the recommendations of the *Flood Risk Management Climate Change Sectoral Adaptation Plan* (OPW, 2019) and are intended to account for potential future flood risk scenarios arising from climate change, as summarised in Figure 2-2 of this FRA.

Criteria	MRFS	HEFS
Extreme Rainfall Depths	+20%	+30%
Flood Flows	+20%	+30%
Mean Sea Level Rise	+500mm	+1000mm
Land Movement	-0.5mm / year*	-0.5mm / year*
Urbanisation	No General Allowance - Review on Case by Case Basis	No General Allowance - Review on Case by Case Basis
Forestation	-1/6 Tp**	-1/3 Tp** +10% SPR***
Notes: * Applicable to the southern part of the country only (Dublin - Galway and south of this) ** Reduce the time to peak (Tp) by a third; this allows for potential accelerated runoff that may arise as a result of drainage of afforested land *** Add 10% to the Standard Percentage Runoff (SPR) rate; this allows for increased runoff rates that may arise following felling of forestry		

Figure 2-2: Allowances based on 100 yr time horizon (Source: Meath CDP 2021-2027: SFRA)

The SFRA used a combination of CFRAM and PFRA data as well as a site visit to zone the lands based on their flood risk, in an existing flood risk scenario (without consideration for climate change). The SFRA flood zone mapping for the site is outlined in Figure 2-3 below. the Application Site is located in Flood Zone C based on the SFRA Flood Zoning.

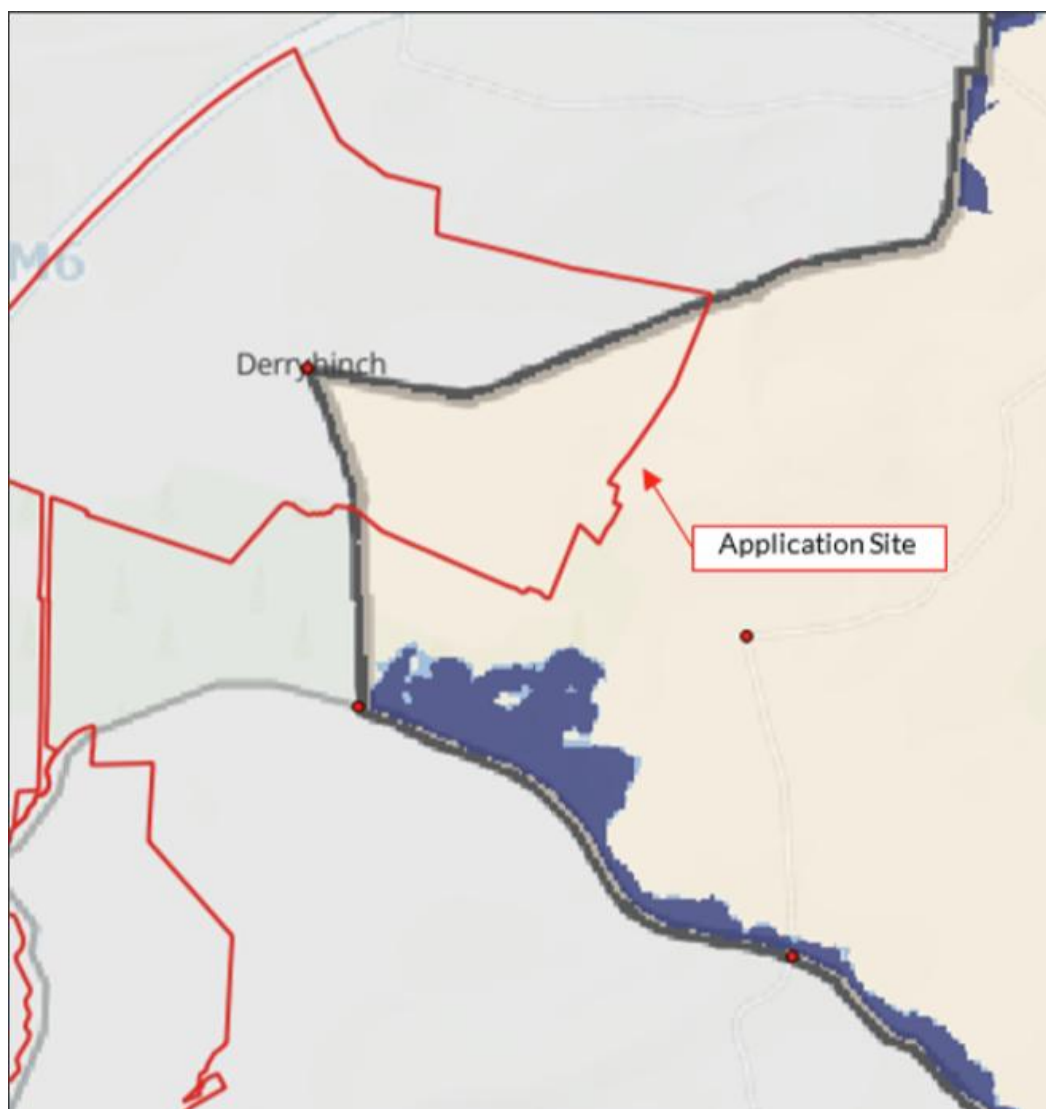


Figure 2-3: SFRA Flood Zoning for Derryhinch Site

2.4 OFFALY COUNTY DEVELOPMENT PLAN (2021-2027)

The current Offaly County Development Plan² provides a strategic framework for planning and sustainable development in County Offaly for 2021-2027. The CDP was adopted on 10 September 2021 and came into effect on 22 October 2021.

Chapter 3 of the Offaly CDP outlines the Council's policies and objectives relating to Climate Action and Energy, while Chapter 13 outlines the Development Management Standards, including requirements relating to flood risk management within the County.

The Offaly CDP includes the following flood risk management policies relevant to Project:

- Support, in co-operation with the OPW, the implementation of EU Flood Risk Directive (2007/60/EC), the Flood Risk Regulations (SI No. 122 of 2010) and the DECLG and OPW Guidelines for Local Authorities, the Planning System and Flood Risk Assessment Management (2009), Department Circular PI2/2014 or any updated/superseding legislation or departmental guidelines and have regard to the findings and relevant identified actions of the Catchment Flood Risk Assessment and Management (CFRAM) study.
- Require all development proposals within or incorporating areas at moderate to high risk of flooding to be accompanied by a site specific and appropriately detailed Flood Risk Assessments (FRAs). The scope of the FRA should be appropriate to the scale of the development and associated flood risk and should have regard to the Planning System and Flood Risk Management Guidelines (DoEHLG and OPW, 2009), available CFRAM information, national flood mapping, and the most up to date climate change scenario mapping. The FRA should assess flood risk, identify mitigation measures, address residual risks and consider the potential impacts of climate change.
- Require the application of the Development Management Justification Test, where applicable, in accordance with *The Planning System and Flood Risk Management Guidelines for Planning Authorities* (DoEHLG and OPW, 2009), for developments proposed within areas at moderate or high risk of flooding.
- Ensure that all acceptable development proposals demonstrate the application of the sequential approach to site layout and design and that suitable mitigation measures can be implemented without increasing flood risk elsewhere.
- Require consideration of the recommendations contained within the Strategic Flood Risk Assessment (SFRA) prepared in support of the Offaly County Development Plan 2021-2027.
- Require development proposals within flood-vulnerable areas to demonstrate the implementation of appropriate structural and non-structural flood risk management measures, as outlined in Chapter 13 of the OCDP.

The Application Site is identified within the OCDP as being located within a "Rural Area Under Strong Urban Influence".

² <https://www.offaly.ie/c/county-development-plan/>

A Site-Specific Flood Risk Assessment was not available for the area of interest pertaining to the subject site Application Site.

