Appendix 9.3

Flood Risk Assessment

Coolglass Wind Farm EIAR Volume 3

Coolglass Wind Farm Limited

SLR Project No.: 501.V00727.00006

27 June 2023

FLOOD RISK ASSESSMENT – STAGE 1 & 2

Proposed Coolglass Wind Farm at Fossy, Co. Laois

Prepared for: Statkraft

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1.0 INTRODUCTION

SLR Consulting (Ireland) (SLR) has been commissioned by Statkraft (the Client) to complete a Flood Risk Assessment (FRA) in support of a planning application for the proposed Coolglass wind farm development.

1.1 Proposed Development

The proposed project will primarily consist of a wind farm of 13 number of wind turbine generators (WTGs), one substation compound along with ancillary civil and electrical infrastructure.

The associated grid connection route will consist entirely of underground cable and will most likely connect the on-site substation 110 kV substation at Coolnabacky, within the townland of Coolnabacky. However, the grid connection does not form part of this planning application and the final grid connection route will be assessed as part of a separate planning and EIA consent process.

1.2 Project Description and Site Location

The turbine layout consists of 13 no turbine layout among two clusters within Fossy Hill and Wolfhill, Co Laois.

- The northern cluster (Fossy Hill) consists of seven turbines (nos 1-7) broadly arrayed in mostly commercial forestry plantation with varying stages of maturity. Turbine 4 is to be located within an existing agricultural field.
- The southern cluster will comprise 6 no turbines (nos 9-14), all arrayed within commercial plantation at varying stages of maturity.

The proposed development layout is shown on Figure 1-1.

Figure 1-1
The proposed wind farm layout

Figure 1-2 below shows all locations of crossings points the proposed wind farm site. The proposed development will utilize four existing crossings. There will be one new crossing over the Fallowbeg Upper stream. The Section 50 consent from the Office of Public Works (OPW) will be required for this crossing point.

Figure 1-2
Watercourse Crossings

A list of all crossing points and their coordinates in the ITM system are provided in Table 1-1.

Table 1-1
Watercourse Crossings -Coolglass Wind Farm

Crossing Point	Existing / Proposed	X coordinate	Y coordinate
WF-HF1	Existing	656925	684326
WF-HF2	Existing	656707	687931
WF-HF3	Existing	656548	688049
WF-HF4	Proposed	656531	688072
WF-HF5	Existing	656810	688357

1.3 Nominated Hydrologists

This FRA report has been prepared by:

- *EurGeol Dr. Peter Glanville PGeo. PhD (Geomorphology) MSc (GIS) – Technical Director Hydrology.*
- *Kristian Divjak MSc (Water Resources)– Senior Flood Risk Engineer*

Peter is a Technical Director (Hydrology) with SLR and has over 20 years' experience in the area of Hydrology and Flood Risk Assessments. Peter has undertaken and prepared flood risk assessments for a wide range of projects and has also prepared Section 4 Discharge Licences for a variety of developments. He has also been involved as a hydrologist in a range of environmental monitoring projects for Environmental Baseline Studies, exploration operations, quarry site operations and infrastructure projects – this work has typically included hydrology monitoring (flow) and water quality sampling and testing.

Kristian is a hydrologist with SLR with over 6 years' experience in the sector, specialising in hydraulic modelling, drainage design and hydrology environmental assessments for planning applications. He has undertaken and prepared flood risk assessment repots for a wide range of projects across Ireland, UK and Croatia.

1.4 Aim of the Flood Risk Assessment

The aim of this FRA is to assess the potential flood risks and to demonstrate that the flood risk to the site has been considered for the planning application.

This FRA has been undertaken in accordance with the National Guidelines for Planning Authorities for Developments and Flood Risk Management.

1.5 Site Visit

Staff from SLR has visited the site on numerous occasions since 2021. The key objectives of the site visits were to assess the existing hydrological and hydrogeological environment and establish existing surface water management activities at the site. No significant constraints were identified during the site walkover.

1.6 Limitations of this Flood Risk Assessment

This assessment is based on available desktop information, information from a site walkover survey and professional experience in undertaking FRA's. The risk assessment is semi-quantitative based on the publicly available information and walkover survey.

No hydraulic modelling has been undertaken as part of this FRA.

