# West Offaly Power - Transition to Biomass Project

ESB

## Environmental Impact Assessment Report

## Volume 1
## Non-Technical Summary (NTS)

Document No.:QS-000206-01-R460-008

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# 1 Introduction

## 1.1 General

This is a Non-Technical Summary (NTS) of the Environmental Impact Assessment Report (EIAR) on a proposal by the ESB to undertake development at West Offaly Power (WOP) Electricity Generating Station located at Shannonbridge in County Offaly.

The existing planning permission for WOP Station will cease on the 31st December 2020 and no further electricity generation can occur at the station beyond that date in the absence of a new permission. The ESB WOP Station is currently fuelled by peat supplied by Bord na Móna under a Public Service Obligation agreement which will also terminate in 2019. In line with ESB's drive towards a low carbon future it proposes to transition the WOP generating station from its current fuel peat, to sustainable biomass. Under the existing European rules, generation of electricity from biomass is considered to be zero carbon in nature. The production and transportation of the biomass will still generate carbon and as a result WOP Station will operate as a low carbon generating station as a result of the proposed development. The ash disposal facility (ADF) associated with the station will continue to be used as part of the development also.

Associated with the extended operational life of the station there will be on-going harvesting of peat by Bord na Móna for the initial period – to fuel co-firing up to the end of 2027. This harvesting activity is subject to separate IPC licensing held by Bord na Móna. Although consent for that activity is not the subject of this planning application, environmental impacts associated with that activity are considered in the EIAR.

## 1.2 The Proposed Development

### 1.2.1 The Applicant

The application for planning permission is being made by the Electricity Supply Board (ESB).

### 1.2.2 The Development

ESB is committed to Ireland's transition to a low carbon economy and this forms part of its core strategy with plans which include investment in biomass, wind, hydro, solar and electric heat and transport. As part of this changeover, ESB is planning to convert the generating station at WOP in Shannonbridge and ESB's other midland station Lough Ree Power (herein referred to as 'LRP') in Lanesborough, from peat to biomass. This will allow the stations to continue to support the regional economy, local jobs, and to contribute to Ireland's security of clean energy supply through diversification of fuel source and utilisation of indigenous fuel supply.

These existing stations currently contribute significantly to the regional economy of the Midlands through direct and indirect employment and in annual contributions to

the local authorities in the form of rates. The proposed development will see the power stations continuing operation by supporting the transition away from peat fuel towards renewable and sustainable biomass in a manner consistent with EU and Government Policy whilst continuing to underpin the region's economy and sustaining employment in an economically challenged area.

Electricity generation at WOP Station is supported by a Public Service Obligation (PSO) contribution and this financial support to burn peat will end in December 2019. WOP Station will receive a Renewable Energy Feed in Tariff (REFiT3) to financially support the burning of the biomass fuel only.

The proposed development comprises four distinct elements:

- the continued operation of the existing WOP Station and ADF beyond the permitted date of 31st December 2020 as provided for under the current permission (Offaly Co. Co. Reg. Ref. 01/187; An Bord Pleanála Ref. PL19.125575);
- the phased transition of the WOP Station to firing exclusively on renewable biomass. The transition to 100% biomass will comprise initial phases of co-firing characterized by the combustion of reducing volumes of peat and associated reduction in carbon dioxide emissions;
- the development of fuel management and handling facilities on the WOP Station site to facilitate the change in fuel type; and
- the development of additional landfill capacity at the existing dedicated ADF at Derrylahan, Co Offaly (in the townlands of Clonfinlough, Clondelara, Leitra and Derrylahan) to accept additional ash from WOP Station.

**The proposed transition to operating solely on biomass will see both peat fuel and biomass being co-fired at WOP Station to the end of 2027, with the quantity of peat combusted reducing stepwise to that date. From the 1st of January 2028 peat fuel will no longer be combusted at WOP Station for the purpose of commercial electricity generation.**

The biomass demand generated by the projects will be fulfilled both by indigenous biomass sources and imported biomass supply. As the Irish forest estate continues to mature, particularly with the private forest estate increasingly reaching thinning and harvesting phases of its lifecycle, reliance on imported biomass is expected to decrease.

The proposed development has the following key objectives:

**Objective 1**. To support ESB's transition to low carbon clean energy production thereby directly supporting the de-carbonisation of the energy generation sector as a whole in line with National and EU policy.

**Objective 2.** To continue to contribute strategically to the socio-economic wellbeing of the Irish State and the Eastern and Midland Region in which West Offaly Power is situated, in line with National and EU policy.

**Objective 3.** To continue to contribute towards security of clean electricity supply into the future through diversification of fuel source and utilisation of indigeneous fuel supply in line with National and EU policy.

Further detail is provided in **Chapter 4** of the EIAR. It is expected that in the early years the bulk of the biomass required for electricity generation at the station will be sourced on the open market internationally with between 20%-40% coming from the Irish forest industry sector. Over time, as the Irish forest estate continues to develop, increasing quantities of biomass will become available on the Irish market displacing imports. Additionally, it is anticipated that the demand for biomass material created by WOP Station and other electricity generating stations, such as Lough Ree Power and Bord na Móna's Edenderry Power Limited, will stimulate the development of an indigenous biomass energy industry.

### 1.2.3 The Development Site

The application for permission relates to the site of the existing WOP Station located on lands in Shannonbridge, Co. Offaly in the townland of Clonifeen; and the site of the existing ADF, located in the townlands of Clonfinlough, Clondelara, Leitra, and Derrylahan.

There has been continuous production of electricity at Shannonbridge since 1965 with successive generating station developments on site and with the current peat-fuelled generating station commissioned in 2005 with an installed capacity of 150 MW electric (MWe).

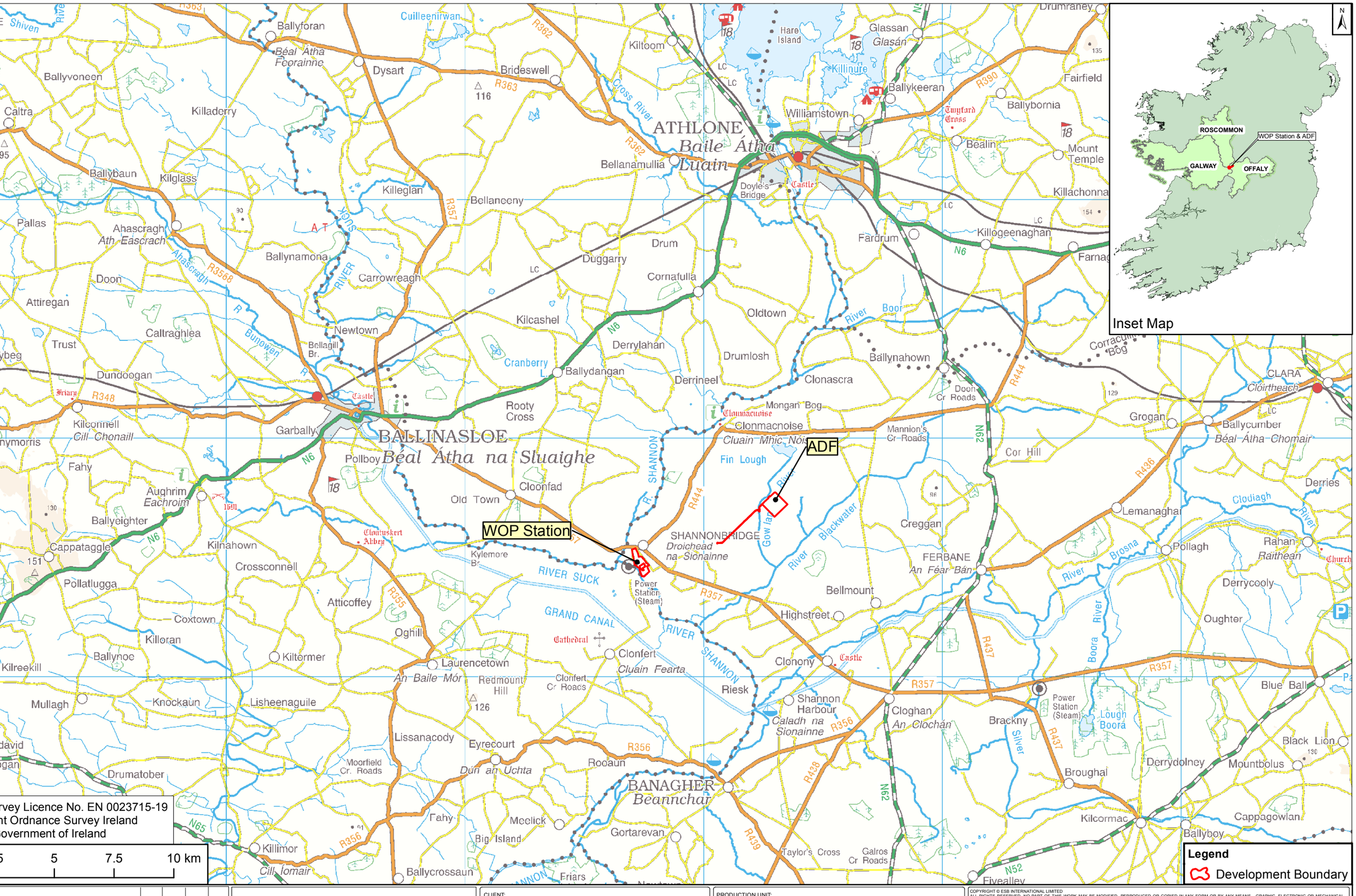
The station is fired on milled peat supplied by Bord na Móna Energy Limited with a support facility for firing standard refinery fuel oil.

WOP Station is operated in accordance with the European Union's Emission Trading Scheme (ETS), which limits and controls greenhouse gas emissions from electricity generating plant at EU level. It operates under Greenhouse Gas Permit (IE_GHG077_10385_4) as administered by the EPA.

In 2017 WOP Station exported 998,687 MWhrs of electricity to the national grid equivalent to the needs of approximately 175,000 households.

The station operates in accordance with an EPA Industrial Emissions (IE) Licence Ref. P0611-02, which regulates activities at both the station and ash disposal sites.

To serve the needs of the WOP Station site with respect of ash disposal, ESB developed a dedicated ADF some 8km from the station. The 59.2 ha site is in a remote area of cutaway bogland. The ADF is a highly engineered site comprising a number of lined landfill cells, each of which is filled, sealed and capped. The site is operated and managed on behalf of ESB by Bord na Móna, in accordance with the requirements of the EPA and the conditions of the aforementioned IE Licence. Ash is transported to the ADF on Bord na Móna's narrow gauge rail system in purpose-built saddleback wagons. It is proposed that both fly ash and bottom ash from WOP Station will continue to be disposed of at the ADF and the landfill will be extended for this purpose.The **Figure 1: WOP Station & ADF Site Location Map**, attached here.

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ESB International is a trading name of ESBI Engineering & Facility Management Ltd.

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CLIENT: **ESB**

PROJECT: **West Offaly Power, Transition to Biomass**

CONTRACT

PRODUCTION UNIT: **Civil & Environmental Engineering**

DRAWING TITLE: **Figure 1 - Location of WOP Station & ADF**



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## 1.3 Relevant Legislation

### 1.3.1 Environmental Impact Assessment (EIA)

To enable Environmental Impact Assessment to be undertaken by the Competent Authority an Environmental Impact Assessment Report (EIAR) has been prepared in accordance with the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018), which were signed by Minister Murphy on 26 July 2018. These Regulations transpose the requirements of Directive 2014/52/EU, amending previous Directive 2011/52/EU, on the assessment of the effects of certain public and private projects on the environment (the EIA Directive) into planning law.