2.4.1 Offaly Strategic Flood Risk Assessment (2021-2027)

The Offaly County Development Plan (CDP) (2021–2027) provides the strategic framework for the planning and sustainable development of County Offaly during the plan period. The Plan is supported by a Strategic Flood Risk Assessment for the Draft Offaly County Development Plan 2021–2027, which was prepared in accordance with *The Planning System and Flood Risk Management Guidelines for Planning Authorities* (DoEHLG and OPW, 2009). The SFRA informed the preparation of the Development Plan and the associated land-use zoning strategy

Key recommendations include:

- Section 4.2 Land Use Zoning: Application of the sequential approach to spatial planning, ensuring that vulnerable development is directed away from areas at risk of flooding and towards lands within Flood Zone C where possible.
https://www.offaly.ie/app/uploads/Council/Council_Services_A-Z/Planning_Building/SFRA.pdf
- Section 4.2 Land Use Zoning: Retention of floodplains for compatible uses and avoidance of highly vulnerable development within Flood Zones A and B, except where the requirements of the Justification Test can be satisfied.
https://www.offaly.ie/app/uploads/Council/Council_Services_A-Z/Planning_Building/SFRA.pdf
- Section 4.3 Integration of Other Provisions Relating to Flood Risk Management into the Plan: Requirement that development proposals are assessed in accordance with *The Planning System and Flood Risk Management Guidelines for Planning Authorities* (2009).
https://www.offaly.ie/app/uploads/Council/Council_Services_A-Z/Planning_Building/SFRA.pdf
- Section 4.3: Requirement for site-specific Flood Risk Assessments where development proposals may be subject to flood risk or have the potential to exacerbate flooding elsewhere.
https://www.offaly.ie/app/uploads/Council/Council_Services_A-Z/Planning_Building/SFRA.pdf
- Section 4.3: Support for the implementation of the Catchment Flood Risk Assessment and Management (CFRAM) Programme and associated Flood Risk Management Plans (FRMPs) prepared by the Office of Public Works (OPW).
https://www.offaly.ie/app/uploads/Council/Council_Services_A-Z/Planning_Building/SFRA.pdf
- Section 4.3: Protection and maintenance of natural drainage systems, floodplains and other areas that provide flood storage and conveyance functions.
https://www.offaly.ie/app/uploads/Council/Council_Services_A-Z/Planning_Building/SFRA.pdf
- Section 4.3: Promotion of Sustainable Drainage Systems (SuDS) and surface water management measures to minimise runoff rates and reduce flood risk.

https://www.offaly.ie/app/uploads/Council/Council_Services_A-Z/Planning_Building/SFRA.pdf

- Section 3.4 Sensitivity to Climate Change and Section 4.3: Consideration of climate change impacts in flood risk assessments and development management decisions to account for potential increases in flood frequency and magnitude.
https://www.offaly.ie/app/uploads/Council/Council_Services_A-Z/Planning_Building/SFRA.pdf
- Section 4.4 Justification Test: Application of the Justification Test where vulnerable development is proposed within areas identified as being at risk of flooding, in accordance with the Flood Risk Management Guidelines.
https://www.offaly.ie/app/uploads/Council/Council_Services_A-Z/Planning_Building/SFRA.pdf

The SFRA concludes that flood risk considerations have been integrated into the preparation of the Offaly County Development Plan through land-use zoning, flood risk policies and development management provisions, thereby supporting the sustainable management of flood risk across the county.

2.4.2 Westmeath County Development Plan (2021 – 2027)

The Westmeath County Development Plan (CDP) (2021-2027) provides the strategic framework for the planning and sustainable development of County Westmeath during the plan period. The Westmeath CDP came into effect on the 3 May 2021.

Flood risk management objectives are set out in Chapter 10: Transport, Infrastructure and Energy. The Plan includes a number of policies and objectives aimed at ensuring that flood risk is appropriately considered in the planning and development process. Key objectives include:

- CPO 10.104: Implementation of, and compliance with, the recommendations of the Strategic Flood Risk Assessment (SFRA) prepared in support of the Westmeath County Development Plan 2021–2027;
- CPO 10.105: Application of *The Planning System and Flood Risk Management Guidelines for Planning Authorities* (DoEHLG and OPW, 2009) and Circular PL2/2014 through the use of the sequential approach and, where required, the application of the Justification Test in development management;
- CPO 10.106: Requirement for a site-specific Flood Risk Assessment (FRA) for development proposals located within 200 m of a watercourse and potentially at risk of flooding. Such assessments must be appropriate to the scale and nature of the proposed development and associated flood risk;
- CPO 10.107 and CPO 10.108: Support for the implementation of recommendations arising from the Catchment Flood Risk Assessment and Management (CFRAM) Programme and the associated Flood Risk Management Plans (FRMPs) to facilitate the effective management and reduction of flood risk;

- CPO 10.109: Consultation with the Office of Public Works (OPW) in relation to development proposals located in the vicinity of drainage channels and watercourses for which the OPW has responsibility, including the retention of maintenance access corridors where required;
- CPO 10.111: Protection and enhancement of floodplains and wetlands as elements of green infrastructure, recognising their role in flood water storage and conveyance and in the sustainable management of flood risk;
- CPO 10.112: Protection of existing and proposed flood risk management infrastructure to ensure that development does not compromise the effectiveness or integrity of such infrastructure;
- CPO 10.114: Integration of climate change adaptation considerations into flood risk management activities, having regard to the OPW Flood Risk Management Climate Change Sectoral Adaptation Plan and any subsequent updates; and
- CPO 10.115: Consultation, where necessary, with Inland Fisheries Ireland (IFI), the National Parks and Wildlife Service (NPWS), and other relevant stakeholders in relation to flood alleviation measures.

2.4.3 Westmeath Strategic Flood Risk Assessment (2021-2027)

A Strategic Flood Risk Assessment (SFRA) was undertaken to inform the Westmeath County Development Plan (2021-2027). The SFRA includes updated flood risk mapping, which supersedes the flood mapping produced to inform the previous Westmeath County Development Plan (2014 to 2020).

The SFRA flood mapping in Figure 2-4 (derived from the PFRA study) indicates that Toar, Drumman, Derryarkin and Derryhinch are all liable to pluvial (surface water) flooding and fluvial (river) flooding during a 1% Annual Exceedance Probability (AEP) event.

However, the National Preliminary Flood Risk Assessment (PFRA) (2012)³ states that *“the flood extents shown on these maps are based on broad-scale, simple analysis and may not be accurate for a specific location.”*

It should also be noted that, due to the large modelling scale of the PFRA, pluvial flood modelling by HR Wallingford did not consider local drainage features. Consequently, the mapping should be considered indicative only and may not accurately represent flood mechanisms or extents at the Application Site.

³ The National Preliminary Flood Risk Assessment (PFRA) Overview Report (OPW, 2012)

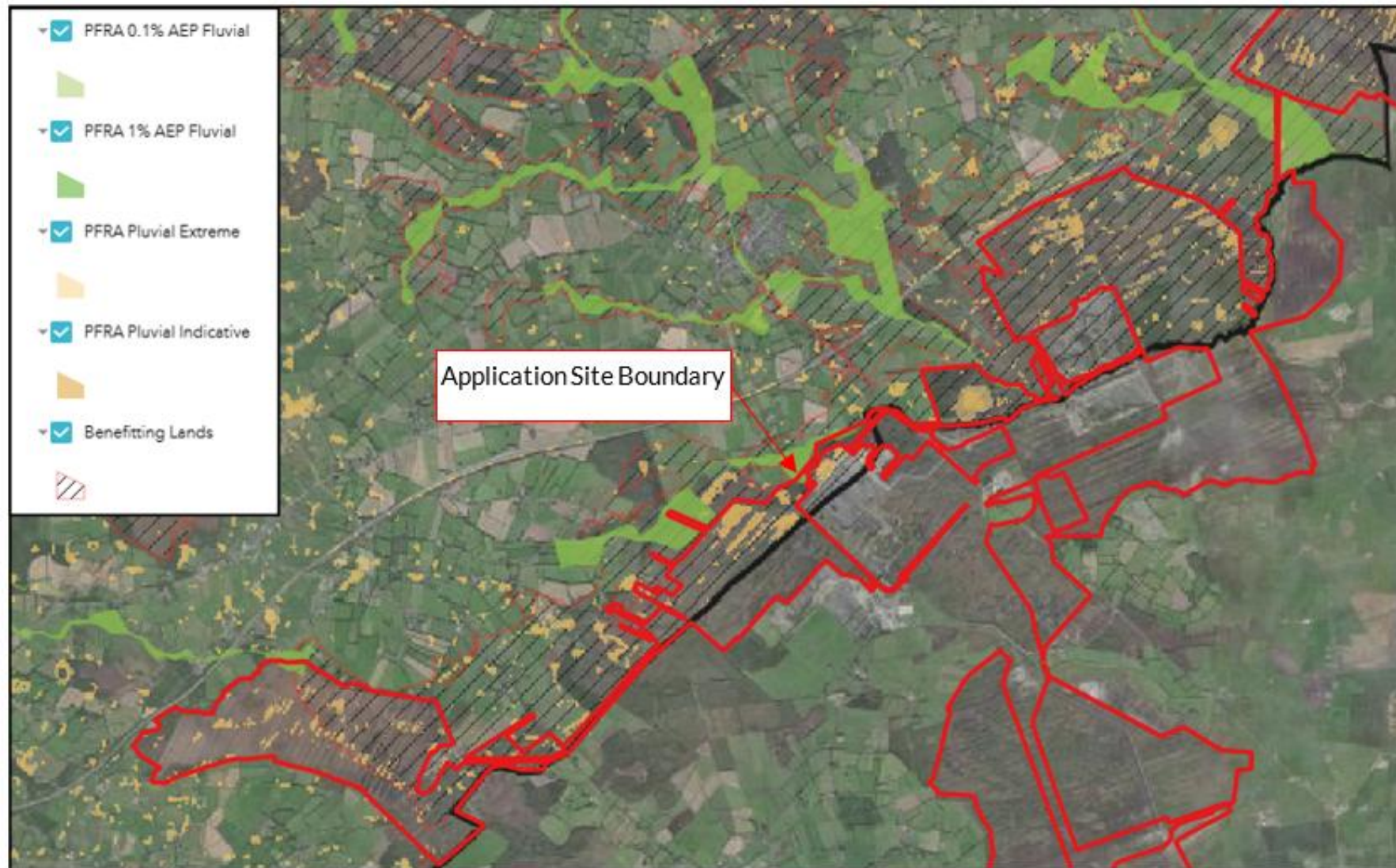


Figure 2-4 Flood Mapping from the Westmeath County Strategic Flood Risk Assessment

