PURSER

Volume 2:

16

Material Assets: Utilities

Environmental Impact Assessment Report: Nua Bioenergy, Lisheen
P-2024-35-59

16 Material Assets – Utilities

16.1 Introduction

This chapter of the EIAR presents findings of the assessment on existing material assets (built services) which could be impacted by the development of a biomethane and bio-based fertiliser production facility at the former Lisheen Mine Site, Killoran, Moyne, Thurles, Co. Tipperary (hereafter refer to as the Project).

According to the EPA's Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (2022), "material assets" encompass “built services” (such as electricity, telecommunications, gas, water supply, and sewerage), “waste management,” and “infrastructure” (such as roads and traffic). Traffic-related impacts are addressed separately under Chapter 14 (Traffic & Transportation), other impacts associated with water quality, land, soils, hydrology, and hydrogeology are detailed in Chapter 9 (Land, Soils and Geology)) and Chapter 10 (Hydrology and Hydrogeology). Additional aspects of waste management are covered in Chapter 15 (Material Assets – Waste), and cultural assets are discussed in Chapter 17 (Cultural Heritage, Archaeology, and Architectural Heritage).

The purpose of this assessment is therefore to consider the likely significant effects of the proposed development on existing onshore built services and infrastructure, including:

- Utilities (such as electricity; telecommunications; gas; water supply; foul and surface water drainage).

16.2 Methodology

16.2.1 Relevant Guidance and Policy

This chapter has been prepared having regard to the overarching EPA Guidelines as described in Chapter 2. The significance of effects has been determined based on the severity of potential disturbance to those existing material assets.

This chapter has been prepared having regard to the following guidelines:

- Guidelines for planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018)
- Environmental Impact Assessment of Projects: Guidance on preparation of the Environmental Impact Assessment Report (European Commission, 2017)
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – Draft (EPA, 2022)
- Tipperary County Development Plan 2022- 2028
- Thurles & Environs Local Area Plan 2024 -2030

16.2.2 Impact Assessment Methodology

The assessment of likely significant effects of the proposed development on material assets has been undertaken having regard to the EPA Guidelines. The assessment includes the following of particular relevance to the proposed development:

- Potential for likely significant effects on public utilities and the need to adequately protect them during the construction phase
- Requirement for connections to public utilities by the proposed development during both the construction and operational phases; and

There are no specific criteria used for assessing the significance of effect of the proposed development on existing utilities. As such, professional judgement and consultation with utility providers has determined the significance criteria used in this assessment. The likely significance of impacts on existing utilities is determined based on consideration of the assumed functionality of the specific utility and the corresponding impact of its disruption.

Sensitivity of the Receptor
The sensitivity of the receptors for material assets is determined by considering the importance and sensitivity of the service and supply of a utility, and land that is zoned for development or with a current agricultural use.

Magnitude of Impact
The criteria used for defining the magnitude of impact for this assessment is based on the EPA Guidelines, 2022. The magnitude of impact for utilities has been considered in terms of the duration of service interruption that would likely occur, service provider notification and level of service reinstatement.

Significance of Effect
The significance criteria used to identify likely significant effects on material assets are defined using the categories defined in the EPA Guidelines. For the purposes of assessing the effects on material assets in this EIAR, an effect is deemed to be not significant from a rating of imperceptible to moderate, and significant from significant to profound.

16.3 Baseline Environment

16.3.1 Desktop Study

A desktop study to identify baseline conditions has been undertaken to establish the existing provision of services and utilities in the areas. The following sources of information were used in the completion of this assessment:

- Tipperary County Council (Drainage and Water Supply Mapping).
- Environmental Protection Agency (EPA) Maps.
- ESB Utility Plans.
- The Lisheen Mine Construction and As-Built Drawings.
- J&L Topographical Survey Drawings.
- Google Earth Maps.

16.4 Methodology

The baseline environment is defined as the existing environment against which future changes can be measured. This chapter has been prepared having regard to the following guidelines;

- Guidelines for planning Authorities and An Bord Pleanala on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018)
- Environmental Impact Assessment of Projects: Guidance on preparation of the Environmental Impact Assessment Report (European Commission, 2017)
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – Draft (EPA, 2022)
- Tipperary County Development Plan 2022- 2028
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16.4.1 Desktop Study

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- ESB Utility Plans
- The Lisheen Mine Construction and As-Built Drawings
- J&L Topographical Survey Drawings
- Google Earth Maps

16.4.2 Consultation

As part of the planning process, the Design Team has attended a number of consultations with authority bodies to confirm and develop the aspects of the design. The following is a list of the formal consultations attended by the Design Team:

- Tipperary County Council: 2 No. Formal Pre-Planning Meetings
- Local Group Water Scheme: 1 No. Site Meeting,
- ESB: 1 No. Site Meeting

The following section describes the baseline environment under the following headings:

- Surface Water Drainage
- Wastewater Drainage
- Water Supply
- ESB Utility Services

16.4.3 Surface Water Drainage

The subject site is currently in brownfield condition consisting of made ground. Historically, the Lisheen Mine was located on the subject site. There is no formal public surface water network in the close vicinity of the subject site. The only surface water field drain in close vicinity to the site is located c. 10m to the south of the site.