The issues raised through a scoping and consultation process were addressed through the EIAR (see **Chapter 1** of the main EIAR also).

### 1.3.2 Appropriate Assessment (AA)

Under the EU Habitats Directive (Directive 92/43/EEC), the requirement for Appropriate Assessment (AA) has been considered. The assessment comprised both a Stage 1 AA Screening report which considered whether the proposed development could, either alone, or in combination with other plans and projects, have significant effects on designated ecological sites – known as the Natura 2000 sites, which have been designated with particular conservation objectives. This assessment identified the need to prepare a more detailed Stage 2 Report that is the Appropriate Assessment itself which is also termed a Natura Impact Statement (NIS).

The AA Screening report and Natura Impact Statement (see **Appendix 6.1 AA Screening Report**) concludes that no significant effect is likely to occur to any Natura 2000 site following the implementation of appropriate mitigation measures identified by the process.

### 1.3.3 Consultation

To inform the preparation of the EIAR an EIA Screening and Scoping Request was issued in February 2018 to nineteen consultees as part of an informal pre-application consultation process, (see the EIAR **Chapter 1**).

Additionally, to encourage and facilitate on-going community participation, the Applicant appointed a Community Liaison Officer (CLO) to update the local community on the status of the project.

A well-attended public consultation meeting was held at the Parish Hall in Shannonbridge, County Offaly on the 21st February 2018 and was structured as informally as possible in order to facilitate meaningful engagement with individuals as well as any local groups who attended.


**Plate 1: Biomass Samples at the Public Meeting, Shannonbridge, February 2018**

This process informed various aspects of the project development including the typical type of biomass that will be used, see **Plate 1** and duration of the initial co-firing period.

# 2 Need for the Proposed Development

The decarbonisation of the energy sector is a fundamental objective of National, Regional, and Local policy documents and a key element to tackling the challenges posed by climate change.

Decarbonising the electricity generating sector is a key priority for the ESB. The Company's strategy to 2030 as set out in its document **Connecting to Our Future** (Connecting to Our Future, Page 17) is stated as follows:

> *"ESB's Strategy to 2030 (Strategy 2030) follows on from Strategy 2025 and is anchored in ESB's ambition to create a brighter future by leading the transition to reliable, affordable, low-carbon energy."*

Emerging from ESB's strategic document **Ireland's Low Carbon Future – Dimensions of a Solution** is a clear emphasis on the need to increase renewable electricity generation and to complement this with low carbon, dispatchable electricity generation. The proposed project – and the parallel proposal for the transition of ESB's LRP station, are key steps in this process.

The WOP Station is a highly maintained, operational energy generating station. Its development and maintenance has been facilitated by the publically funded PSO. It represents a significant asset – both to the ESB and the midlands region. Under its

current planning permission the WOP Station will close at the end of 2020. However, maintaining WOP Station as a peat-fuelled station conflicts with ESB corporate policy and also EU and State policies, which strongly favour the decarbonisation of the energy sector as a key means of addressing climate change.

Because WOP Station is fit-for-purpose to operate as a co-fired and exclusively biomass fuelled generating station, the transition to biomass requires minimal works on the station site and a relatively minor extension to the dedicated ADF. The transition therefore represents a highly logical use of existing infrastructure – and a realisation of the investment of resources that have been funded by ESB and the State, through the PSO, to deliver renewable energy generating capacity.

The proposed project will convert WOP Station to a low carbon dispatchable renewables station fuelled by sustainable biomass – a significant enhancement to the ESB generating fleet. This delivers on strategic objectives of the Company and also to the attainment of National and International policy objectives and targets. Dispatchable generation refers to sources of electricity that can be dispatched at the request of power grid operators or of the plant owner according to market needs. These facilities can literally dispatch electricity to the grid at the press of a button. By contrast, non-dispatchable renewable energy sources such as wind, cannot be controlled by operators during all operating conditions. They are, by their very nature, intermittent and variable.

The timeframe for this transition is limited by two factors – namely the need to manage the socio-economic impact of the move away from peat on the Midlands Region, and the financial feasibility of the transition.

Having regard to these considerations, ESB can implement an immediate reduction in the volumes of peat consumed (from early 2020, subject to consents), with a complete transition to biomass by the end of 2027. From that date WOP Station can operate as a renewable energy station.

Arising from the minimal scale of the development works, the environmental impact associated with the development is less than that which would arise were a new station to be constructed. This is a key consideration in the justification of the project – both for the ESB and the consenting authorities.

In terms of policies and supports, the delivery, within a relatively short-time frame, of dispatchable renewable energy generation, is a critical step in realising objectives and targets for the functioning of the energy sector, and tackling climate change as identified by the ESB, the EU, the State and Regional and Local Authorities.

The Company's strategy is strongly supported by both EU and National policies. This is reflected in a wide range of policy documents and – critically, by the availability of fiscal supports – namely REFiT3. The development will contribute towards energy security and diversification of fuel sources – key to the Union and the State's policies on the energy sector. In addition to assisting on the attainment of policies and targets, the transition of the WOP Station (and its sister facility at LRP) to biomass has the potential to stimulate the development of the indigenous biomass industry. This can

assist in the diversification of the rural economy and also support initiatives such as renewable heating initiatives.

The proposed development represents a significant and positive step towards addressing the challenges facing the energy sector, as ESB and broader society tackle the threat of climate change.

# 3 Alternatives Considered

In identifying the optimum solution for the future use of the existing WOP Station a range of alternative options were assessed. These were compared and evaluated against the objectives of the project and how these could best be met having regard to the potential environmental impacts associated with each alternative. A range of alternatives to the proposed project were considered and include: 'do nothing' scenario; seeking permission for continued use of peat fuel solely at the site; switching immediately to electricity generation using biomass only; achieving transition to biomass only at a later date (2030); alternative energy uses for the site; seeking alternative ash disposal options; alternative fuel transport options and alternative designs for the project itself.

The EIAR (**Volumes 2 – Chapter 3 and Table 3-2**) considers in detail the main alternatives. The findings are summarised as follows:

- The 'Do Nothing' alternative would see WOP Station cease electricity generation from the end of 2020 with its subsequent decommissioning and demolition. There would be a very significant reduction in direct greenhouse gas emissions from the generating station which is of major benefit to reducing contributions to climate change but the carbon allowances available under the EU's emission trading scheme would not be reduced by this closure and would be available to other generating plant in Europe. Any savings in GHG emissions from the plant could therefore be tempered by increases elsewhere in Europe with no resultant benefit to climate overall. Importantly, there would be immediate significant negative socio-economic impact on the Midlands and Eastern Region from the closure of WOP Station. The immediacy of this impact would not facilitate a transition period which might allow alternative sustainable industries to be developed. There would also be no transition to a dispatchable renewable electricity generating plant with negative impacts on ESB's roadmap to a low carbon generation portfolio and there would be no contribution to achieving Ireland's EU renewable energy generation target, which if not achieved will attract fines from the EU. This alternative does not meet any of the Project Objectives.
- Continuing to generate electricity from peat alone would ensure continued positive impact on the socio economic well-being of the Midlands and Eastern region, but it would have significant negative impacts on the environment in terms of greenhouse gas emissions and would not achieve objectives one and three of the project. Planning permission would also be required to continue the generation of electricity solely from peat fuel

post 2020 and as such an application is unlikely to be successful. This is not considered to be a viable alternative.

- Transitioning immediately to biomass alone, is not commercially viable. Although, if it were feasible through increased financial support and immediate availability of economically available biomass it would have significant positive benefits in terms of an immediate reduction in Ireland's greenhouse gas emissions and contribution to the achievement of Ireland's renewable energy generation targets. There would however, be an immediate, significant, negative socio-economic impact on the Midlands and Eastern region as peat harvesting for energy generation purposes and delivery to WOP Station would no longer be required. There would be no transition period to facilitate the development of alternative sustainable employment in these areas.
- Delayed transition to biomass to 2030 is feasible and was initially discussed with An Bord Pleanála in pre-application discussions and formed the basis for public and stakeholder consultation. This alternative is strongly supported by a range of policies, however it delays the transition to dispatchable renewable energy generation and is therefore not favourably considered.
- Alternative uses for the site for energy generation, such as gas fired electricity generation, solar electricity generation or energy storage have been considered. Whereas all are viable options they would not contribute significantly to achieving ESB's low carbon generation portfolio. Furthermore these alternatives would require an immediate cessation of peat harvesting activity with associated significant negative socio economic impact on the midlands and eastern region.
- Alternative fuel transport and alternative project design proposals were also considered but add to project cost, complexity or impacts and are not considered favourably.

In addition to looking at alternatives for WOP Station, potential alternatives for ash disposal were also explored. These are not 'stand-alone' alternatives as the requirement for additional disposal capacity only arises where WOP Station continues to operate – whether fuelled by peat, or as proposed, by transitioning to full biomass.

- The feasibility of seeking an existing alternative licenced disposal site was considered, however this raises sustainability concerns as it would increase travel distances, and likely result in transport via road rather than rail as is the case currently. Planning permission could also be required at the alternative site which if delayed or refused would lead to the closure of WOP Station with associated significant negative socio economic impacts.
- The feasibility of developing an alternative licenced disposal site was considered, however this would likely necessitate the development of a greenfield site, result in lengthened travel distances, and increase road traffic. Again, if planning permission was delayed or refused, this would

lead to the closure of WOP Station with associated significant negative socio economic impacts.

The project as proposed will continue the use of the existing WOP Station with modifications allowing for the full utilisation of the existing site without significant capital investment. It also utilises the existing station and ADF footprint with extension and existing ash transportation mechanism.

Overall the proposed development would continue to provide a very significant socio economic benefit to the Midlands region, would see a stepwise reduction in GHG emissions in line with national and EU strategies, would have a moderate impact on traffic and transport, and minor environmental impacts on other elements identifying it as the preferred alternative. The development would contribute significantly in a positive way to ESB's portfolio of low carbon generation and would contribute to national greenhouse gas emission reduction and renewable energy generation targets. It would fulfil all the project objectives and is the best alternative for the project.

# 4 Description of the Proposed Development

**Chapter 4** of the EIAR describes the proposed development in detail.

## 4.1 Continued Operation of WOP Station

Continued operation of the existing WOP Station is proposed. The site is owned by the ESB and is separated into two areas with separate entrances, the power station and associated buildings and infrastructure which is operated by ESB, and the fuel handling area which is operated by Bord na Móna. The site is accessed via two routes – leading east and west respectively along the R357.

The station comprises a single boiler/turbine unit with an electrical output of 150 MWe and its main features are the thermal generation plant itself and peat fuel handling facilities. Peat fuel is supplied to the station by Bord na Móna and is delivered via a dedicated rail line and also by road, with ash produced from the combustion of peat transported by Bord na Móna via the rail system to a dedicated ash disposal facility some 8km away and located in a remote area.

For clarity, permission is being sought to maintain in situ all physical development on the WOP Station and ADF sites associated with existing activities on those sites.

## 4.2 Transition to Biomass

From the initial stage, in early 2020, biomass will be introduced as outlined in Figure 2 below. There will an immediate 40% reduction in the current usage of peat. From 2020 to 2024 biomass annual usage is expected to be about 512,000 energy tonnes, equating to approximately 17,000 HGV deliveries per annum. During this period the maximum quantity of peat that will be used on an annual basis will be approximately 750,000 energy tonnes generating a maximum amount of 670,000 tonnes of $CO_2$ annually. From the beginning of 2025 to the end of 2027 biomass use will increase

and peat usage will reduce to an annual maximum amount of 500,000 energy tonnes generating a maximum of 450,000 tonnes of $CO_2$ annually. Post 2027 peat usage will be zero and the plant will be exclusively fuelled by biomass, whereupon it will be characterized by extremely low carbon emissions.