3. INITIAL FLOOD RISK ASSESSMENT

3.1 PAST FLOOD EVENTS

The Preliminary Flood Risk Assessment (PFRA) is a national screening exercise, based on available and readily deliverable information, to identify areas where there may be a significant risk associated with flooding.

The PFRA has been undertaken by:

- Reviewing records of floods that have happened in the past;
- Undertaking analysis to determine which areas might flood in the future, and what the impacts might be; and
- Consulting with the local Authorities and other Government departments and agencies.

The OPW's National Flood Information Portal (NFIP)⁴ provides past flood event mapping with records of flooding reports, meeting minutes, photos, and/or hydrometric data. Based on the flood map shown in Figure 3-1, there are no reported past flood events recorded by the OPW National Flood Information Portal in the immediate vicinity of the Application Site.

- The closest past flood event to the Application Site is a recurring flood event (Flood-ID: 2697) 1.3 km north of the Application Site at its closest point and is a result of low-lying lands. Meeting records available through the NFIP⁵ state that *"Low lying land floods after heavy rain every year."*
- There is also a recorded flood event (Flood-ID: 11401) located 4.3 km north-east of the Application Site and has no listed cause. None of these flood events fall within the Application Site boundary. Meeting records available through the NFIP⁶ state that *"The source of the flood waters was run off (and the cause was Infiltration of runoff into combined sewer). The flooding occurred in the Boyne catchment, on the Kinnegad river"*.

⁴ floodinfo.ie

⁵ floodinfo.ie – K18

⁶ floodinfo.ie





Figure 3-1: OPW National Flood Information Portal Recorded Past Flood Events

3.2 OPW PRELIMINARY FLOOD RISK ASSESSMENT (PFRA) STUDY

In 2009, the OPW produced a series of maps to assist in the development of a broad-scale FRA throughout Ireland. These maps were produced from several sources.

The OPW's National Preliminary Flood Risk Assessment (PFRA) Overview Report from March 2012 noted that *"the flood extents shown on these maps are based on broad-scale simple analysis and may not be accurate for a specific location"*. Figure 3-2 provides an overview of the fluvial, coastal, pluvial, and groundwater indicative flood extents in the vicinity of the Application Site.

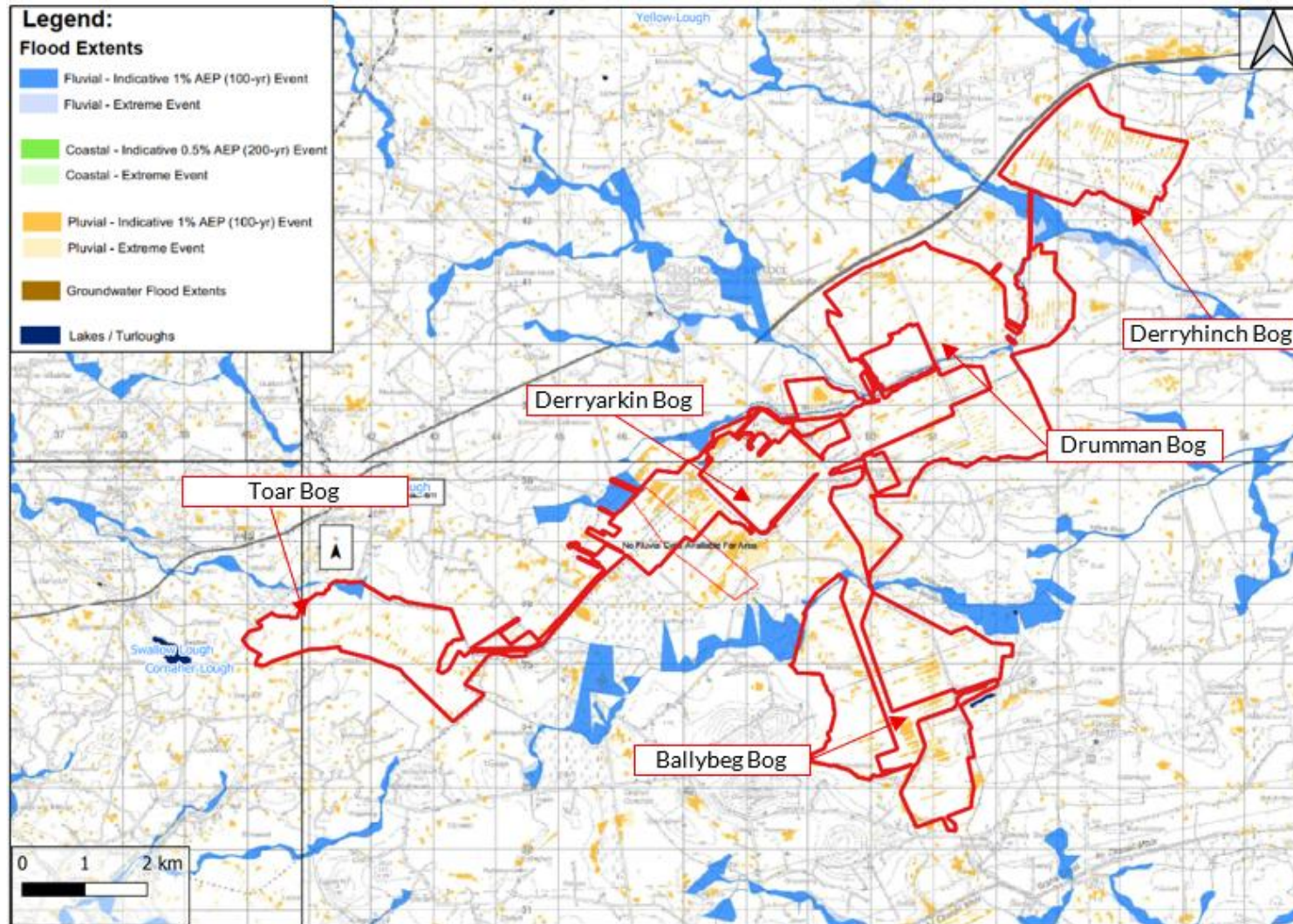


Figure 3-2: Indicative Flood Mapping [extract from PFRA Map 251, 252, 233, 234]