2.0 FLOOD PLANNING GUIDELINES

In November 2009, the Office of Public Works (OPW) and Department of the Environment, Heritage and Local Government (DoEHLG) issued guidelines for planning authorities addressing the management of flood risk in the planning system[1] (hereinafter referred to as the 'Flood Planning Guidelines').

The flood planning guidelines introduced comprehensive mechanisms for the incorporation of flood risk identification, assessment and management into the planning process. Implementation of the guidelines will be achieved through actions at national, regional, local authority and site-specific levels, depending on the plan or development project being considered.

2.1 Planning Objectives in Relation to Flooding

The Flood Planning Guidelines require the planning system at national, regional and local level to:

- Avoid development in areas at risk of flooding by not permitting development in flood risk areas, particularly floodplains, unless where it can be fully justified, there are wider sustainability grounds for appropriate development and unless the flood risk can be managed to an acceptable level, without increasing flood risk elsewhere and, where possible, reducing flood risk overall;
- Adopt a sequential approach to flood risk management based on avoidance, reduction and then mitigation of flood risk as the overall framework for assessing the location of new development in the development planning processes; and
- Incorporate flood risk assessment into the process of making decisions on planning applications and planning appeals.

A sequential approach is adopted in the Flood Planning Guidelines in order to guide development away from areas at risk of flooding, this entails the following actions:

- **Avoid** Locate new development in lower risk flood zones;
- **Substitute** Ensure that the type of development is not particularly vulnerable to the adverse impacts of flooding;
- **Justify** Ensure that the development is considered for strategic reasons;
- **Mitigate** Ensure that flood risk is reduced to acceptable levels; and
- **Proceed** Development to proceed only where Justification Test passed and emergency planning measures are in place.

The sequential approach identifies and defines three different flood zones (designated Zones A, B and C) in order to guide development at a particular site. The flood zones are:

Zone A *High probability of flooding. This zone defines areas with the highest risk of flooding from rivers (i.e. more than 1% probability or more than 1 in 100) and the coast (i.e. more than 0.5% probability or more than 1 in 200).*

Zone B *Moderate probability of flooding. This zone defines areas with a moderate risk of flooding from rivers (i.e. 0.1% to 1% probability or between 1 in 100 and 1 in 1000) and the coast (i.e. 0.1% to 0.5% probability or between 1 in 200 and 1 in 1000).*

Zone C *Low probability of flooding. This zone defines areas with a low risk of flooding from rivers and the coast (i.e. less than 0.1% probability or less than 1 in 1000).*

[1] *The Planning System and Flood Risk Management Guidelines for Planning Authorities* (2009): Office of Public Works and the Department of the Environment, Heritage and Local Government.

2.2 Flood Risk Management

Technical Appendix B of the Flood Planning Guidelines addresses the incorporation of flood risk management in the design of developments, and sets out practical measures, with the aid of design examples, which can be incorporated into the development design in order to reduce the risk of flooding in areas where a potential flood risk has been identified. The design examples match flood risk with appropriate land uses, while also protecting flood conveyance routes and preserving floodplain storage.

A number of core principles are outlined in the Flood Planning Guidelines regarding design for, and management of, flood risk. These follow a sequential approach to flood risk management, and involve:

- Locating development away from areas at risk of flooding, where possible;
- Substitution of less vulnerable land uses for the more vulnerable ones that are to be replaced, where the principle of development within flood risk areas has been established; and
- Identifying and protecting land required for current and future flood risk management, such as conveyance routes, flood storage areas and flood protection schemes etc. where the principle of development within flood risk areas has been established.

In the Flood Planning Guidelines, Section 3.4 of Appendix B outlines practical landscape and drainage measures which can be closely integrated to play a key role in effective flood-reduction measures if incorporated into the design of developments. Key elements which can be incorporated include:

- Creating a permeable network and hierarchy of green space providing for direct access to areas of lower flood risk;
- Planting and shaping the land surrounding individual buildings and groups of buildings to encourage drainage away from a property;
- The use of “higher-risk” low-lying ground in waterside areas for recreation, amenity and environmental purposes;
- Modest land-raising of a part of the area at high risk of flooding accompanied by compensatory provision of flood storage in areas of existing lower risk of flooding having considered other natural and built heritage issues;
- Recontouring of edge of floodplain;
- Use of earth bunds to provide local flood defense;
- The use of surface runoff attenuation measures / sustainable drainage systems (SuDS) to manage run-off from rain falling on a development can be an effective means of reducing its impact reflecting natural drainage processes and removing pollutants from urban run-off at source; and
- Avoiding structures in the floodplain.