The above profile of biomass and peat burn represents the worst case scenario in terms of $CO_2$ emissions from WOP Station. As the biomass supply chain is developed increasing quantities of this fuel can be utilised by the generating station and it is possible that even in the period 2020 to 2024, with sufficient subsidies in place, the maximum amount of biomass, approximately 1.2 million energy tonnes, could be used on an annual basis should it be commercially viable to do so.

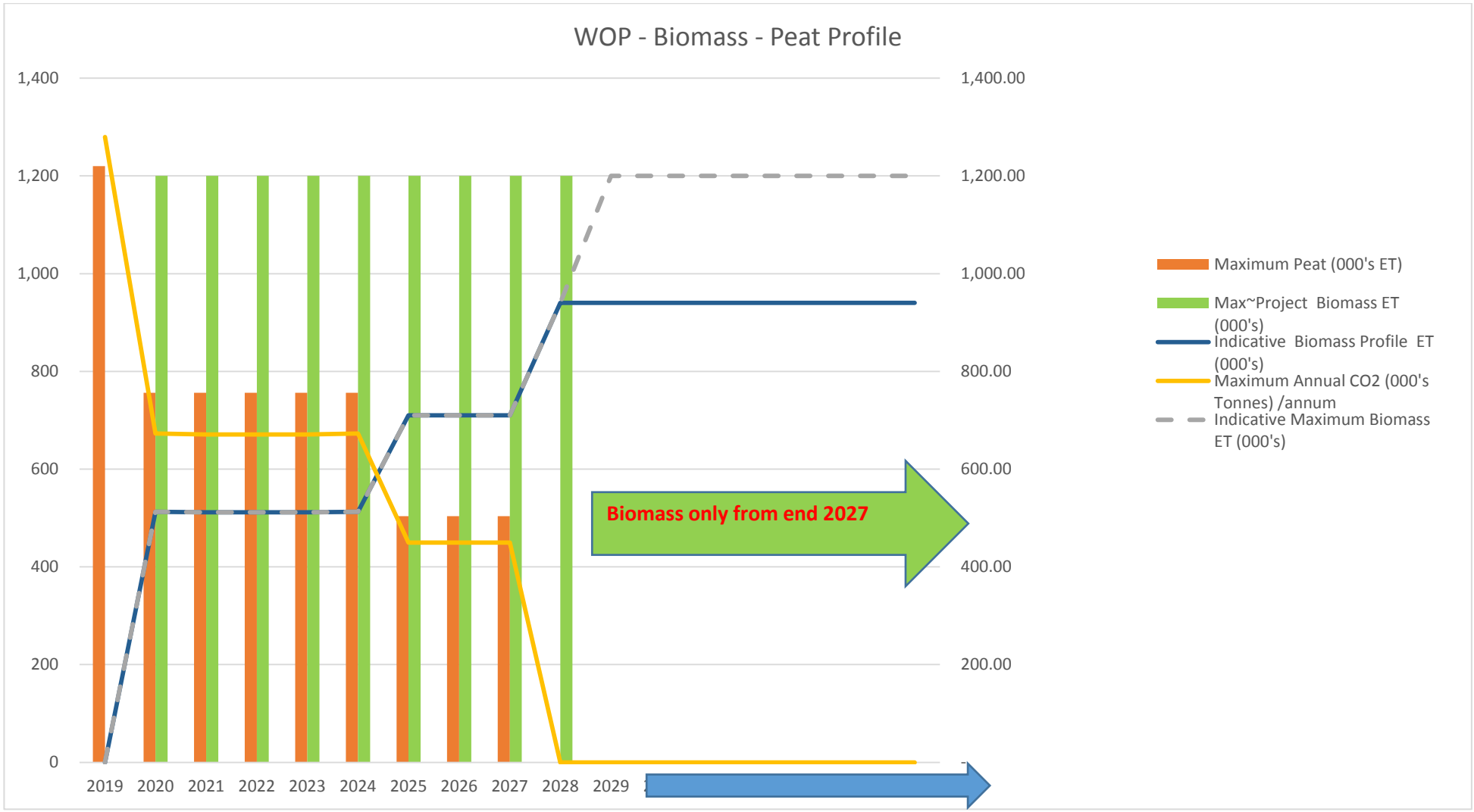



**Figure 2 Biomass, Maximum peat and Maximum $CO_2$ Profile**

ESB recognises the importance of ensuring that biomass utilised at its generating station is sourced sustainably and meets the European Union's sustainability requirements. It will operate a sustainability programme to best international standard with core sustainability principles founded on the principles of legality, sustainability and independent auditing as outlined in **Figure 3** below.

It is acknowledged that there will be insufficient native biomass available in the early years and biomass will be both Irish sourced and imported material. It will comprise non waste materials typically products, co-products, by-products and residues of the commercial forestry and agricultural sector. It will include materials like brash, thinning and other residues from the active management and felling of commercial forests, and also materials from timber processing residues such as saw dust from timber mills and manufacturing processes. Biomass from the agricultural sector will include residues from plant materials like husks, shells, and pulp, and from energy crops such as willow plantation. Manufactured wood pellets will also be used as a fuel source for WOP Station.

The growing demand for biomass arising from this project and the other proposed and existing biomass fired stations, Lough Ree Power and Edenderry Power Limited, is expected to stimulate the development of an indigenous agricultural energy crop increasing indigenous supply over time and displacing imported material.

Indigenous biomass will typically come from sources within a 100 kilometre radius of WOP Station but could also be sourced at greater distance depending on economic factors. Imported biomass, will be landed by bulk transporters of approximately 30,000 tonne capacity at key ports with facilities to handle biomass – such as Dublin Port and Greenore, Co. Louth on the east coast or Foynes Port, Co. Limerick in the Shannon Estuary on the West coast. It will also be possible to utilise Killybegs Harbour, Co. Donegal on the North West coast as outlined in **Figure 4** below.