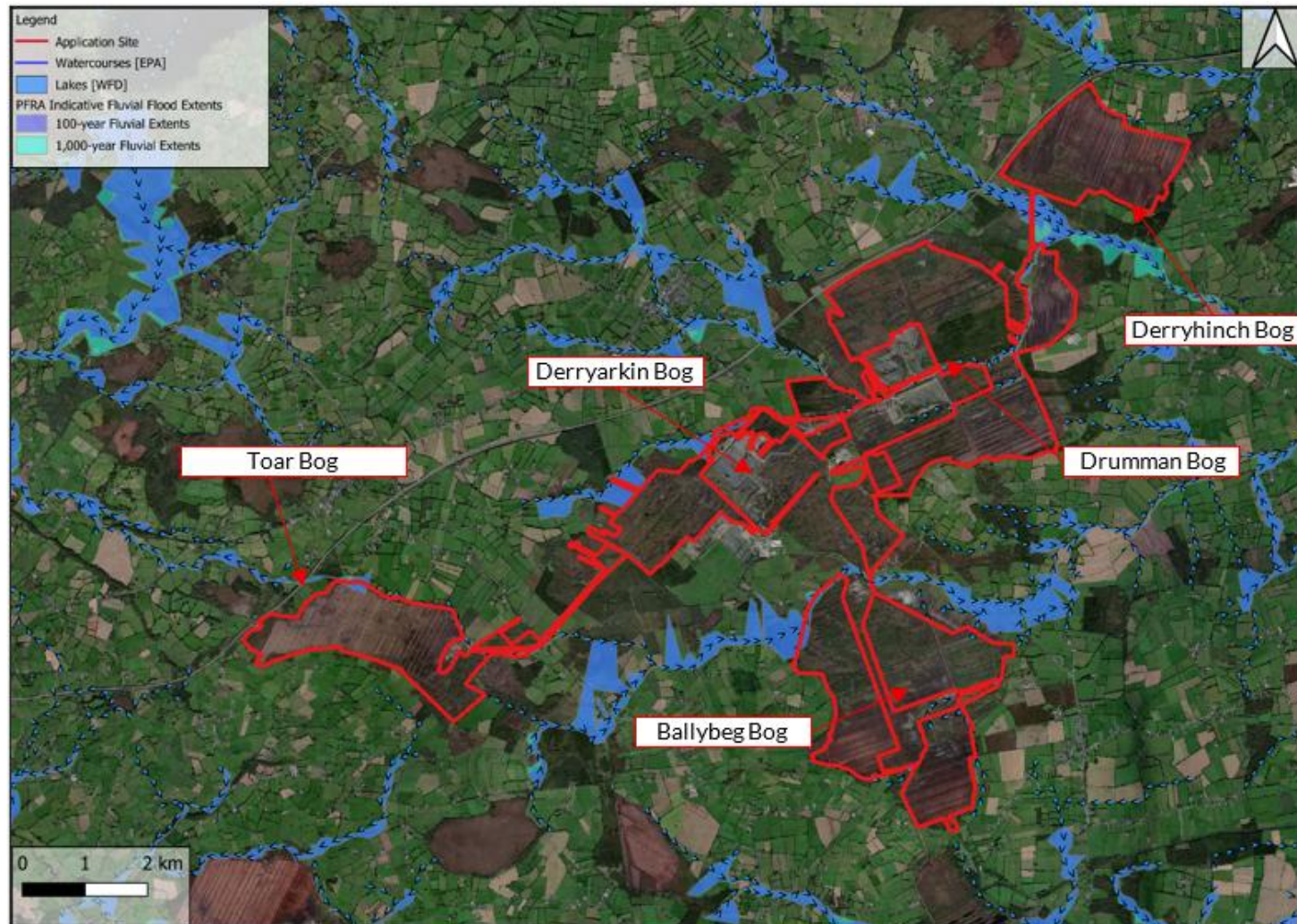


Figure 3-3: PFRA Fluvial Flood Extents

The PFRA mapping indicates that the Application Site would be liable to fluvial flooding during a 1% AEP (1 in 100-year) event. It also indicates that the Application Site is liable to pluvial flooding during a 1% AEP event. PFRA mapping suggests that the Application Site is not liable to either coastal or groundwater flooding.

Limitations on potential sources of error associated with the PFRA maps include:

- Assumed channel capacity (due to absence of channel survey information)
- Absence of flood defences and other drainage improvements and channel structures (bridges, weirs, culverts)
- Local errors in the national Digital Terrain Model (DTM)

3.3 NATIONAL INDICATIVE FLUVIAL MAPPING (NIFM) 2020

In 2020, the OPW produced the second-generation indicative fluvial flood mapping, improving upon the first generation PFRA and producing higher quality flood maps⁷.

The NIFM Flood Mapping Technical Data notes that *“Cross sectional surveys have not been used to define the dimensions of river channels and structures within the 2D model. Channels have been represented in the 2D model by assuming their channel capacity is equivalent to the estimation of [the index flood flow]”*⁸. The 2D model uses a Digital Terrain Model with a grid scale of 5m.

Figure 3-4 provides an overview of the 1 in 100-year (1% AEP) and 1 in 1000-year (0.1% AEP) current fluvial flood extents from the rivers that were modelled as part of this study in the vicinity of the Application Site.

There are two areas of fluvial flooding noted within the Derryarkin site, one extent is located in the south and arises due to flooding from the River Rathgarrett and the Yellow River. The other extent is located in the northwest of the site and arises due to flooding from the Kiltotan and Collinstown River. Both areas flood in a 1 in 100-year (1% AEP) event. Slightly larger extents are noted in the same areas in 1 in 1000-year (0.1% AEP) events.

There is also flooding noted along the connecting road between the Derryarkin and Toar bogs during the 1 in 100-year event.

There is one area of fluvial flooding noted within the Ballybeg site, this extent is located in the north and arises due to flooding from the Yellow River. Both areas flood in a 1 in 100-year (1% AEP) event. Slightly larger extents are noted in the same areas in 1 in 1000-year (0.1% AEP) events.

The River Mongagh flows through the Drumman site. During a 1% AEP fluvial event it is predicted to overtop its banks in two distinct locations. During a 0.1% AEP fluvial event there are four noted areas of fluvial flooding.

The Derryhinch site is liable to fluvial flooding during a 1% AEP fluvial event as a result of flooding from the Milltownpass River.

⁷ National Indicative Fluvial Mapping; Applying and Updating FSU Data to Support Revised Flood Risk Mapping for Ireland, Brown et al., Irish National Hydrology Conference 2019

⁸ https://www.floodinfo.ie/map/nifm_user_guidance_notes/

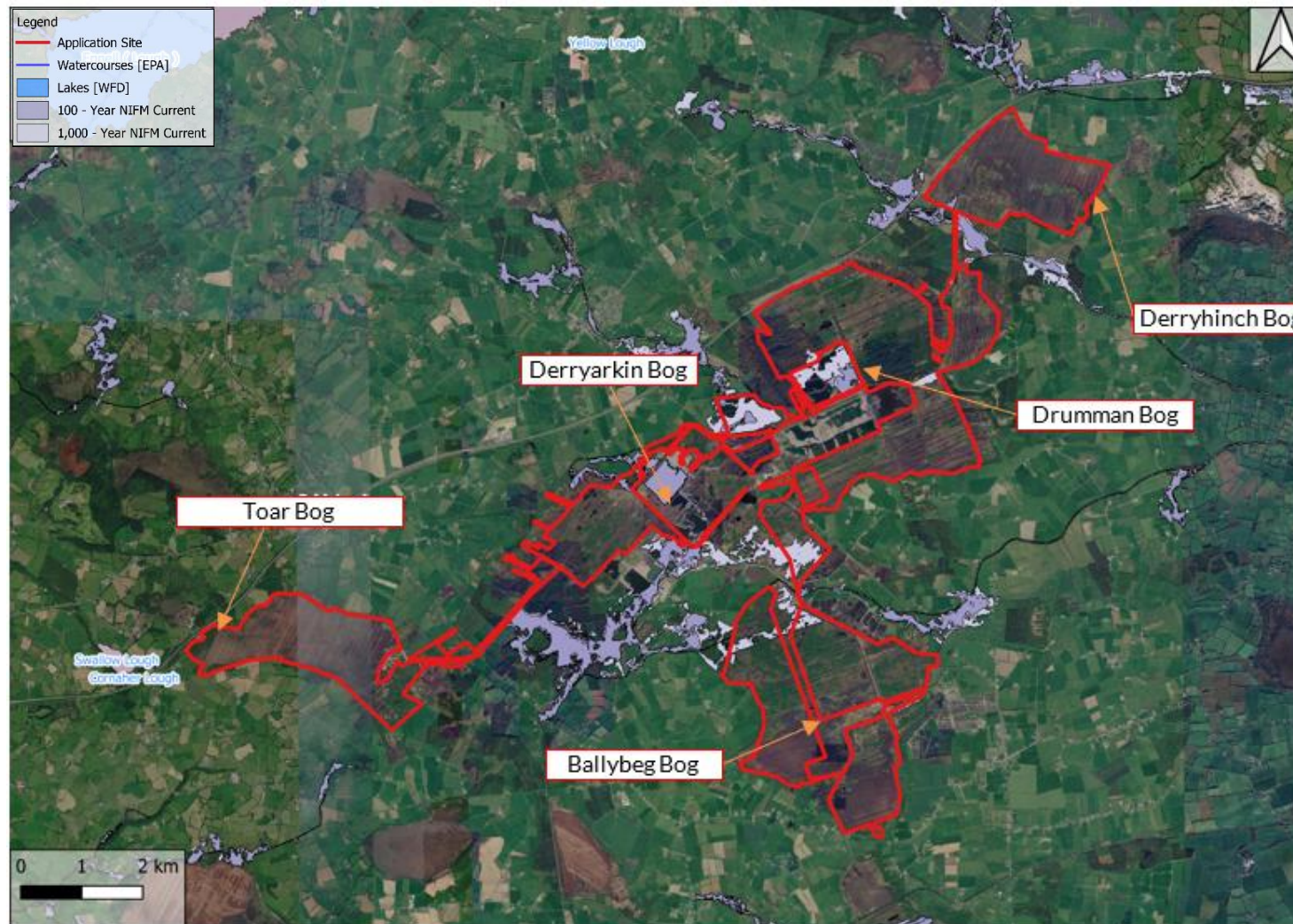


Figure 3-4: National Indicative Fluvial Mapping 2020- Existing Scenario

The NIFM update also included an assessment of the likely impact of climate change on flood risk in the area. The flood extents for the 1 in 100-year (1% AEP) and 1 in 1000-year (0.1% AEP) MRFS events are shown in Figure 3-5.