2.3 Development Vulnerability and Justification Test

The Flood Planning Guidelines classify potential development in terms of its vulnerability to flooding and assigns each land-use to an appropriate Flood Risk Zone. There are three categories, Highly vulnerable development, such as housing, emergency services and strategic infrastructure, Less vulnerable development, such as retail, commercial and industrial uses, and Water compatible development, such flood control infrastructure, docks and marines.

Full list of types of development and related vulnerability class is provided in Table 3.1 of the Flood Planning Guidelines. Uses which are not listed in the table should be considered on their own merits.

Table 3.2 of the Flood Planning Guidelines illustrate those types of development that would be appropriate to each flood zone and those that would be required to meet the Justification Test.

The Justification Test has been prepared to rigorously assess the appropriateness of developments that are being considered in areas of moderate or high flood risk. The test comprises the following two processes:

- The first is the Plan-making Justification Test and is used at the plan preparation and adoption stage where it is intended to zone or otherwise designate land which is at moderate to high risk of flooding
- The second is the Development Management Justification Test and is used at the planning application stage where it is intended to develop land at moderate or high risk of flooding for uses or development vulnerable to flooding that would generally be inappropriate for that land.

2.4 Flood Risk Assessment - Methodology

A methodology for the identification and assessment of flood risk is outlined in Technical Appendix A of the Flood Planning Guidelines. The aim of the FRA is to identify and quantify the risk of flooding to land, property and people and also to provide sufficient information to assess whether the site is appropriate at a specific site.

The FRA is undertaken over a number of stages which each progressing to a more detailed assessment, dependant on the outcome of each stage, until the level of detail in the FRA is appropriate to support the planning application or it has been demonstrated that flooding is not a relevant issue for the site. The stages in the assessment are typically;

- **Stage 1:** Flood Risk Identification;
- **Stage 2:** Initial Flood Risk Assessment; and
- **Stage 3:** Detailed Flood Risk Assessment (including quantitative model).

At the end of Stages 1 and 2, a decision is taken as to whether it is necessary to proceed to the next stage in the assessment process, in relation to flood risk at a site.

2.5 Flood Risk Assessment Conceptual Model

To assess the flood risk for a particular site, it is essential to understand what the risk is. This is undertaken using a conceptual Source-Pathway-Receptor (SPR) model, which is widely used in understanding and managing environmental risks.

In order to develop a conceptual SPR model for the purpose of risk assessment, it is necessary to understand the origin and magnitude of potential flooding (the **Source**), the mechanism or route of flooding (the **Pathway**) and the nature / scale of the site (the **Receptor**).

2.6 Data Sources

In order to assess the flood risk at a site, it is necessary to understand both the flood Source and Pathway for flooding at a site. This is completed using available desktop data for Stages 1 and 2 of the FRA. Desktop data sources for Stages 1 and 2 include:

- **The Office of Public Works** (Flood Risk Assessment Maps, flood study reports and flood hazard mapping);
- **Environmental Protection Agency** (hydrology flow / levels, catchment boundaries);
- **Ordnance Survey of Ireland** (historical mapping);
- **Geological Survey of Ireland** (groundwater flooding, soils, subsoil, karst);
- **Site Walkover and Topographic Surveys** (site water management and topographic survey).

This report follows the methodology for a Stage 1 flood risk identification, Stage 2 initial flood risk assessment and Stage 3 detailed flood risk assessment at the site-specific level as outlined in the Flood Planning Guidelines.

3.0 Baseline Scenario

This section details the information obtained from the desk top study relating to the site of the proposed development. The desktop study obtained information relating to:

- Topography;
- Soils and geology;
- Hydrology (surface water features);
- Hydrogeology (groundwater); and

The baseline environment within c. 500m of the planning area red line boundary was assessed here.

3.1 Soils and Geology

The Irish Soil Information System project has developed a national association soil map for Ireland, the project is co-funded by Teagasc and the Environmental Protection Agency (EPA).

The soils are discussed in detail in Chapter 8 of the EIAR.