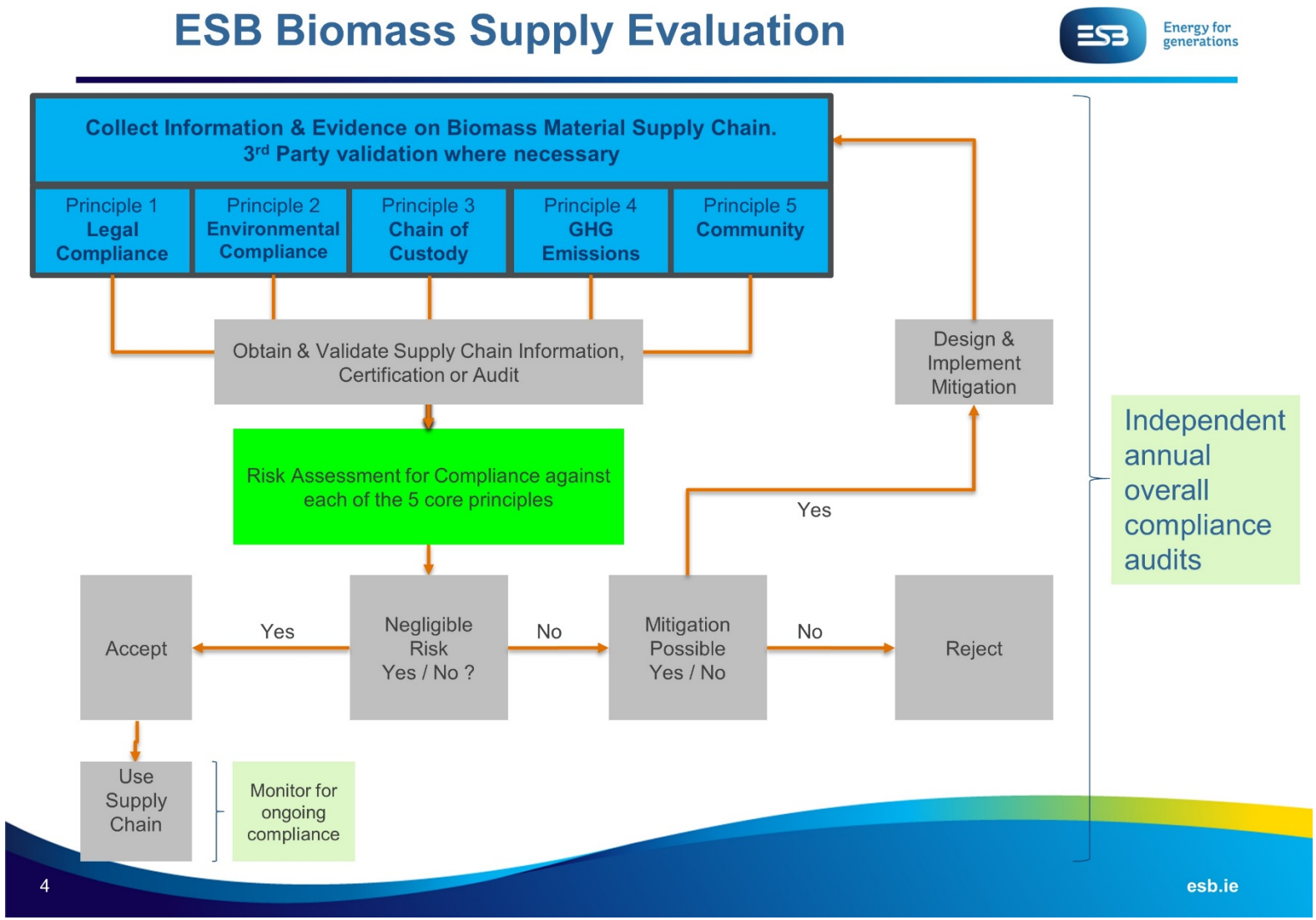



**Figure 3 ESB Biomass Supply Evaluation**

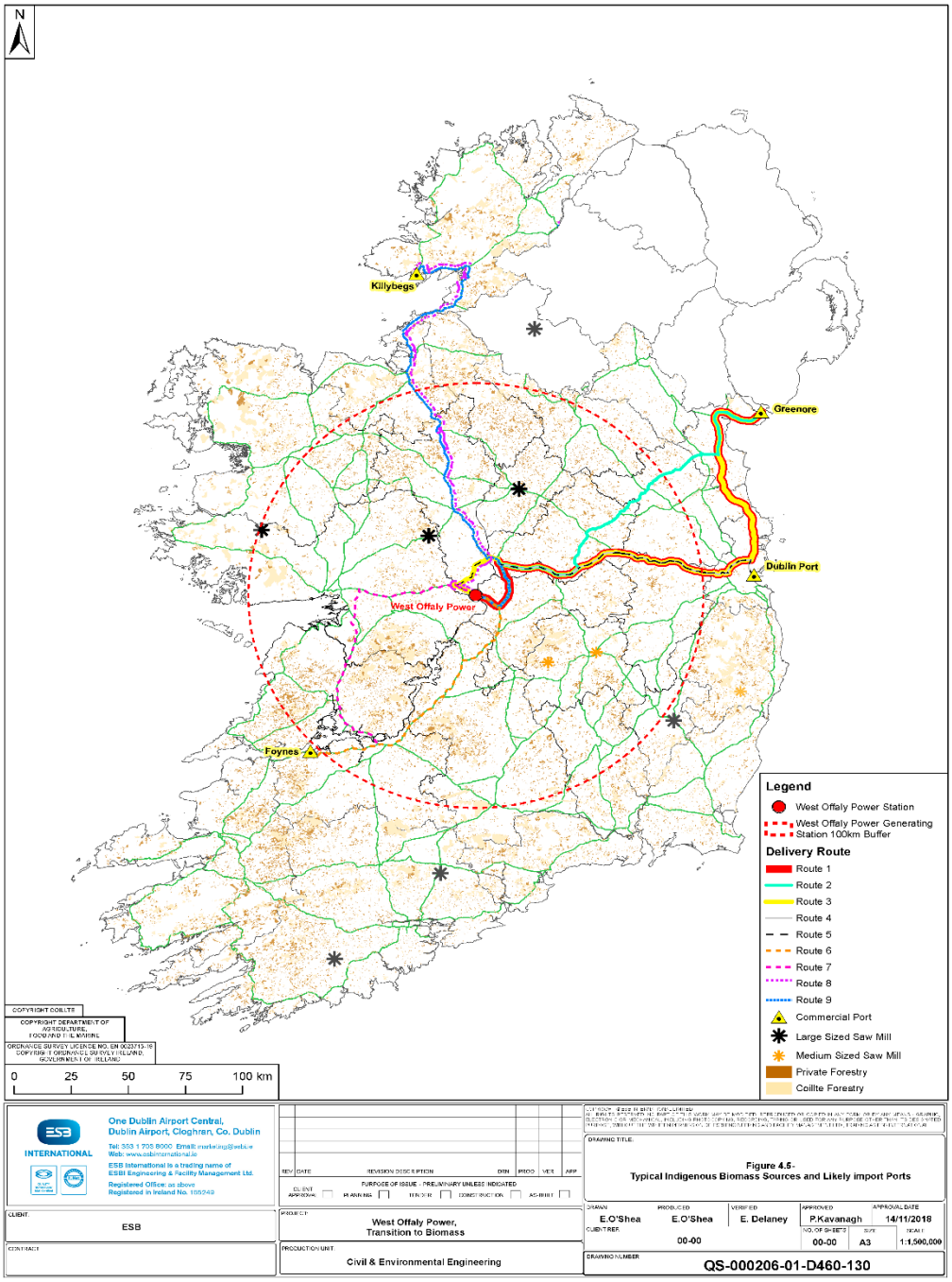



**Figure 4: Typical Indigenous Biomass Sources and Likely import Ports**

Biomass will be transported to the WOP Station site by road transport. The station will operate mainly on a just in time delivery basis for biomass with a 95%ile of 129 HGV biomass deliveries per day and average of 100 HGV biomass deliveries per day. Deliveries will be scheduled over a 16 hour day between (07.00 and 23.00 hours) with a peak of 20 HGV biomass deliveries per hour.

Peat deliveries to the station will be mainly by rail, using the existing Bord na Móna rail system with road deliveries also occurring. Road deliveries of peat are not additional to the biomass deliveries stated above.

## 4.3 Biomass Storage at WOP Station

There is no proposal to deviate from the established peat handling system on the WOP Station site – namely the existing peat wagon tipplers, screens, conveyors and storage in the intermediate peat storage (IPS) as these can be used also for handling biomass.

Short-term biomass storage facilities will be developed in the form of two purpose built concrete slabs within the development site. One of the proposed concrete slabs is located immediately south of the existing Intermediate Peat Storage building and is referred to as the Biomass Storage Slab A. The other slab is located adjacent to the eastern entrance to the station referred to as Biomass Storage Slab B. The locations of the proposed biomass storage slabs and pellet silo are shown on **Figure 5** below.

It is also proposed to provide a silo for the storage of pellets and this will be located adjacent to the Biomass Slab A. The proposed pellet silo will have a storage capacity of circa 260 cubic metres.

Storage slab A will consist of a concrete slab, irregular in shape and surrounded on three sides with a 5m high reinforced concrete retaining wall approximately 300mm to 400mm in thickness. It is located in the centre of an existing unused gravel area within the Bord na Móna controlled fuel handling side of the WOP Station site. It will provide circa two days of operational biomass supply to WOP Station.

Biomass storage slab B will be located to the south-east of the existing roundabout at the entrance to the fuel handling section of the power station development site. It will comprise a mass concrete slab.

The construction programme is dependent on the sequencing of the works and the resources provided to complete the works. It is estimated that the overall construction period will be in the region of 6 – 9 months but will be dependent on the construction methods required which will be finalised following detailed design.

## 4.4 Ash Disposal facility

It is proposed to extend the ADF footprint by c. 173,130 sq.m. This will accommodate the disposal of an additional c. 929,200 cubic metres of ash (approximately

equivalent to 879,900 tonnes) within an additional 5 No. engineered landfill cells. This development will be accommodated in the larger 59.2 ha ADF site.

Based purely on the traditional peat combustion, the combustion of 1,250,000 energy tonnes of peat per annum would give rise to a maximum disposal requirement of c. 52,000 tonnes of ash. However the combustion of biomass gives rise to less ash than peat. Therefore the volume of ash arising each year will reduce as the proportion of biomass increases. Based on indicative calculations for the co-firing and exclusively biomass stages, it is estimated that the extended footprint can meet disposal requirements for at least 25 years, depending on the actual ash arising which in itself is a function of the fuel type and annual plant load factor.

## 4.5 Peat Supply to WOP Station

During the transition period of WOP Station to biomass there will be ongoing peat harvesting to supply fuel to the end of 2027. The station is currently and will continue to be fuelled by peat provided by Bord na Móna and sourced from EPA licensed bogs (IPC Licence Registration Numbers – P0501-01, P0502-01, P0503-01 and P0504-01). No new peat supply bogs are being developed as a consequence of this project and there is sufficient remaining capacity in the bogs that are currently, or have recently, been in production to supply peat to WOP Station up to the end of 2027.

In order to ensure that any environmental impact assessment of this proposed development has regard to the indirect effects of the associated activity, the planning application and EIAR include an assessment of the induced indirect environmental impacts associated with the associated peat harvesting and the cumulative impacts also.

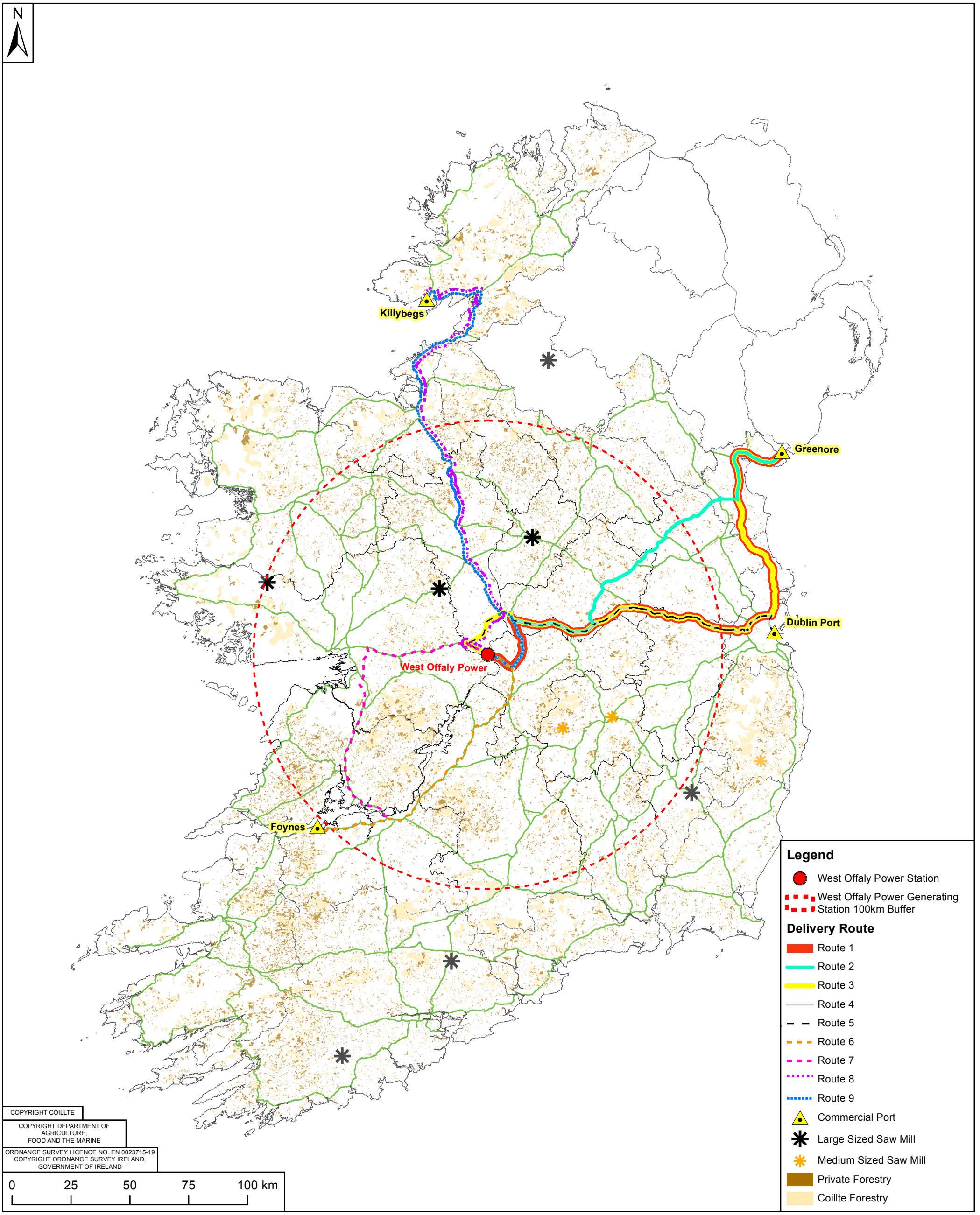
## 4.6 Operational Activities

The existing station operates in accordance with the requirements of its IE Licence issued by the EPA. During continued operation, transition to biomass and subsequent continued firing on biomass only, WOP Station will continue to operate in accordance with the IE Licence issued by the EPA.

## 4.7 Decommissioning

When electricity generation at WOP Station ceases it will be decommissioned in accordance with the conditions of its IE Licence under an EPA approved Decommissioning Management Plan (DMP) to render it environmentally safe. The WOP Station site will be reinstated in accordance with the conditions of any planning permission granted. This will generally require the demolition of all surface structures with maximisation of materials recycling.

The ash disposal facility will also be decommissioned by sealing the landfill and capping in accordance with an EPA approved Closure Restoration and Aftercare Management Plan (CRAMP) as required by its IE Licence to prevent environmental contamination occurring.