The mapping is similar to the current scenario with slightly larger areas shown as liable to flooding in the Derryarkin, Ballybeg, Derryhinch and Drumman bogs. The Application Site is liable to flooding in a 1 in 100-year (1% AEP) MRFS event.

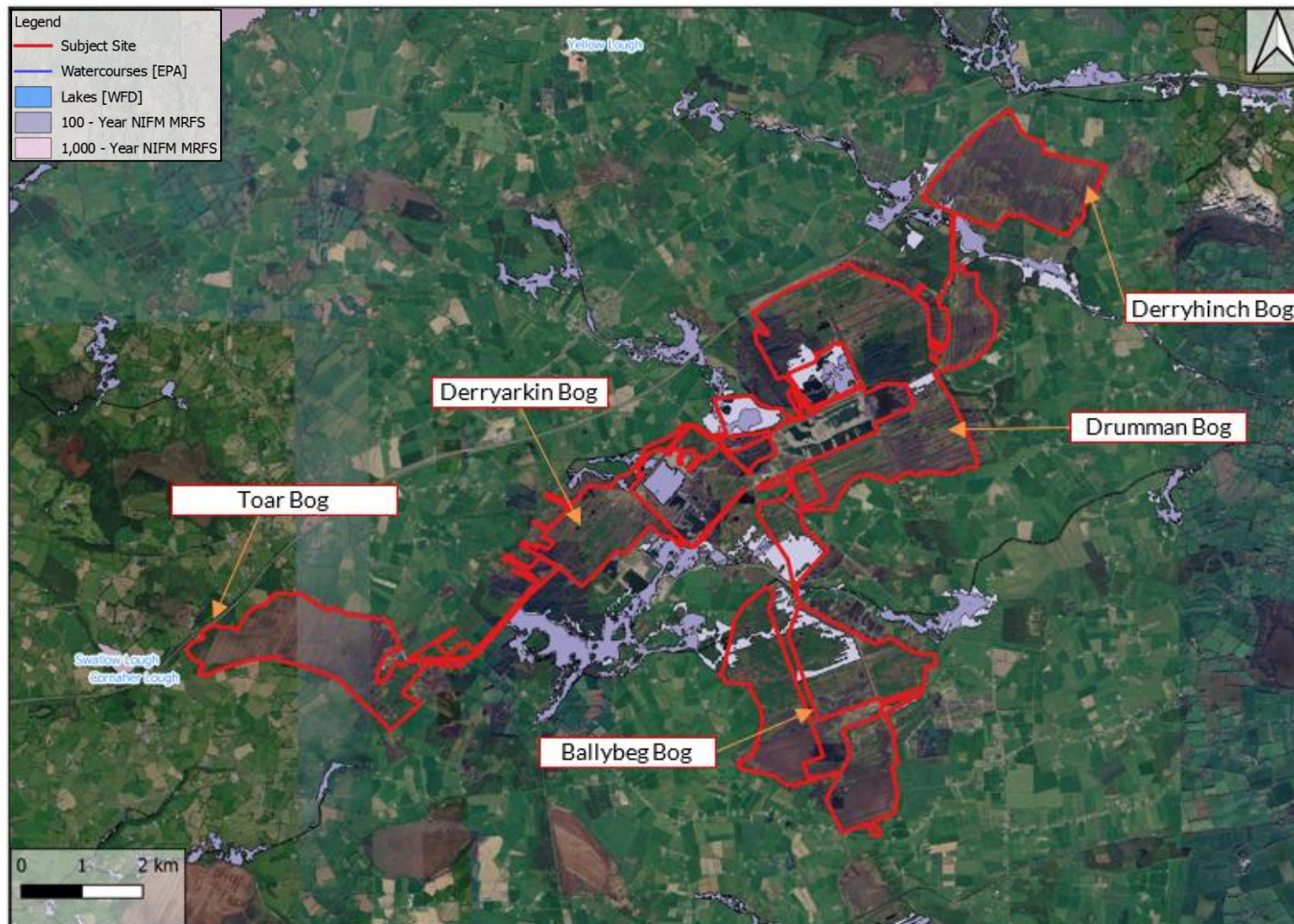


Figure 3-5: National Indicative Fluvial Mapping 2020- Mid-Range Future Scenario

It should be noted as well that there is a certain level of uncertainty pertaining to these findings due to not all of the watercourses in the vicinity of the Application Site being modelled as part of the NIFM study.

3.4 CATCHMENT FLOOD RISK ASSESSMENT AND MANAGEMENT STUDY

In 2015, the OPW produced flood maps as part of the Catchment Flood Risk Assessment and Management (CFRAM) Study. The flood extents in these maps are based on detailed modelling of Areas for Further Assessment identified by the National Preliminary Flood Risk Assessment⁹.

None of the relevant watercourses to the Application Site were modelled as part of this study.

3.5 OPW DRAINAGE DISTRICTS AND ARTERIAL DRAINAGE SCHEMES

The OPW Drainage Districts were carried out by the commissioners of Public Works under a number of drainage and navigation acts from 1842 to the 1930s to improve land for agriculture and to mitigate flooding.¹⁰ The local authorities are charged with the responsibility to maintain Drainage Districts.

Benefited lands are areas that were previously subject to poor drainage and/or flooding but that have benefited from the implementation of Boyne Arterial Drainage Scheme carried out under the Arterial Drainage Act 1945.

The majority of the Application Site has benefited from the implementation of Boyne Arterial Drainage Scheme however; it is not located in an OPW Drainage District (Figure 3-6).