The subsoils at the site are till derived from Namurian sandstone and shales, and bedrock outcrop/sucrop, see Figure 8-2 of the EIAR.

These subsoils are highly permeable (GSI online map viewer).

3.2 Hydrology

The existing topography in the vicinity of the site varies in level from approximately 190m to 330m AOD at the northern cluster and 190m 300m AOD at the southern cluster.

The wind farm site and grid connection route area fall within the boundary of two catchments. The north of the area is within the Barrow catchment (ID 14) and the surface water bodies are comprised of the tributaries of Stradbally River and Crooked River. The Crooked River joins the Stradbally River approximately 6.7 km north of the site.

The key hydrology features at the northern cluster are the Fossy Lower, Timahoe, Honey, Orchard Lower, Fallowbeg Upper, Owveg [Nore] and Scotland Stream. The Fossy Lower stream flows in the western direction where it joins the Aghoney Stream approximately 0.6 km south-west of the wind farm red boundary. The Aghoney Stream is a tributary of the River Stradbally. The surface runoff from the northern area of the wind farm is draining towards the Honey and Orchard_Lower Stream. The Orchard_Lower joins the Honey Stream which runs in the northerly direction where it ultimately joins the River Crooked approximately 3.7 km north of the site.

The surface runoff from the eastern area of the northern cluster flows towards the Fallowbeg Upper Stream which runs in north-eastern direction where it flows into the River Crooked.

The wind farm entrance is located at the confluence of the Scotland Stream and Owveg [Nore] Stream. The Owveg [Nore] Stream flows in the south-western direction where it joins the River Nore approximately 17.6 km from the site.

The surface runoff at the southern cluster of the wind farm is collected by the Clogh Stream, Brennanshill, Crissard and Moyadd Stream. These streams are tributaries of the Clogh Stream. The Clogh Stream flows in the southern direction for approximately 5.8 km where it joins the River Dinin [North] which is a tributary of the River Nore.

3.3 Hydrogeology

The Luggacurren Shale Formation and Killeshin Siltstone Formation north of the site area are are classified by the GSI's groundwater resources maps and classification system as *"Pl - Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones"*[2].

Southbound the Bregaun Flagstone Formation and Moyadd Coal Formation are classified as "*Pu - Poor Aquifer - Bedrock which is Generally Unproductive"*[2].

There are two bands of Carboniferous sandstone, the Clay Gall Sandstone Formation and the Swan Sandstone member of the Coolbaun Formation that transect these lithologies which are classified as *"Lm - Locally Important Aquifer - Bedrock which is Generally Moderately Productive"*[2]. The remainder of the Coolbaun Formation in the area is classified as *"Pu- Poor Aquifer - Bedrock which is Generally Unproductive"*[2]

To the north of the site area, alluvium, gravels and till derived from limestone are classified as *"Lg – Locally important gravel aquifer"*[2].

The GSI's national groundwater vulnerability map has indicated the aquifers in the area of interest classified as 'Low' to 'Extreme'. The majority of the area is classified as both category of 'Extreme' – X and E which are indicative of karst features, or more relevant here – near surface rock[3]

The less extensive vulnerability categories in this area are reflective of overburden permeability and thickness. The areas that are classified as 'High' would be consistent with 3-4m of moderate permeability overburden, 'Moderate' with more than 10m of moderate permeability overburden, and 'Low' with 10m but low permeability overburden.

[2] Geological survey of Ireland - Groundwater resources – bedrock aquifers mapping: www.gsi.ie
[3] Geological survey of Ireland - Groundwater vulnerability mapping: www.gsi.ie

4.0 STAGE 1: FLOOD RISK IDENTIFICATION

Flood risk identification uses existing and recorded information to identify whether there may be any flooding or surface water management issues related to the site. The potential sources of flooding to any site are varied and can include one or more of the following:

- Flooding from rivers (fluvial);
- Flooding from the sea or tidal (coastal);
- Flooding from land (pluvial);
- Flooding from groundwater and karst;
- Flooding from sewers; and
- Flooding from manmade impoundments (reservoirs, canals, and other artificial sources).

4.1 Desktop review of potential flooding sources

4.1.1 Historical Flooding

The Office of Public Works (OPW) is the Government agency with statutory responsibility for flooding. The OPW website (www.floodinfo.ie) indicates that there are no recorded recurring flood events at the site and within 2 km of the site.