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| REV | DATE | REVISION DESCRIPTION | DRN | PROD | VER | APP |
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PURPOSE OF ISSUE - PRELIMINARY UNLESS INDICATED

CLIENT APPROVAL ☐ PLANNING ☐ TENDER ☐ CONSTRUCTION ☐ AS-BUILT ☐

CLIENT: **ESB**

CONTRACT

PROJECT: **West Offaly Power, Transition to Biomass**

PRODUCTION UNIT: **Civil & Environmental Engineering**



DRAWING TITLE:

**Figure 4 -**
**Typical Indigenous Biomass Sources and Likely import Ports**

| DRAWN | PRODUCED | VERIFIED | APPROVED | APPROVAL DATE |
|---|---|---|---|---|
| E.O'Shea | E.O'Shea | E. Delaney | P.Kavanagh | 22/11/2018 |

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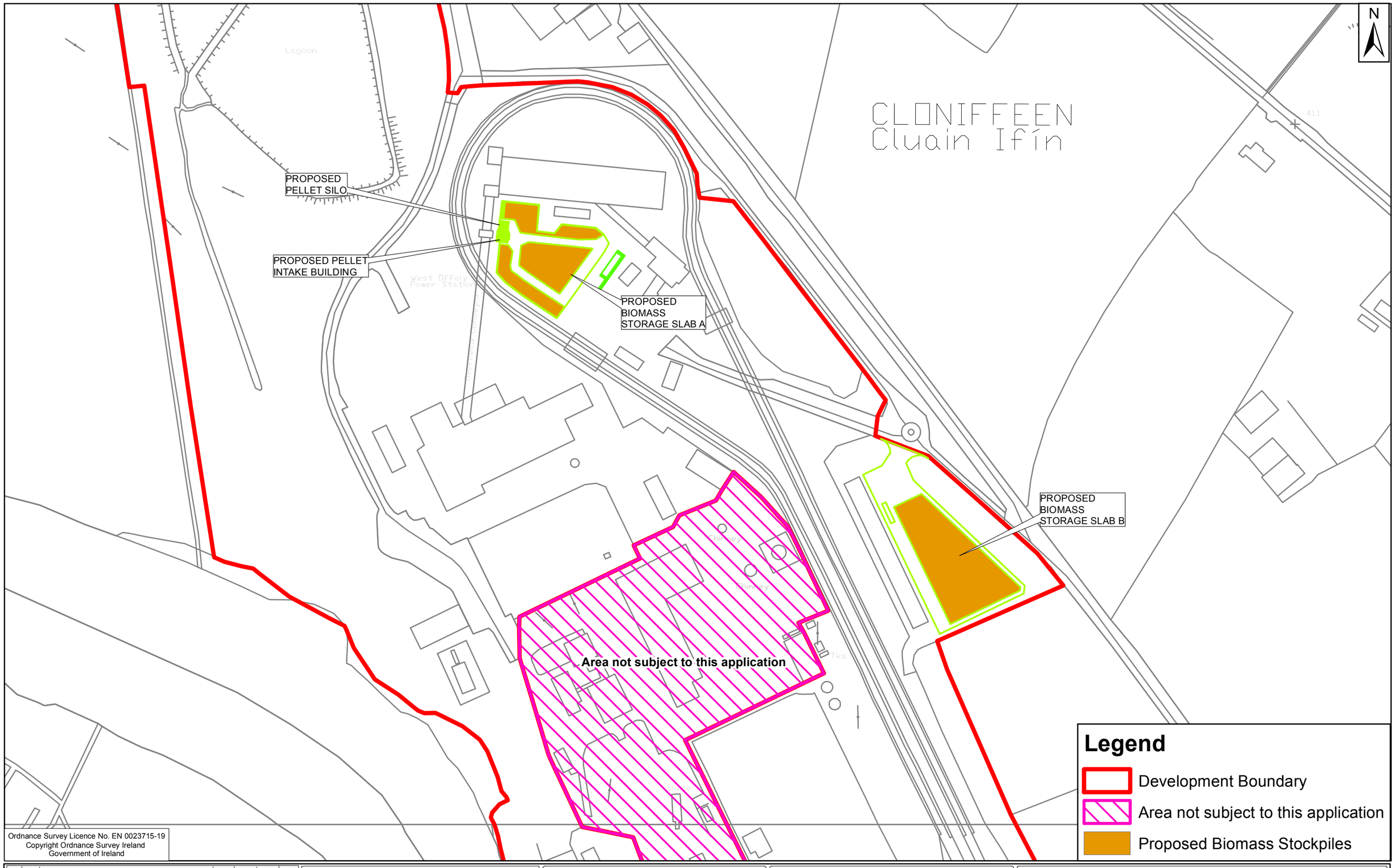
| 00-00 | 00-00 | A3 | 1:1,500,000 |

DRAWING NUMBER: **QS-000206-01-D460-170**



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PURPOSE OF ISSUE - PRELIMINARY UNLESS INDICATED

CLIENT APPROVAL ☐ PLANNING ☐ TENDER ☐ CONSTRUCTION ☐ AS-BUILT ☐

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CLIENT: ESB

PROJECT: West Offaly Power
Transition to Biomass

CONTRACT

PRODUCTION UNIT: Civil & Environmental Engineering

DRAWING TITLE: Figure 5 -
WOP Station
Proposed Layout Plan



| DRAWN | PRODUCED | VERIFIED | APPROVED | APPROVAL DATE |
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# 5 Assessment of Impacts

**Chapters 5 to 14** of the EIAR set out a detailed assessment of impacts as they may occur, under the required environmental topics. The scope and findings of those assessments are summarised below.

## 5.1 Population and Human Health

This topic considers population and human health in the receiving environment and the potential significant impacts associated with all stages of the proposed development. This includes consideration of impacts on land-use, population, socio-economic activity and employment, tourism, amenities and recreation, health and safety and human health.

A desk based review was carried out of publicly available information relevant to the proposed development in terms of population, employment and economic activity, land-use, tourism, community facilities, health and safety and human health. Consultation was also undertaken with various organisations including an open day in Shannonbridge in February 2018.

The WOP Station is located in the village of Shannonbridge Co. Offaly on an existing brownfield site located on the banks of the River Shannon. As well as the village of Shannonbridge, typical land use in proximity to WOP Station includes pastoral farmland and the callows associated with the River Shannon. The proposed electricity generation element of the development is within the existing footprint of the WOP Station, on a site where power generation is the established land-use since the 1960s.

The ADF site is in a remote area of cutaway bogland, characterised by the existing established ash disposal facility operated by Bord na Móna. Land-use in proximity to and surrounding the ADF is primarily cutaway bog.

The largest concentration of residential housing is located to the north and north east of the station within the village of Shannonbridge. One off housing is also located to the east of the boundary of the station along the R357. The WOP ADF is located within a remote location with one residential dwelling located within 1 km of the ADF existing and proposed footprint.

The existing WOP Station currently directly employs 41 staff. An additional 317 permanent and seasonal Bord na Móna employees are involved in the fuel supply to the station and the management of the ADF facility. This includes direct employees at the station and the ADF, and those involved in rail haulage of peat and ash and in peat operations. Road haulage of peat is currently undertaken by external contractors and approximately 13 staff are employed. These employment figures do not include those employed in ESB or Bord na Móna head offices in administration or engineering duties. An additional 96 jobs are supported by indirect and induced employment.

Existing tourism, amenity and recreational activities at Shannonbridge and in the surrounding area currently take place in an operating environment of an existing electricity generating station with all its associated activity. The settlement of Shannonbridge is situated on the River Shannon which itself forms part of Fáilte Ireland's recent tourism initiative "Ireland's Hidden Heartlands". Clonmacnoise is located along the R444 regional road, and is of international importance as a spiritual, historic, archaeological and cultural centre. Clonmacnoise is located approximately 6 km from Shannonbridge and approximately 3 km from the ADF.

Services in Shannonbridge include a post office, shops, public houses, restaurants and a tourist information office. Shannonbridge GAA club pitch and clubhouse is located on the R357, southeast of Shannonbridge. Leisure and recreational activities in Shannonbridge associated with the River Shannon and its immediate surrounds include river cruising, boating, angling, bird watching and swimming. A number of walking trails are located within Shannonbridge.

The proposed development will result in an increase in HGV movements related to the transportation of biomass impacting on the road network and local population. A Delivery Management Plan (DMP) has been prepared in order to mitigate against any potential adverse impacts associated with increased HGV deliveries.

The proposed development will extend the operational life of the existing WOP Station and will provide direct employment during the operational phase into a new stage of increasingly sustainable power generation. This would see the provision of continued employment at WOP Station and ADF.

The phased transition period set out herein allows a realistic timeframe for the local economy to move from peat harvesting for energy generation purposes towards more sustainable industries. In contrast, the closure of WOP Station and the immediate cessation of peat harvesting for electricity generation purposes in 2020 would significantly impact on the socio-economic activity in the midlands region with loss of employment and insufficient time to identify alternative sustainable development opportunities.

As the proposed development at WOP Station is located within the boundary of an existing generating station, the construction of the proposed infrastructure has very limited potential to impact negatively on tourism, amenity and recreational activities. There may be spin-off benefits with construction workers using local accommodation and shops/cafes and restaurants. The haulage routes for both biomass and peat will not utilise the R444 and therefore the proposed development will not have any direct impacts on Clonmacnoise.

All works will be carried out so as to comply with all the requirements of the Safety and Health at Work Act 2005 and any subsequent regulations or amendments and with the requirements of the Health and Welfare at Work (Construction) Regulations, (SI 291 of 2013), any subsequent amendments to those Regulations, and any other relevant Health and Safety legislation. A series of mitigating measures will be implemented at WOP Station to reduce or eliminate both the likelihood and impact of the identified biomass related risks occurring.

## 5.2 Biodiversity

This topic includes consideration of impacts with respect to: habitats; breeding / feeding / roosting areas; routes; mammals, birds, fish, insects, reptiles; population stability / management; critical resources; terrestrial and aquatic ecology; seasonality; existing management and designations.

WOP Station is located south of Shannonbridge village, immediately east of the River Shannon and comprises a range of habitats, namely artificial surfaces associated with roads, storage areas, previously developed ground and buildings; areas comprising recolonising vegetation of varying degrees of maturity; planted or landscaped areas including small woodland compartments; and peripheral grassy areas (such as road verges and adjacent agricultural fields). Bird species recorded around the overall WOP Station site are typical of woodland and scrub habitats.

The overall WOP Station site does not contain any habitats suitable for use by migratory waterfowl which use the River Shannon callows in winter. The seasonally flooding wet grassland on the east bank of the Shannon (outside the station boundary) supports small numbers of wintering birds. Mammal activity around the overall WOP Station site is relatively limited, with no evidence of any such activity within the footprint of the proposed biomass storage development. An active badger sett is located on the old ash storage area to the northwest of WOP Station, while otter are expected to forage extensively along the River Shannon and its associated riparian vegetation which lie outside the western boundary of the WOP Station site. There is minor bat activity associated with habitats and peripheral buildings around the site. Small blue butterfly occurs within the WOP Station site, associated with a number of small flowering stands of kidney vetch, the larval food plant for this species. A thermal cooling water discharge from WOP Station occurs just upstream of the Bord na Móna railway Bridge at Shannonbridge and on the east bank of the River Shannon. This disperses in the water column downstream of the outfall to the River Shannon (designated under the River Shannon Callows SAC and Middle Shannon Callows SPA).

WOP ADF is located within the Blackwater Bog Bord na Móna property, 8 km from WOP Station. It is surrounded by large areas of cutover bog part of which are actively being harvested for peat, while bare peat directly abuts the northern boundary of the ADF. The habitats at the ADF broadly comprise active ash deposition cells and works areas with associated areas of artificial and bare ground; filled and capped ash deposition cells with colonising ruderal vegetation; decommissioned harvesting peat fields with colonising ruderal vegetation; intermittent strips of scrub of varying levels of maturity; waterlogged areas and associated colonising reedbed habitat; surrounding areas of active peat harvesting comprising bare peat fields; and standing and running water in a leachate lagoon, settlement ponds and site drains.