¹⁰ www.floodinfo.ie



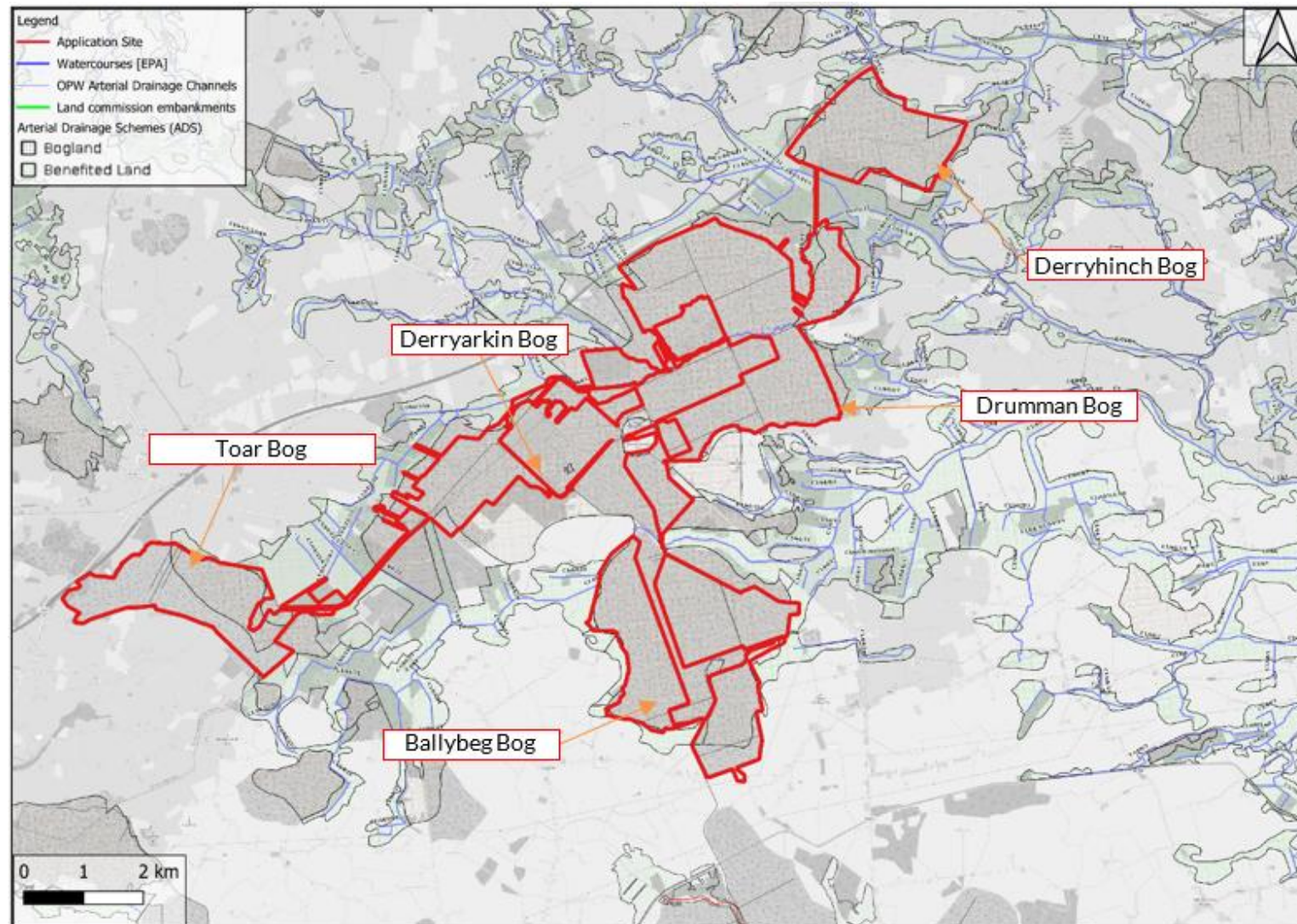


Figure 3-6: Arterial Drainage

3.6 GEOLOGICAL SURVEY IRELAND MAPPING

Based on a review of the OPW's Preliminary Flood Risk Assessment (PFRA) mapping (Figure 3-2) there is no noted risk of groundwater flooding to the Application Site.

GSI Groundwater Flooding Probability Maps¹¹ for the Application Site were reviewed (Figure 3-7). No areas of GSI historic groundwater flooding were noted within the Application Site boundaries. The closest groundwater feature is 30m south-west of the Toar bog; there are further groundwater extents 1km north-west of the Derryarkin bog.

GSI Surface Water Flood mapping from 2015/2016 was reviewed. This showed evidence of surface water flooding in Derryarkin, Drumman, Ballybeg as well as Derryhinch bogs.

¹¹FloodInfo.ie | National Flood Information Portal, Available at:
<https://www.floodinfo.ie/map/floodmaps/>

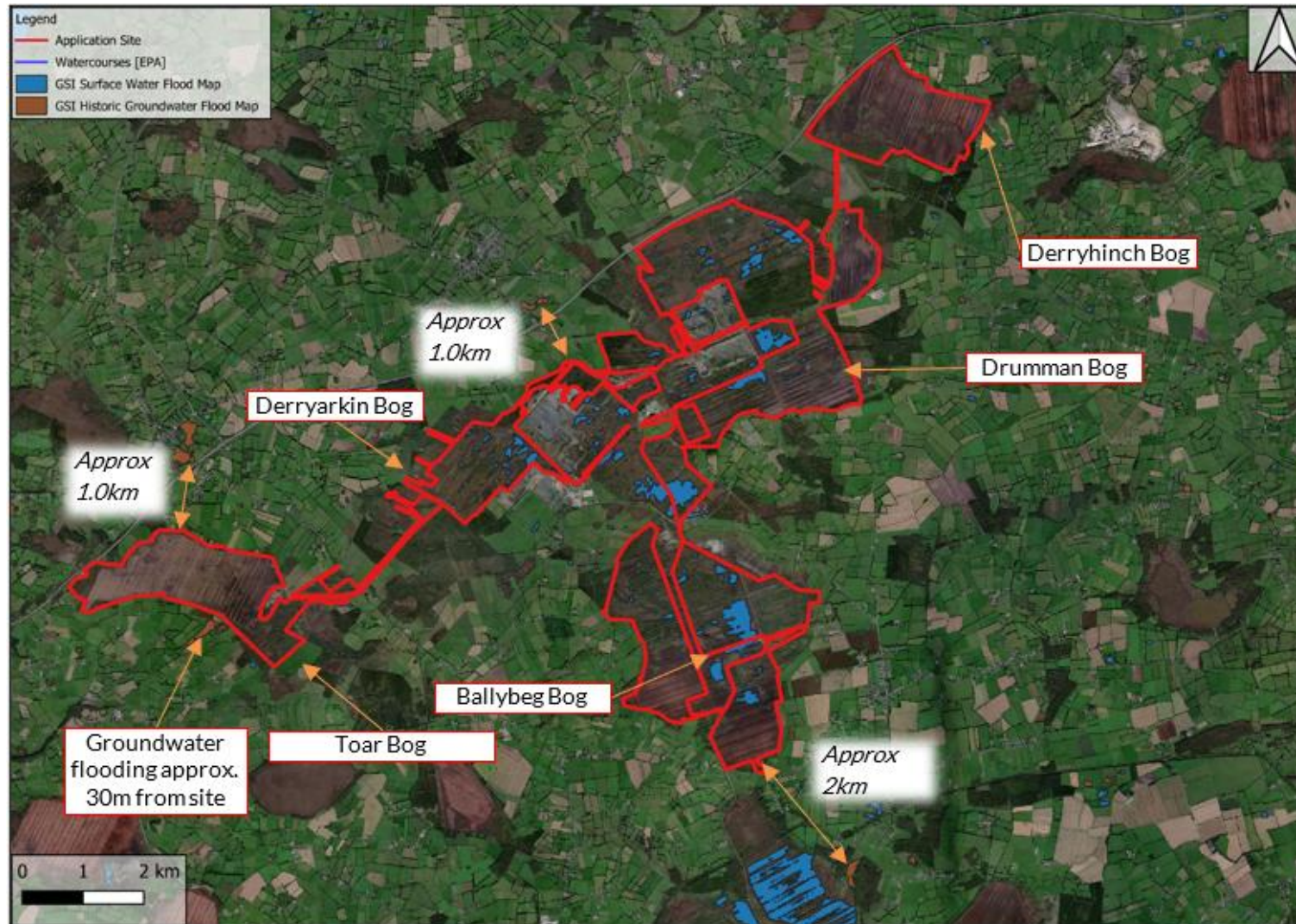


Figure 3-7: GSI Mapping of Historic Surface and Groundwater Flood Extents

Geological Survey Ireland (GSI) subsurface mapping of karst features¹² (Figure 3-8). There are no karst features within the boundaries of the Application Site. The nearest feature is a spring located approximately 700 m south of the Ballybeg bog site.

¹²GSI Groundwater Data Viewer, Available at:
<https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=7e8a202301594687ab14629a10b748ef>