The Internet research did not provide any information indicating the site was flooded in the past.

4.1.2 Fluvial Flooding

OPW CFRAM Maps

The Catchment Flood Risk Assessment and Management (CFRAM) Programme has been implemented for seven areas across Ireland termed River Basin Districts (RBDs) which cover the whole country. Each RBD is divided into a number of River Basins (Units of Management, or 'UoMs'), where one Plan has been prepared for each River Basin.

The subject site is within Flood Risk Management Plan the Barrow River Basin (UOM14) and Flood Risk Management Plan for the Nore River Basin (UOM15).

The subject site was outside of detailed modelled area.

OPW National Indicative Flood Mapping

The OPW National Indicative Fluvial Mapping (NIFM) dataset has been produced nationally for catchments greater than 5 km^2 in areas for which flood maps were not produced under the National CFRAM Programme and should be read in this context. The NIFM dataset are 'predictive' flood maps showing indicative areas predicted to be inundated during a theoretical fluvial flood event with an estimated probability of occurrence.

The NIFM are not the best achievable representation of projected flood extents, such as those that could be generated through detailed hydraulic modelling for a particular watercourse; they are only indicative of the predicted flood extent of any given probability at any particular location.

The NIFM dataset shows the modelled extent of land that might be flooded by rivers (fluvial flooding) during a theoretical or 'design' flood event with an estimated probability of occurrence, rather than information for actual floods that have occurred in the past. In this respect, the NIFM data only provide an indication of areas that may be prone to flooding.

The OPW states that the NIFM data may be used in the preparation of a Stage 1 Flood Risk Assessment to identify areas where further assessment would be required for a development. The NIFM data may be used to identify whether flood risk might be a relevant issue when considering a planning application, or when discussing a potential application at pre-planning stage.

According to the NIFM data, the subject site is within Flood Zone C as shown on Figure 4-1 below.

Figure 4-1
NIFM Maps – Flood Zone A and B

4.1.3 Coastal Flooding

A review of the OPW national coastal / tidal flood mapping indicates that the site is not at risk from coastal or tidal flooding due to its location and elevation.

4.1.4 Pluvial Flooding

Pluvial flooding occurs when the amount of rainfall exceeds the capacity of urban storm water drainage systems or the ground to absorb it. This excess water flows overland, ponding in natural or man-made hollows and low-lying areas or behind obstructions.

PFRA pluvial maps show a small, isolated patch between the proposed turbine T2 and T3 indicating pluvial flooding. The areas with potential for pluvial flooding are usually those where a closed depression occurs with no outflow for surface water runoff and where runoff from overland flow can collect and pond, causing flooding. This area has been inspected during the site walkover, and no depression that could lead to ponding has been identified. This type of flooding is not expected at mountainous terrain.

4.1.5 Groundwater Flooding

Groundwater flooding is caused when the water table rises up above ground level, causing flooding to occur at the surface. Such groundwater flooding tends to be seasonal occurring after seasonally higher rainfall. Seasonal rainfall infiltrates into the ground causing the groundwater level to rise and where it rises above the ground surface then groundwater flood occurs.

Groundwater flooding is unlike river or coastal flooding where a flood event may be relatively short lived; groundwater flooding can last up to several months where the groundwater table is still above ground level. An example of groundwater flooding in Ireland is Turloughs in karst limestone environment which can be flooded for several months at a time.

According to the Geological Survey of Ireland (GSI) groundwater flooding probability maps, the site is at a low risk of groundwater flooding.

The GSI Groundwater Flood database does not show any historical groundwater flooding in the area.

4.1.6 OPW Arterial Drainage Benefiting Lands

The site is not within the OPW Arterial Drainage designated 'benefiting lands'. Note, the River Clogh, the main receptor at the southern cluster, is within benefitting lands.

Benefitting lands are lands benefiting from works undertaken as part of the Arterial Drainage Scheme. The OPW have a statutory duty to maintain Arterial Drainage Schemes.

4.2 Classification of the Proposed Development

The wind farm developments are not classified within Table 3.1 of the Flood Planning Guidelines. Thus, it must be considered on their own merits.

Recent ABP judgements[4] have indicated that turbines and access roads are water compatible. However, where turbines and access roads can be in Flood Zone A, when it comes to the layout of wind farms the appropriate approach would be to locate any water sensitive infrastructure, such as substation(s), in Flood Zone C at the site.