The lands are currently drained by discharging via overland flow routes to the existing field boundary drain to the south of the site at an unrestricted flow rate. This field boundary drain ultimately drains in a southern direction and outfalls into the Black River which joins into the Drish River further downstream. The existing surface water field boundary drain and river are indicated in Figure 16.1 & Figure 16.2 below.

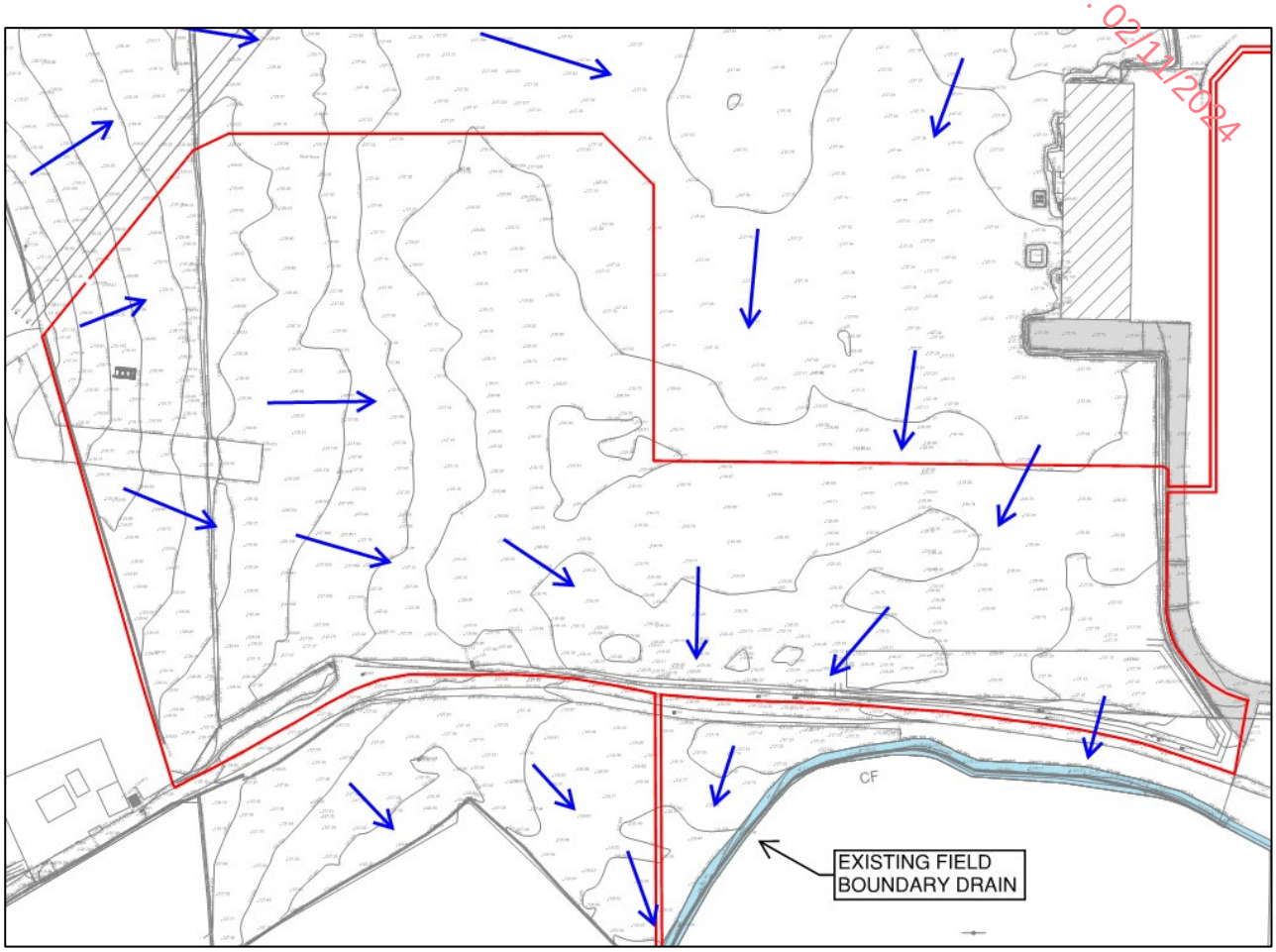

Figure 16.1: Existing Pre-Development Overland Flood Route (Source: DOBA Design Drawing, annotated DOBA)