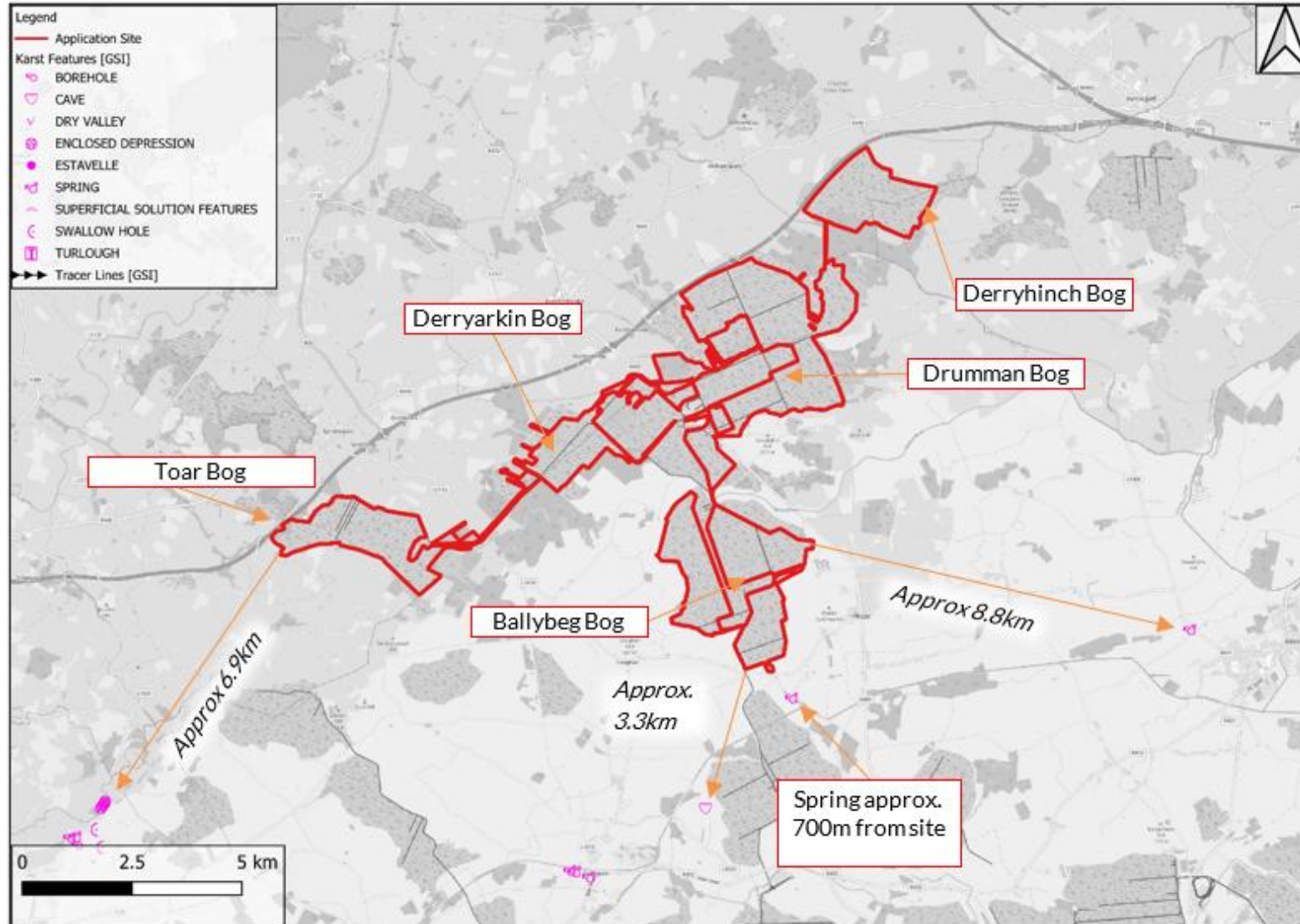


Figure 3-8: GSI Mapping of Karst Features

3.7 SITE DRAINAGE

Drainage works commenced at the Application Site in 1950. The Application Site was drained by a series of parallel open ditches to facilitate peat production. Large areas of the site have been stripped to the subsoil layer as a result of peat extraction operations. The drainage ditches installed in the worked bog discharge to the natural drainage of the area. Similar to arterial drainage schemes, the streams surrounding the bog and within the boundary were straightened in the 1950s to 1970s.

As part of the Third Development Programme in the 1970s (refer to Chapter 4 - Section 4.5 of the remedial EIAR), Bord na Móna decided in 1974 to install specially designed and constructed silt ponds across its landbank. The purpose of this was to control surface water emissions, thereby trapping more than 90% of the suspended solids present in the drainage waters¹³. In 1975, experiments were carried out to establish the optimum size, number and location of silt ponds required for a given area.

As well as installing silt ponds in all new bogs from this date, Bord na Móna decided to fit ponds in all previously developed. In the provision of silt ponds across the bogs, the perimeter drains were now diverted through the ponds prior to discharge into a nearby surface water body. Silts ponds which were installed in the early 1970s, were reviewed with additional ponds installed in 1978. As detailed in Chapter 4, further Bord na Móna's records show that silt pond measures were introduced across all the Bord na Móna's bogs in the early to mid-1980s in response to the 1977 *Water Pollution Act*. All silt ponds were in place pre-1988. Figure 3-10 provides an depiction of the silt ponds installed within the Derrygreenagh Bog Group.

During the Peat Extraction Phase, the deepening and maintenance of drainage channels continued beyond 1988 and remained ongoing at each bog until peat extraction ceased. As the areas subject to peat extraction gradually decreased in extent over time, and as the available peat depth correspondingly reduced, the number and extent of drains requiring deepening and maintenance also reduced over time.

Drainage features installed across the Application Site to facilitate peat extraction included drainage channels, silt ponds and a submersible cofferdam pump.

A Plan identifying the drainage features within the Application Site is provided in Figure 3-9 and a summary of the drainage features on each bog follows.

¹³ Clarke, Donal, *Brown Gold: A History of Bord na Móna and the Irish Peat Industry* (2010)



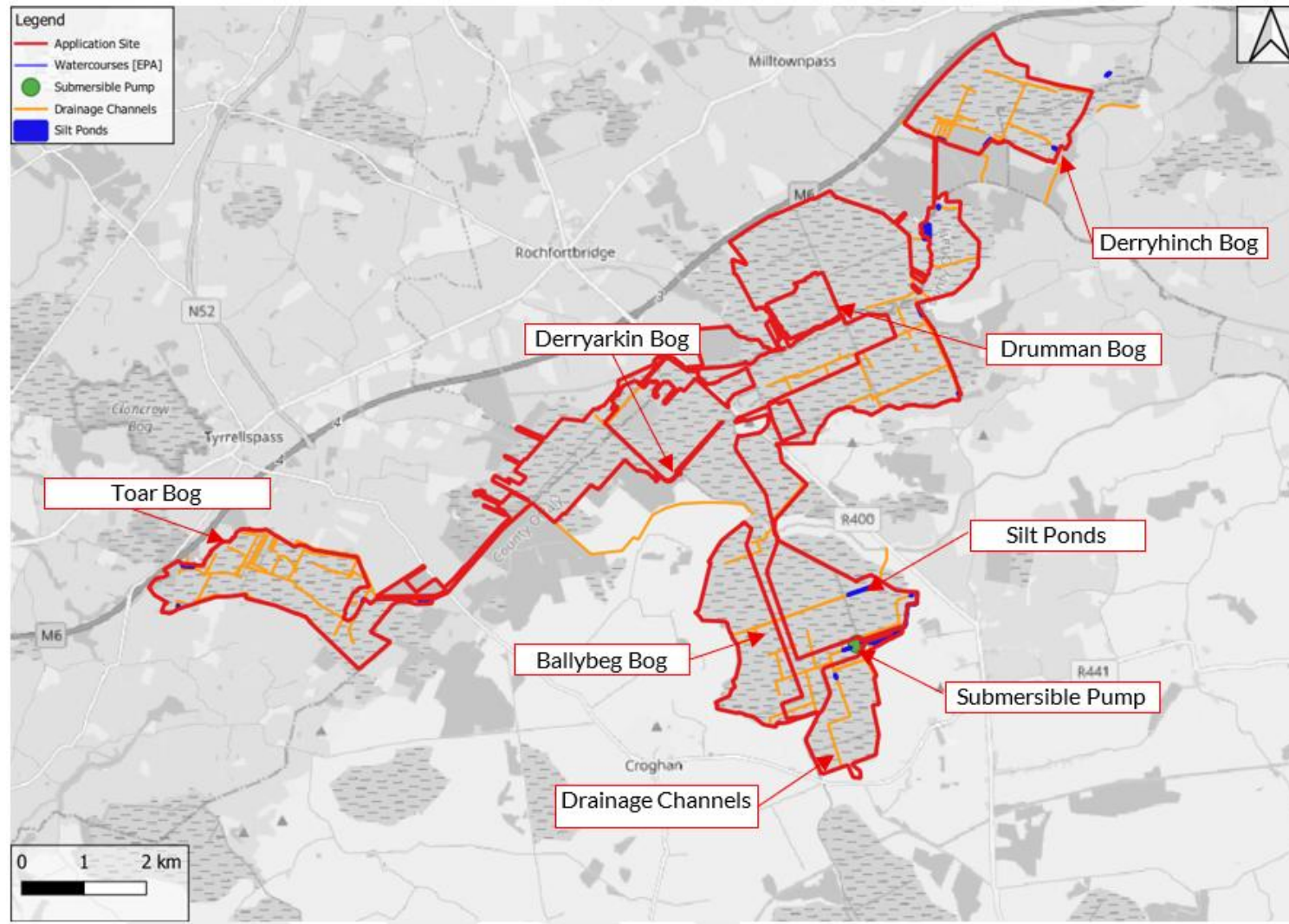


Figure 3-9: BnM Drainage Channel layout

3.7.1 Derryhinch Bog

Drainage was fully inserted in Derryhinch Bog by 1988.

There were four silt ponds and no pumps installed on Derryhinch Bog. The drainage features remained the same until peat extraction ceased at Derryhinch Bog in 2017.

3.7.2 Drumman Bog

Drainage had been fully inserted in Drumman Bog by 1988.

There were six silt ponds and no pumps installed on Drumman Bog. These drainage features remained the same until peat extraction ceased at Drumman Bog in 2018.

3.7.3 Derryarkin Bog

In 1988, drainage had been fully inserted in Derryarkin Bog.

There were no silt ponds, and no pumps installed on Derryarkin Bog.

Peat extraction in Derryarkin Bog ceased between 1988 and 1991 and the number of drainage features remained the same at Derryarkin Bog up to the peat extraction ceased.

3.7.4 Toar Bog

Drainage had been fully inserted in Toar Bog by 1988.

There were six silt ponds, and no pumps installed on Toar Bog. The number of drainage features on site remained the same until peat extraction ceased at Toar Bog in 2018.

3.7.5 Ballybeg Bog

Drainage had been fully inserted into Ballybeg Bog by 1988.