While it may be possible to place a wind turbine within a flood zone, the base of the turbine would need to be elevated above the 1:100 year (Flood Zone A) level by at least 600mm to allow for freeboard and climate change.

[4] Case Number: PL09.306500

4.3 Flood Screening - Summary

With reference to identified potential sources of flooding at the site identified in Section 4.1 above, the flood risk from each source is screened in Table 4-1 below.

Table 4-1
Flood Risk Screening

Source of Flooding	Potential to Flood at the Site	Flood Screening - Potential Impact from Flooding
Flooding from rivers (fluvial)	The available CFRAM and NIFM mapping show the site is within Flood Zone C.	Not Significant
Flooding from the sea (coastal / tidal)	The OPW tidal / coastal flood mapping indicates that the site is not at risk from coastal or tidal flooding.	Not Significant
Flooding from land (rainfall - pluvial)	There are no topographic depressions on the site which could flood as a result of overland flow from pluvial flooding. The proposed development will increase impermeable areas. However, each development must include measures to discharge flows at the greenfield levels.	Not Significant
Flooding from groundwater	The likelihood of groundwater flooding of the site is considered to be very remote and the consequence of the site flooding is low.	Not Significant
Flooding from sewers	The site is located within a forestry area. No sewers were identified in the vicinity of the site during the walkover surveys.	Not Significant
Flooding from Impoundments - reservoirs and artificial sources	There are no artificial sources of water in the vicinity of the site.	Not Significant

4.4 Requirement for a Stage 2 Flood Risk Assessment

The Flood Planning Guidelines state that if a flood risk is identified at this Stage 1, it is necessary to progress and undertake a Stage 2 Initial Flood Risk Assessment for the site. Each of the potential flooding sources have been assessed here based on the findings of a desktop study. The desktop survey has been verified by a site visit.

No available sources show the site being at the risk of flooding. However, due to the proposed construction of impermeable areas, the wind farm development will increase the risk of flooding downstream of the site if drainage measures are not applied.

Therefore, it is proposed to proceed to Stage 2 to assess and define drainage mitigation measures.

5.0 STAGE 2: INITIAL FLOOD RISK ASSESSMENT

5.1 Site Runoff

Storm runoff from the site either percolates naturally to the ground or drains towards the watercourses.

A Surface Water Management Plan has been developed for the site, refer to Appendix 7-B of the accompanied EIAR.

The principal components of the proposed water management system at the site are detailed here:

- Clean surface runoff will be kept clean by avoiding disturbance to natural drainage features, and minimising any works in or around drainage features:
- Clean surface runoff will be diverted around excavations and construction areas;
- Surface runoff from construction areas carrying silts or sediments will be collected, and drained towards settlement ponds prior to controlled diffuse release over vegetated surfaces;
- The access roads will be constructed from crushable stones which will allows surface runoff to percolate underground.
- New access roads will be drained by the swales with check dams installed within them. The check dams will slow down velocities and will provide storage within the swales.
- The proposed substation will have its own internal drainage network which will be based on the SuDS, and the runoff post development will be limited to the greenfield runoff.

5.2 Mitigation Measures

The following mitigation measures are recommended at the wind farm site to mitigate any potential future flood risks to the development and to mitigate the increase of the runoff from the site:

- All equipment sensitive to water should be positioned a minimum of 0.3m above surrounding ground levels so that the installed infrastructure is unaffected by any localised flooding;
- The surface water management plan will be implemented at the site to limit any storm surface water from the site flowing to nearby surface watercourses (measures listed in Section 5.1 above);
- No fuel should be stored within Flood Zone A or B.

6.0 CONCLUSIONS

The purpose of this initial FRA is to ensure that all relevant flood risk issues are assessed in relation to the proposed wind farm site, and the potential conflicts between flood risk and development are addressed to the appropriate level of detail to allow the development to be considered.

This initial FRA has assessed existing baseline information and in relation to flooding from fluvial, pluvial and groundwater flooding at the site of the proposed development. The proposed wind farm development is at the low risk of flooding (situated within Flood Zone C based on NIFM Maps).

Based on the available data reviewed here in relation to flooding at the site and using the precautionary approach it is considered that the risk of flooding to the proposed development is not subject to a significant flood risk. The risk of flooding to the site is considered to be Low to None with mitigation measures in place.