Terrestrial mammal activity in and around the ADF appears to be minimal. Open areas (bare and recolonising ground) within the site footprint are generally of low ecological value, but may be used for foraging by Irish hare and fox, which are known to occur at the site. There is the potential for a number of bat species to also occur

and feed in this area. Areas of bog woodland and associated scrub which are adjacent to the ADF are likely to provide nesting habitat for a range of passerine bird species. There are no expansive areas of open water in immediate proximity to the site which could support breeding or wintering waterbirds. Birds of prey may also hunt for small mammals over the ADF. The lagoon and settlement ponds at the site discharge to the Gowlan River, a tributary of the River Blackwater and subsequently River Shannon.

Peat fuel is supplied to WOP Station from a suite of supply bogs. The respective bogs feature a suite of habitat types including those currently in full commercial production, recolonising areas on which peat harvesting has ceased, and other areas of undisturbed high bog. The majority of the footprint of most of the supply bogs relates to commercial production and comprises bare peat. Complex mosaics of cutover bog occur on the periphery of most of the active peat harvesting sites, while compartments of unharvested raised bog may also occur on the periphery of these sites. Recolonising vegetation of varying degrees of maturity occurs on cutaway bog which has been taken out of commercial production. The level of colonisation is dependent on the date of cessation of harvesting and subsequent water levels at the respective sites.

Bare peat fields associated with the WOP Station supply bogs are known to support roosting or resting Golden Plover, while wintering flocks of Whooper Swan occur on harvesting areas where there are temporary areas of standing water found in association with recolonising surface vegetation upon which the flocks forage. Peregrine falcon and Merlin may also hunt over bare peat areas. Recolonising habitats associated with areas of cutaway bog provide breeding habitat for a range of bird species, including a number of Red-listed species. With regard to mammals, Irish hare is common at supply bog sites, with badger also utilising the mosaic of habitats which occur between the bogs and the surrounding agricultural habitats. Otter is well distributed in the midlands and can be expected to occur along minor watercourses and possibly drains where it can successfully forage. Pine marten is widespread in the locality and would be expected to occur in association with well-developed bog woodland and adjacent blocks of forestry. Other ubiquitous species such as pygmy shrew, hedgehog and Irish stoat could also be expected to occur. Most records of bats at bog sites are associated with linear features along the site margins including hedgerows and scrub. Common lizard, smooth newt and common frog are associated with a number of sites. The respective supply bogs drain via settlement ponds to a number of surface water catchments which comprise designated sites.

In the absence of mitigation, the majority of potential impacts to biodiversity are considered to be not significant. The main potential impacts of the development of the biomass storage slabs at WOP Station relate to minor loss of habitat (planted woodland and recolonising areas) used by the local population of small blue butterfly, as well as aquatic impacts to the River Shannon which have the potential to occur during the construction phase.

Based on the findings of specific aquatic ecology studies, the ongoing cooling water discharge from WOP Station is not expected to have a significant effect upon the

River Shannon. Potential impacts arising from the development and operation of the ADF are considered to be negligible. Potential medium-term impacts associated with activities and discharges at the respective WOP Station supply bogs are predominantly considered to be moderately negative in the absence of mitigation.

Proposed mitigation measures for local impacts to specific habitats and species at the WOP Station and ADF sites as well as for the respective WOP Station supply bogs will ensure that any residual negative impacts will be negligible. The implementation of licence compliance conditions for WOP Station and ADF (IE Licence P0611-02) and the respective supply bogs (P0500-01, P0501-01, P0502-01 and P0503-01) will ensure that there are no impacts arising from the proposed development to local biodiversity receptors and also to designated sites in the region.

## 5.3 Land, Soil, Geology and Hydrogeology

**Chapter 7** of the EIAR assesses the potential impacts with respect to land, soil, geology and hydrogeology arising from modifications to the West Offaly Power (WOP) Station and associated ash disposal facility (ADF) to facilitate the continued operation of these facilities and phased transition of that station to exclusive firing with biomass.

A desk study, field surveys including boreholes and trial pits, water quality monitoring and consultation have all been undertaken in order to gain an understanding of the environment in the vicinity of the proposed development.

The WOP Station is an existing station commissioned in 2005 on a site with a long history of power generation. The existing baseline is industrial in nature with the lands comprising made ground, fill and peaty materials. The ADF is situated on cutaway peat bog. WOP Station is located on two groundwater bodies, the Inny and Clara, and the ADF on the Clara groundwater body also. The groundwater status, an assessment of chemical groundwater quality and abstraction, assigned by the EPA to the groundwater bodies, is stated as Good.

All of the groundwater bodies in the vicinity of the bogs that supply WOP Station are also at Good status.

The bedrock aquifer beneath the WOP Station site and ADF is classed as locally important (Ll) which is moderately productive only in local zones. There are no significant groundwater abstractions within one kilometre of the WOP Station site. There are no wells identified within two kilometres of the ADF site.

The WOP Station including the ADF currently operates under the Environmental Protection Agency (EPA) Industrial Emissions (IE) licence P0611-02 reporting groundwater quality annually to the EPA as part of its Annual Environmental Report.

The potential impacts on groundwater quality, land changes and soil contamination from the proposed development, have been identified and assessed. These could arise from construction activities and arising from the continued operation of the

station. During the construction phase there is a potential for pollution of soils and groundwater from silt and polluting substances from accidental spills of chemicals such as concrete or diesel. The proposed development will also cause the permanent removal of some made ground and some peat in the area of excavation for the biomass storage slabs and the construction of the ash disposal facility. The majority of excavated peat and subsoil will be re-used as required e.g. for landscaping at the station site and for the construction of cell embankments, capping layers and composite drainage layers.

To mitigate potential impacts during the construction phase, the contractor will be required to implement good engineering practice in accordance with published guidance designed to ensure no release of sediment and polluting substance to soils, geology or groundwater. These include a requirement that all temporary tank and drum storage areas shall be bunded; adequate supply of containment booms and suitable absorbent material to contain and absorb any spillage or leak maintained at the development sites and designated vehicle refuelling points will be implemented. Water monitoring will also continue to be undertaken by the station during the construction phase as specified by the IE licence granted by the EPA.

During operations, there will be no direct discharges from the WOP Station or ADF to groundwater and no impacts are predicted to occur. Operational stage mitigation measures will include ongoing monitoring of groundwater and control of operations under the stations IE Licence. At the ash disposal site mitigation will include the installation of an impermeable liner and good modern design in accordance with Landfill Directive requirements which includes a leachate alarm and pumping facility; capping of each cell when full to minimise the volume of leachate generated and groundwater monitoring and reporting to the EPA as directed by the Licence monitoring requirements.

Potential impacts as a result of the peat supply and the biomass supply to the station were also considered. As the peat supply bogs and associated engineering facilities are operated with existing control measures required under the EPA Integrated Pollution Control (IPC) the assessment concluded that that there will be no impact from the proposed development in relation to this activity. Similarly ESB are committed to ensuring sustainability principles are adhered to in relation to biomass supply and it is therefore considered that no significant impacts will occur. There are no additional mitigation measures proposed in relation to the peat supply bogs over those required as part of the current IE Licence requirements. ESB will ensure that only biomass which meets its sustainability requirements is used.

No significant cumulative impacts associated with the proposed development and any identified plans or projects, are anticipated.

No additional mitigation measures, other than compliance with the limits regulated by the EPA, are considered necessary in terms of groundwater during the operational phase.

Decommissioning of the station will be carried out in accordance with the EPA approved Decommissioning Management Plan for the station and Closure Restoration and Aftercare Management Plan for the ADF. Groundwater monitoring will continue as part of these plans for a period of up to 10 years following closure as agreed with the EPA.

The proposed development will not cause the deterioration of groundwater quality within the groundwater bodies adjacent to the proposed development either during construction (with implementation of appropriate mitigation measures) or during the subsequent operational phase with established mitigation and design. Therefore it can be concluded that the proposed development will not compromise the ability of groundwater bodies to maintain the “Good” status assigned by the EPA.

## 5.4 Surface Water

The surface water assessment looked at the potential for rivers and streams i.e. surface waterbodies) in the vicinity of the station and the Ash Disposal Facility (ADF) site to be impacted by the proposed development.

A desk study, field surveys, water quality monitoring and consultation have all been undertaken in order to gain an understanding of the surface environment in the vicinity of the proposed development.

The major waterbody within the study area of the surface water assessment is the River Shannon which is adjacent to the station site. There is also a smaller waterbody known locally as the Gowlan River adjacent to the ADF site.

The WOP Station including the ADF currently operates under the Environmental Protection Agency (EPA) Industrial Emissions (IE) licence P0611-02.

During the construction phase there is a potential for pollution of these waterbodies from sediment and polluting substances entering them as a result of sediment laden runoff from construction areas and/or accidental spills of chemicals such as concrete or diesel.

In order to mitigate potential impacts during the construction phase, the contractor will be required to implement measures to ensure no release of sediment and polluting substance to the River Shannon waterbody. This will include but not be limited to measures such as silt fences, silt curtains and settlement lagoons/tanks. The contractor will also be required to undertake monitoring of any discharges from the construction site area. Water monitoring will also continue to be undertaken by the station during the construction phase as specified by the IE licence granted by the EPA.

Construction of cells at the ADF will continue to be undertaken by Bord na Móna in line with its ADF Operating Plan which has been developed in line with the requirements of the IE Licence.

Measures to attenuate and treat the runoff from the new hardstanding area of the site have been incorporated into the drainage design of the new elements of the proposed development. Therefore no further mitigation is proposed in relation to these new

areas. Potential operational phase impacts to the River Shannon and the Gowlan River are related to the continuation of operational discharges from the station and the ADF to these waterbodies. These operational discharges include the cooling water, storm water, boiler blowdown, treated sewage wastewater, treated water effluent, storm water and leachate form the ADF. A number of studies have been undertaken to support the assessment in relation to the cooling water discharge from the station and these studies have demonstrated that there is no significant impact to the River Shannon as a result of this discharge. In addition there are a number of existing control measures in place in relation to surface water discharges at the station and ADF site as a result of the IE Licence and these control measures will continue to be implemented for the duration of the proposed development.

In addition to potential impact from the station and the ADF site the surface water assessment considered potential impacts as a result of the peat supply and the biomass supply to the station. The assessment concluded that with existing control measures required under the EPA Integrated Pollution Control (IPC) licence for the supply bogs and the commitment by ESB to use only biomass which has received sustainability certification it is therefore considered that there will be no impact from the proposed development in relation to the supply bogs or biomass supply. There are no additional mitigation measures proposed in relation to the peat supply bogs over those required as part of the current IE Licence requirements. ESB will ensure that only biomass which has received sustainability certification is used. No other mitigation measures are proposed in relation to the biomass supply

A Flood Risk Assessment in line with the Guidelines for Planning Authorities (GPA) 20: The Planning System and Flood Risk Management (OPW, 2009), has been conducted for the proposed development. The FRA concluded that the flood risks and impacts associated with the proposed development are low.

## 5.5 Noise

This topic includes consideration of impacts with respect to: noise and vibration. The proposed continued operation of WOP Station, with associated change in fuel type, will result in operational noise impact at neighbouring noise sensitive locations. This impact has been assessed against a no development case of discontinuation of operation of WOP Station and also in terms of the noise change for the change in fuel type.

The predicted new operational noise level has been evaluated by separately quantifying an underlying ‘base’ noise level from the operation of the plant itself and the noise from rail and road vehicle/plant movements at the most critical noise sensitive locations in the vicinity. It is understood that, for continued operation, the processes within WOP Station itself will not change significantly such that there will be no change in the underlying continuous noise level from the main building. There will, however, be changes in the number of rail and road vehicle deliveries and alterations to the operations relating to fuel handling. The number of rail deliveries is likely to decrease whilst the number of road deliveries is likely to increase and fuel handling operations are also likely to increase.