Verbal communication from a former employee confirmed that two screw pumps were installed at Ballybeg Bog in 1987 and were later replaced by a modern submersible pump around the year 2000.

In 1988, there were six silt ponds at Ballybeg Bog. Peat extraction ceased at Ballybeg Bog in 2020.



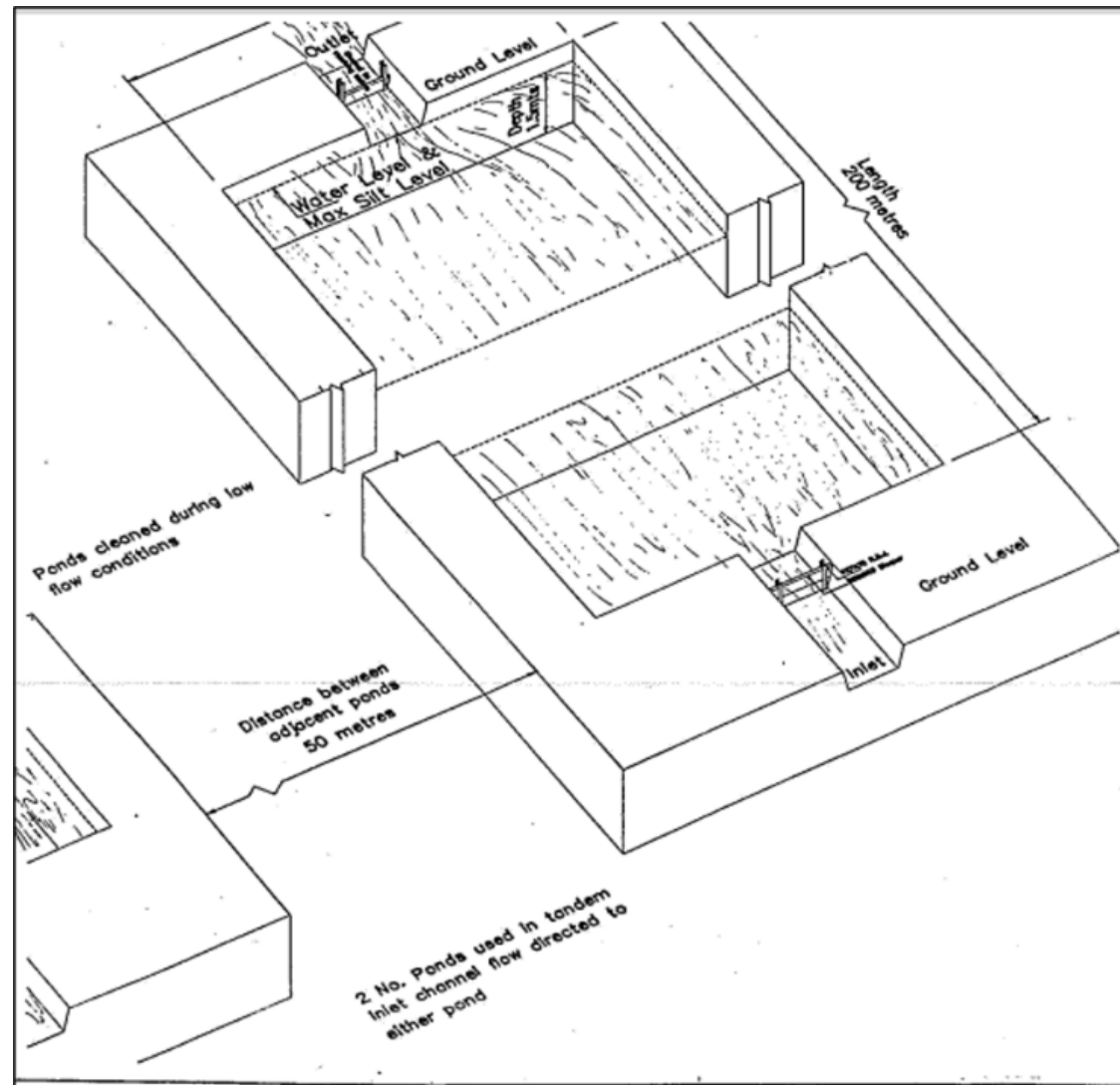


Figure 3-10: Silt Pond design implemented at the Derrygreenagh Bog Group (Source: Bord na Móna IPC Licence Application submitted to the EPA in 1999)

4. CONCLUSIONS

TOBIN was appointed by Bord Na Mona to undertake a Stage 1 Flood Risk Assessment (FRA) for the former peat extraction sites. The Application Site consists of five bogs, all of which form part of the Substitute Consent application:

- Toar
- Derryarkin
- Drumman
- Derryhinch
- Ballybeg

In accordance with the Planning System and Flood Risk Management Guidelines for Planning Authorities (DoEHLG and OPW, 2009), the different phases of the project have been classified as follows:

4.1 PEAT EXTRACTION PHASE

The extraction of peat is classified as a “less vulnerable development”, as it is comparable to mineral extraction activities under the vulnerability classification system set out in the Guidelines.

4.2 CURRENT PHASE

Peat extraction ceased at the Application Site in June 2020. The site remains regulated under IPC Licence P0501-01, with decommissioning works undertaken in accordance with the EPA licence requirements. Peat stockpiles were removed from the Application Site in 2021 and a programme is underway to remove or decommission remaining infrastructure, equipment, waste materials and ancillary infrastructure where required.

With regards to the Current Phase, the decommissioning of remaining infrastructure in accordance with the IPC Licence are considered “water compatible” and are therefore appropriate within all flood zones.

4.3 REMEDIAL PHASE

Following decommissioning, rehabilitation of the cutaway bogs will be undertaken in accordance with the IPC Licence (Reg: P0501-01) conditions and subject to EPA approval. As required per condition of the IPC Licence, Bord na Móna has prepared draft Cutaway Bog Decommissioning and Rehabilitation Plans for the bogs within the Application Site. The primary objective of IPC rehabilitation is environmental stabilisation, supporting the development of self-sustaining peatland habitats.

The proposed remedial works are classified as “Water-Compatible Development” and are therefore considered appropriate within all Flood Zones.

4.4 FLOOD RISK SUMMARY

An assessment of the principal sources of flood risk affecting the Application Site was undertaken using available flood mapping, historical records and other relevant datasets. A summary of the flood risk is provided below.

4.4.1 Fluvial Flooding

Based on a review of available flood risk information, parts of the Application Site are potentially susceptible to fluvial flooding.

The NIFM mapping indicates that the Derryarkin, Drumman, Derryhinch and Ballybeg bogs may be affected by flooding in a 1 in 100-year (1% AEP) event. Under the MRFS, these same extents show further flood areas.

Detailed CFRAM flood mapping is not available for the watercourses within the vicinity of the Application Site. PFRA mapping shows evidence of potential fluvial flood risk during a 1% AEP event within the Derryarkin, Drumman, Derryhinch and Ballybeg bogs.

During the peat extraction phase, fluvial floods arising were managed by the extensive drainage channels and a submersible pump located in Ballybeg.

4.4.2 Coastal Flooding

The Application Site is not at risk of coastal flooding due to its distance inland from coastal waters.

4.4.3 Pluvial Flooding

PFRA mapping indicates large areas of potential pluvial flooding within the Application Site. The Application Site is in low-lying land as the ground level was lowered as the bog was harvested over time.

During the peat extraction phase, surface water was managed through dedicated pumps at Ballybeg, and drainage channels across the Application Site. Heavy rainfall will contribute to the surface water build up and is expected to be managed in the existing drainage regime.

4.4.4 Groundwater Flooding

While there are no recorded groundwater flood extents within the Application Site, large areas of surface water flooding have been identified. These floods are currently managed by the existing channels across the site and Ballybeg pump.

The existing drainage features (see 3.7) are considered suitable in assisting with the minimisation of flood extents that may arise.

The current and proposed remedial works for the bogs are classified as “water compatible” and are considered suitable in any Flood Zone. Therefore, the flood risk to this phase of the Project is minimal. However, when there are works underway in areas of flood risk thus relevant health and safety measures should be applied.

4.4.5 Conclusion

This flood risk assessment indicates that the principal flood risks affecting the Application Site are associated with fluvial and pluvial flooding, primarily within the low-lying cutaway bog areas of Derryarkin, Drumman, Derryhinch and Ballybeg. These areas have been managed through an extensive network of drainage channels and, in the case of Ballybeg, a dedicated pump system developed pre-1988. While flood risk mapping identifies areas of potential flooding across the site, no significant risk has been identified, and there are no recorded groundwater flood extents within the Application Site. The existing drainage infrastructure continues to provide an important role in managing surface water across the bogs.

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