The increased runoff from the site will be limited to the pre-development levels following the Surface water management plan accompanied with the EIAR (Appendix 7-B) and mitigation measures listed in Section 5.2.

Based on these findings, it is not considered necessary to proceed to a Stage 3 – Detailed flood risk assessment for the development.

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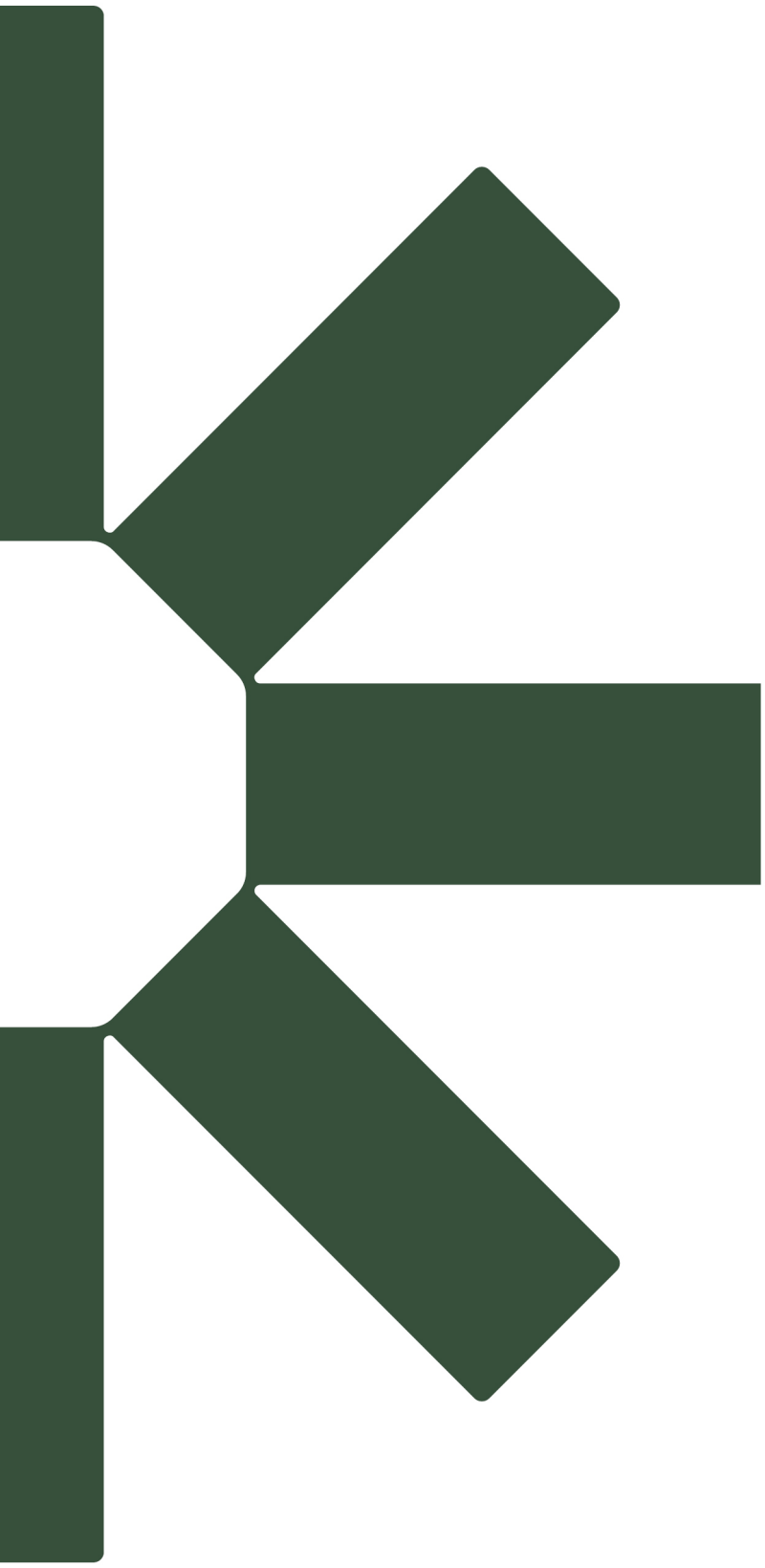

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