The predicted changes to fuel delivery and handling operations have been quantified and the noise relating to these activities has been added to the base noise level to give the overall noise level at noise sensitive locations after the change in operation and as existing currently.

The no development scenario has been quantified through measurement of noise when all significant items of plant were not in operation.

It is expected that the station will operate under noise conditions and limits set out in a revised EPA Industrial Emission Licence referenced to the EPA Noise Guidance document NG4 which forms the basis of the assessment. Where likely exceedance of noise limits set out in the guidance have been predicted to occur, appropriate mitigation has been identified to ensure no significant impact occurs once these are implemented.

There will also be a temporary impact from the construction activities associated with the change in operation. These have been separately quantified by comparison with benchmark noise criteria for construction projects.

## 5.6 Climate & Air Quality

This topic includes consideration of impacts with respect to greenhouse gas and air emissions from the proposed development its associated indirect and cumulative impacts and their potential contribution to climate change and air quality. It is discussed in more detail in **Chapter 10** of the EIAR.

### 5.6.1 Climate

Greenhouse gas emissions are clearly linked to global warming and climate change by the IPCC (Intergovernmental Panel on Climate Change) which if unchecked will have significant negative impacts globally. Atmospheric concentrations of the greenhouse gases carbon dioxide, methane, and nitrous oxide have increased to levels unprecedented in at least the last 800,000 years with global surface temperature change for the end of the 21st century projected to be likely to exceed 1.5 °C relative to the period 1850 to 1900 and potentially to exceed 2°C in the absence of climate action. Continued emissions of greenhouse gases will cause further warming and changes in all components of the climate system and limiting climate change will require substantial and sustained reductions of greenhouse gas emissions. The likely impact of such changes on Ireland's climate have been predicted by Met Éireann which predicts that all seasons will be warmer with the probability of occurrence of extreme weather events expected to increase also.

The need for Climate action is set out in Government Policy and legislation. Ireland's Climate Action and Low Carbon Development Act 2015 provides the statutory basis for the national transition objective to a low carbon economy laid out in the national policy position underpinning climate change policy in Ireland. Under this the first National Mitigation Plan (NMP) sets out the context for transitioning to a low carbon, climate resilient and environmentally sustainable economy by 2050. The need to speed up the transition away from fossil fuels and achieve significant reductions in Greenhouse gas emissions is also highlighted by the Climate Change Advisory

Council (CCAC), an independent advisory body established under the Climate Action and Low Carbon Development Act of 2015.

The carbon emissions from WOP Station are accounted for in the Pan EU Emissions Trading Scheme (ETS). The ETS is a cap and trade scheme, established in 2005, that restricts carbon dioxide emissions from the major emitting sectors in Europe. Under the ETS scheme West Offaly Power operates under GHG emission permit (IE_GHG077-10385-4 issued by the Environmental Protection Agency), which allows them to operate and emit carbon dioxide. The scheme is designed to ensure that the EU as a whole achieves a carbon reduction target of 43% below 2005 levels, by 2030 in-line with the EU Council 2030 Climate and Energy Policy Framework.

In the short term, between 2020 and 2027 greenhouse gases from the combustion of the peat co-firing element will continue to be emitted from the generating station but these will reduce to zero at the end of 2027. The projected carbon dioxide emissions between 2020 and 2028 are shown on **Table 1** below. Thereafter, electricity generated by the station from sustainable biomass will be counted as zero carbon for the biomass element under the EU ETS scheme.

**Table 1: Biomass, Peat and $CO_2$ Profile to 2035**

| Year | Maximum Peat (000's ET) | Annual $CO_2$ (000's Tonnes) /annum | Percentage Biomass energy |
|---|---|---|---|
| 2019 | 1,220 | 1,279 | 0 |
| 2020 | 750 | 673 | 40.6% |
| 2021 | 750 | 671 | 40.6% |
| 2022 | 750 | 671 | 40.6% |
| 2023 | 750 | 671 | 40.6% |
| 2024 | 750 | 673 | 40.6% |
| 2025 | 500 | 450 | 58.2% |
| 2026 | 500 | 450 | 58.6% |
| 2027 | 500 | 450 | 58.6% |
| 2028 ⟹ | 0 | 0 | 100% |

The emissions of these greenhouse gases are significant and negative in terms of climate change impact but will be reducing and for a short defined time period 2020 to end 2027. From the end of 2027 WOP Station will be a low carbon renewable energy generating station displacing electricity generation from fossil fuel on the grid and reducing Ireland's greenhouse gas emissions with a significant sustainable positive impact for climate change.

The proposed transition period between 2020 and the end of 2027 is in line with Ireland's National Mitigation Plan (NMP) and reflects the gradual transition as

identified in the Plan. The proposed project also advances the date by which peat harvesting for electricity generation at WOP Station will cease with the generating station firing on biomass only from the end of 2027 well in advance of the 2030 date. It will contribute significantly to achieving the national transitional objective of a low carbon, climate resilient and environmentally sustainable economy. It will contribute significantly to meeting the objective of mitigating the greenhouse gas emissions and adapting to the effects of climate change in the State.

Cumulative impacts will arise from peat harvesting operations and from emissions from other peat energy generating stations, Lough Ree Power (LRP) and Edenderry Power Limited (EPL). EPL already co-fires on peat and biomass and a similar transition period for LRP is proposed. There will be a cumulative significant reduction in greenhouse gas emissions with significant positive benefits on climate change. Additionally, cessation of peat harvesting activities and subsequent rehabilitation of these areas will significantly reduce their associated greenhouse gas losses.

### 5.6.2 Air quality

To protect human health, vegetation and ecosystems, EU Directives have been adopted which set down air quality standards for a wide variety of pollutants. EU legislation on air quality (Clean Air for Europe, CAFE) requires that Member States divide their territory into zones for assessment and management purposes. Ireland is divided into four such zones and the development site is located in the air quality management area Zone D (principally rural) as defined by the Environmental Protection Agency (EPA). Air quality in this zone is good as identified through the network of air quality monitoring stations across this zone.

Emissions from the WOP Station have the potential to impact on air quality and human health during construction and operation.

Operational emissions are strictly controlled and reported on under the stations Industrial Emission Licence issued by the EPA.Emissions are monitored and reported on to ensure compliance with the stations emission limits for air quality parameters including sulphur oxides, nitrogen oxides, dust and other parameters. To ascertain that licenced emissions from WOP Station do not give rise to any significant air quality or health impacts modelling has been undertaken which demonstrates that no impairment of air quality will occur.

Construction impacts from dust generation arising from biomass storage slab construction could give rise to potential impact on localised air quality for brief periods and mitigation measures have been included in the environmental impact assessment report to mitigate this. Potential for dust generation could occur from the construction and operation of the ash landfill areas and from the capping of the cells. There is therefore some potential for local air quality to be impacted by dust during the construction phase giving rise to local nuisance. Again mitigation measures have been put in place to minimise potential impact. The focus for dust control and emissions is on minimising the potential for a nuisance occurring in the first instance and implementing good site practices where practicable.

Operational emissions from the WOP Station are controlled under the EPA's IE Licence P0611-02. Air emissions occur principally from the main chimney stack and

the impact on air quality from the key emission parameters have been modelled out to a distance of 20km. The assessment indicates that the air quality standards to protect human health, vegetation and ecosystems will not be exceeded.

WOP Station and ADF will operate fully in compliance with the EPA's Industrial Emission Licence for the site. The main mitigation is the implementation in full of the requirements of the sites IE Licence with respect to operational management of the station and the landfill. This will ensure that no significant air quality impacts will arise and that public health will be protected.

Cumulative emissions from other generating stations are controlled under Industrial Emission Licences and the peat harvesting activities are controlled under IPC Licences issued by the Environmental Protection Agency and with the full implementation of these no significant impacts are predicted.

During the decommissioning of WOP Station and ADF localised air quality impacts could arise from air borne dust but these would be of short duration and localised. These will be mitigated to ensure no significant impacts on human health or the environment in general.

## 5.7 Material Assets

This topic considers the potential impacts to Material Assets arising from the proposed modifications to the West Offaly Power (WOP) Station and associated ash disposal facility (ADF). The Material Assets to be considered as part of this assessment include Energy and Fuel Supply; Major Utilities; and Ownership and Access.

The WOP Station is currently a peat-fuelled generation station with an installed capacity of 150 MWe. WOP Station is currently fired on milled peat supplied by Bord na Móna Energy Limited with a start-up and combustion support facility for firing standard refinery fuel oil.

As a result of these proposals there will be a periodic stepwise reduction in peat combustion with increasing biomass combustion and with corresponding reduction in greenhouse gas emissions. From 2028 WOP Station will be fuelled on 100% renewable biomass. This is considered to have a positive impact due to the use of existing infrastructure to provide a low-carbon dispatchable energy generation station.

In terms of utilities, WOP Station currently has an installed capacity of 150MWe and is capable of exporting c. 137MWe to the National grid. WOP Station is connected to the National grid via five 110kV lines and one 220kV line. WOP Station is primarily self-sufficient in terms of power demands. Telecommunications are provided via fibre from the nearby Shannonbridge radio site. WOP Station has its own proprietary wastewater treatment system septic tank and is independent of the town sewerage scheme. The station is served by the public water supply with abstraction of water from the Shannon for the purpose of condensing, cooling of plant and manufacture of water for steam cycle.

The proposed development does not require alterations to any major existing utilities and services at WOP Station, ADF or outside the boundaries of the sites themselves during the construction or operational phases and it is therefore considered that there will be no effects on major utilities.

At the WOP Station, all development work will take place on lands within the ownership of ESB. Road access arrangements will continue as presently. The ADF site will continue to be served by the Bord na Móna rail-line that links to the WOP Station. Until 2027 peat will continue to be extracted and delivered to WOP Station via the existing rail and road network.

In terms of Material Assets, as this is a continuation of existing fuel supply to WOP Station, no alterations to the existing major utilities, ownership and access are required to accommodate this. By 2028 WOP Station will be fired on 100% biomass and no alterations to the existing major utilities, ownership and access are required to accommodate this.

No specific mitigation is required in the context of Material Assets.

## 5.8 Traffic and Transport

This section of the EIAR assesses the impact of the West Offaly Power (WOP) station and the Ash Disposal Facility (ADF) on the traffic and transport network.

The existing peat-fuelled power station will transition on a phased basis towards the exclusive firing with biomass.

From the initial stage, immediately post 2020, biomass will be introduced. The volume of biomass will increase over subsequent years until the plant will be exclusively fuelled by biomass.

It is envisaged that, during the co-firing stage, peat will principally continue to be delivered to the station by rail and handled using existing plant facilities with peat deliveries by road also continuing. As the transition to increasing quantities of biomass continues, road peat deliveries will decrease.

The WOP Station will be fuelled by increasing volumes of biomass, sourced from indigenous and non-indigenous sources. The principle source of indigenous fuel will be biomass sourced from the forest sector (e.g. brash, thinning, and residues), biomass from Irish sawmills (e.g. woodchip and sawdust) and from the agricultural sector. It is recognised that in the early years there will not be sufficient indigenous by-product and residue supply available to meet the demand of the project and for this reason biomass will also be imported in the form of wet woodchip, and wood pellets.

The proposed development will utilise the existing access junctions to the WOP Station and does not involve any new works on the road network.

The impact of the proposed development has been assessed for the construction, operation and decommissioning phases.

During the construction phase it is anticipated that the proposed development at the WOP Station will generate an additional 100 vehicle movements. These movements will result in a slight increase (1.1%) in the Ratio of Flow to Capacity (RFC) of the R357. This will have a not significant impact on the surround road network.

It is anticipated that the operational phase of the proposed development at the WOP Station will result in the following traffic generation:

- Staff, non-fuel deliveries, visitors etc.– 199 movements per day.
- Average HGV deliveries of biomass/peat – 100 deliveries per day.
- 95 percentile HGV deliveries of biomass/peat – 129 HGV deliveries per day.

The 95 percentile means that 95% of the time the deliveries will be 129 or less per day.

These deliveries will arrive between the hours of 07:00 – 23:00, a 16-hour period. ESB and Bord na Móna have estimated that the 95th percentile hourly delivery flow will be 15 HGV deliveries per hour or lower, and that the 97.5% percentile will be 20 HGV deliveries or lower.

A route preference analysis was undertaken for the operational phase of the proposed development at the WOP Station. This route preference analysis was undertaken to prioritise delivery traffic onto routes that were safer, maximise usage of the national road network, and to minimise impact on communities.

The following **Table 2** summarises the increase in the ratio of flow to capacity on the relevant road links that delivery traffic will utilise.

**Table 2: Percentage Increase on Road Links**

| Link | 2017 AADT | Additional traffic (vehicles) compared to No Development | AADT of Level of Service D | % of increase in Flow to Capacity compared to No Development |
|---|---|---|---|---|
| M6 | 14,244 | 312 | 44,100 | 0.7% |
| M7 | 18,902 | 52 | 44,100 | 0.1% |
| M18 | 9,466 | 206 | 44,100 | 0.4% |
| N18 | 29,739 | 206 | 44,100 | 0.4% |
| N52 | 3,906 | 86 | 8600 | 1% |
| N62 | 4,700 | 86 | 8600 | 1% |
| R357(North) | 1,902 | 338 | 8600 | 3.9% |
| R357(South) | 1,902 | 172 | 8600 | 2% |

The development at the WOP Station will result in a very minor increase in the RFC of the national road network and a minor increase in the RFC of the regional road.

The impact of this additional traffic on the surrounding junctions was also assessed. This analysis demonstrated that all the junctions and the bridge in Shannonbridge would continue to operate satisfactorily within capacity.

The development at the WOP Station will have an imperceptible long-term impact on the wider national road network and will have a not significant negative long-term impact on the local road network.

The decommissioning phase will generate similar traffic levels to the construction period, but the station will not be in operation at this stage, so the impact will be reduced.

The proposed development at the WOP Station will have indirect traffic impacts on the road network in the vicinity of peat supply bogs, indigenous sources of biomass, and access routes to and from ports.

Landfill cell construction is an ongoing activity at the ADF with a cell being developed as another cell approaches capacity, and traffic movements will be the same as for the operational phase. The construction of the ADF will have an imperceptible negative short-term impact on the transport network.

The ADF will continue to employ 2 no. full-time staff and the volume of traffic generated by the ADF will be very low, having no impact on the road network. The operation of the ADF will have an imperceptible negative long-term impact on the transport network.

For the decommissioning of the ADF, the landfill will be closed and there will be no new deliveries. There will be some periodic visits required to undertake environmental monitoring at the ADF. The decommissioning process is likely to generate similar traffic flows to the construction phase and it is anticipated to have a not significant impact on the transport network.

## 5.9 Cultural Heritage

This topic includes consideration of impacts with respect to: archaeology; architectural heritage; folklore and history.

Cultural Heritage is defined by UNESCO as “the legacy of physical artefacts and intangible attributes of a group or society that are inherited from past generations, maintained in the present and bestowed for the benefit of future generations” (www.unesco.org/new/en/cairo/culture/tangible-cultural-heritage). In terms of the present project, Cultural Heritage is assumed to include all humanly created features on the landscape, including portable artefacts, which might reflect the prehistoric, historic, architectural, engineering and/or social history of the area. Consequently, the proposed development areas were subjected to Historical, Archaeological and Architectural Heritage studies. In addition, field/surface reconnaissance surveys and limited monitoring of Geotechnical Site Investigations (Trial Pit excavations) were also undertaken.

**Local History**

In terms of WOP Station there are no significant historical events associated with the existing/proposed development area which have the ability to be impacted upon by the construction or subsequent operation of the proposed development and, consequently, no mitigation measures are considered necessary.

In terms of the ADF there are no significant historical events associated with the proposed development area which have the ability to be impacted upon by the construction and subsequent operation of the proposed development. Consequently it is considered that there are no predicted direct impacts with respect to Historical Heritage with regard to the proposed construction and operational phases of the development within the ADF area, and it is considered that no mitigation measures are required.

**Archaeological Heritage**

There are six previously identified monuments of archaeological interest/potential located within the defined study area associated with the WOP Facility. None are located within, or in the immediate environs of, the subject development areas associated with the WOP Station. The nearest archaeological monument to any proposed construction area is CH-1 (Church & Graveyard) which is located approx. 400m to the south of the proposed East Biomass Stockpile area. The remaining archaeological monuments (CH-2 – CH-6) are located at distances of between 650m – 1000m from the nearest element of any proposed construction area. There are no records for the discovery of any archaeological artefacts within, or in the immediate area of the WOP Station site and nothing of archaeological interest/potential was noted by programme of archaeological monitoring associated with the construction of the present station. Likewise, nothing of archaeological interest/potential was noted by archaeological monitoring of Geotechnical Site Investigations associated with the subject development.

It is considered that there is very low potential for the discovery of subsurface archaeological features/deposits or artefacts within the specific proposed development areas at the WOP Station and that no predicted direct impacts will occur with respect to Archaeological Heritage during the construction phase of the development at these locations. Likewise, it is considered that no impacts will occur with respect to Archaeological Heritage during the operational period of the proposed development; consequently, no mitigation measures are considered necessary.

There are two previously identified monuments of archaeological interest/potential located within the defined study area associated with the ADF Site. These are located at distances of 300m and 800m from the proposed development area and no sites or features of interest have been identified within the subject development area either by field reconnaissance survey or by the monitoring of Geotechnical Site Investigations (Trial Pits) within the extent of the relevant area. Furthermore, there are no records for the discovery of any archaeological artefacts within, or in the immediate area of the ADF site. It is considered that there are no predicted direct or indirect impacts to any previously recorded archaeological monuments by the proposed extension to the ADF, either at construction stage or by the subsequent operational/post-operational stages.

Groundworks associated with sites such as the ADF have the general ability to uncover and disturb hitherto unrecorded subsurface features, deposits, structures and artefacts of archaeological interest and potential, particularly within and under existing peat-bogs which are of significant archaeological potential. Consequently, it

is considered that an Archaeological Monitoring Programme, appropriate to the nature of the operation, be implemented at construction stage so that, in the event of the discovery of archaeological features or artefacts, appropriate recording measures can be implemented. It is not considered necessary for mitigating measures to be applied with respect to the operational/post-operational phase of this element of the development.

**Architectural Heritage**

There are eleven structures listed in the Record of Protected Structures (RPS) of the Offaly County Development Plan 2014-2020 as being located within the subject study area associated with the WOP Station Site. Nine of these are also listed by the non-statutory National Inventory of Architectural Heritage (NIAH), together with a further two which are not included in the RPS. There are no structures or features of architectural heritage interest located within, or in the immediate environs of, the proposed development areas of the WOP Station site – the closest being St. Kieran's Church situated approx. 450m to the north of the nearest construction element. It is considered that no predicted direct impacts will occur with respect to Architectural Heritage during the construction and operational phases of the development at the WOP Station and no mitigation measures are considered necessary.

There are no structures listed in the Offaly County Development Plan – RPS, or by the NIAH as being located within the study area associated with the ADF Site. Consequently it is considered that no direct impacts to structures of architectural heritage interest will occur during the construction or operation of the proposed ADF extension and no mitigation measures are considered necessary.

## 5.10 Landscape

This topic considers the landscape context of the proposed development and assesses the likely landscape and visual impacts on the receiving environment.

The landscape study areas for WOP Station and the associated ADF are located in the corner of northwest Offaly, with overlaps across the Shannon to County Galway (to the west) and County Roscommon (to the northwest). Representative of the broader county, the study areas are characterised by ostensibly flat landscapes with some undulation in the north. The Shannon is the principal watercourse within the study area, which borders the western edge of the power station, as well as meandering within 4km northwest of the ADF. Low-lying, exploited bog/peatland makes up the lion's share of land cover within the vicinity of the ADF, while pastoral farmland and callows are more prevalent near Shannonbridge. Much of the bog around the ADF has been drained and cultivated extensively over the last century. While there is a minor degree of coniferous forest found in the ADF study area, there are several patches of transitional woodland scrub located in the study areas.

The site of the WOP Station is located on an existing industrial power station site that is located on the banks of the River Shannon, by the village of Shannonbridge, which is the chief settlement in the area. The WOP Station site accommodates structures and activities representative of many power stations. These includes fuel/peat

storage; handling areas; plant; the generation station itself, as well as a range of ancillary services, such as water treatment and management systems, offices and administration area.

While there are few roads within 2km radius of the ADF, there are numerous roads in the broader study areas. The R444 feeds into Shannonbridge from the northwest, via Clonmacnoise, while the R357 serves a similar function southeast and northwest of Shannonbridge.

This area is nationally and internationally known for ancient religious traditions and monastic settlements. Aside from the ancient Pilgrim Road that runs along the Esker Riada, the ancient monastic site of Clonmacnoise is located in the northwest of the ADF study area, and is of international importance as a spiritual, historic, archaeological and cultural centre. The other landscape feature that this area is synonymous with is the River Shannon, which is Ireland's largest river. The WOP Station western site boundary accounts for approx. 600m of the River Shannon's east bank.

Impacts on the physical landscape and on landscape character were considered for both the WOP Station and ADF at various phases of the proposed development including: construction, operation and decommissioning. Visual impacts of both aspects of the development (WOP Station and ADF) were also assessed from a range of eight representative viewpoint locations. Again, the continued use and conversion to biomass of the facilities result in no greater than 'Slight' visual impacts when compared to the existing context.

It is acknowledged that decommissioning and substantial removal of the WOP Station in the future 'baseline scenario' would result in a positive effect due to the removal of a substantial piece of industrial development from the Shannonbridge skyline, this has also been balanced against the fact that this feature has a long legacy with this locality and forms the existing scenario..

Overall, it is not considered that significant landscape and visual effects will occur as a result of this proposed development.

## 5.11 Major Accidents and Interaction of Impacts

The expected significant effects on the environment arising from the vulnerability of the proposed development to risks of major accidents and/or natural disasters which are relevant the project have been assessed. This assessment is carried out in compliance with the EIA Directive which states the need to assess:

*"the expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or natural disasters which are relevant to the project concerned."*

Severe weather conditions and associated extreme weather events – such as flooding and flash flooding have been identified as risk particularly as the WOP Station Site is adjacent to the River Shannon.

The residual risk or vulnerability of a major accident and/or disaster during the construction and operation of the proposed development is considered ‘low’ with regards to the risk evaluation methodology.

In addition to the requirement to describe the likely significant effects of the proposed development on specific environmental topics, the assessment of interactions of those effects is also required and has been assessed. A summary of the interactions are presented the EIAR. Each aspect of the environment which is considered in detail in the appropriate sections of the EIS is cross-tabulated against all other aspects that have also been considered.