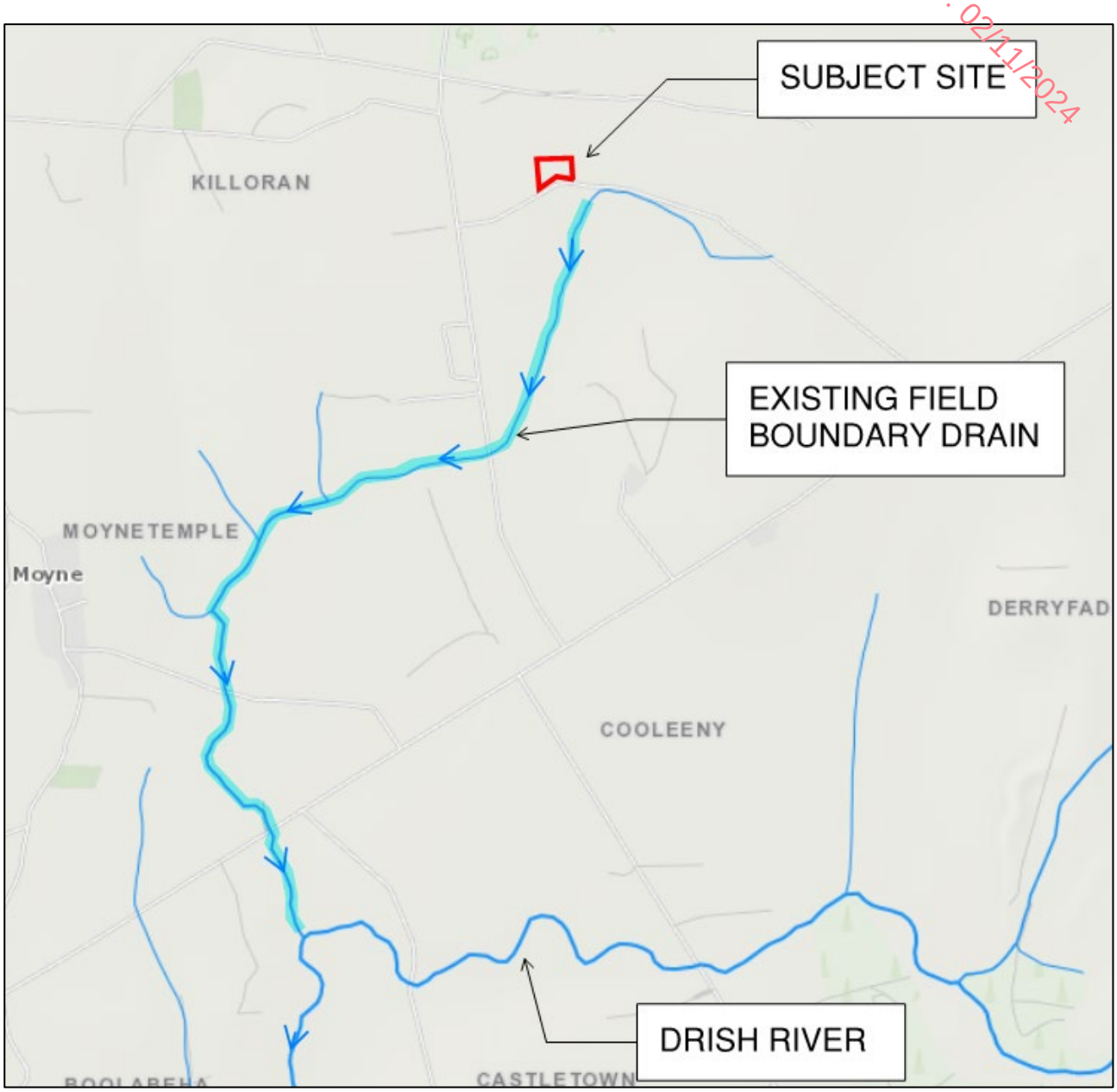

Figure16.2: Existing Surface Water Flow Routes (Source: EPA Maps, annotated: DOBA)

16.4.4 Wastewater Drainage

The subject site is not served by any public or private wastewater infrastructure. There is no public wastewater infrastructure in the general vicinity of the site.

16.4.5 Water Supply

The subject site has a 75mm watermain located adjacent to the private access road, within the red line boundary of the subject site. This water supply is a private main and is managed by a local group, the Moyne Group Water Scheme. The watermain is currently serving the derelict building immediately to the southwest of the site.

Any proposed development works have been designed in order to keep an adequate separation between it and the existing watermain. The subject site surface water outfall will cross the existing watermain at one location only, no other utility crossings are anticipated.

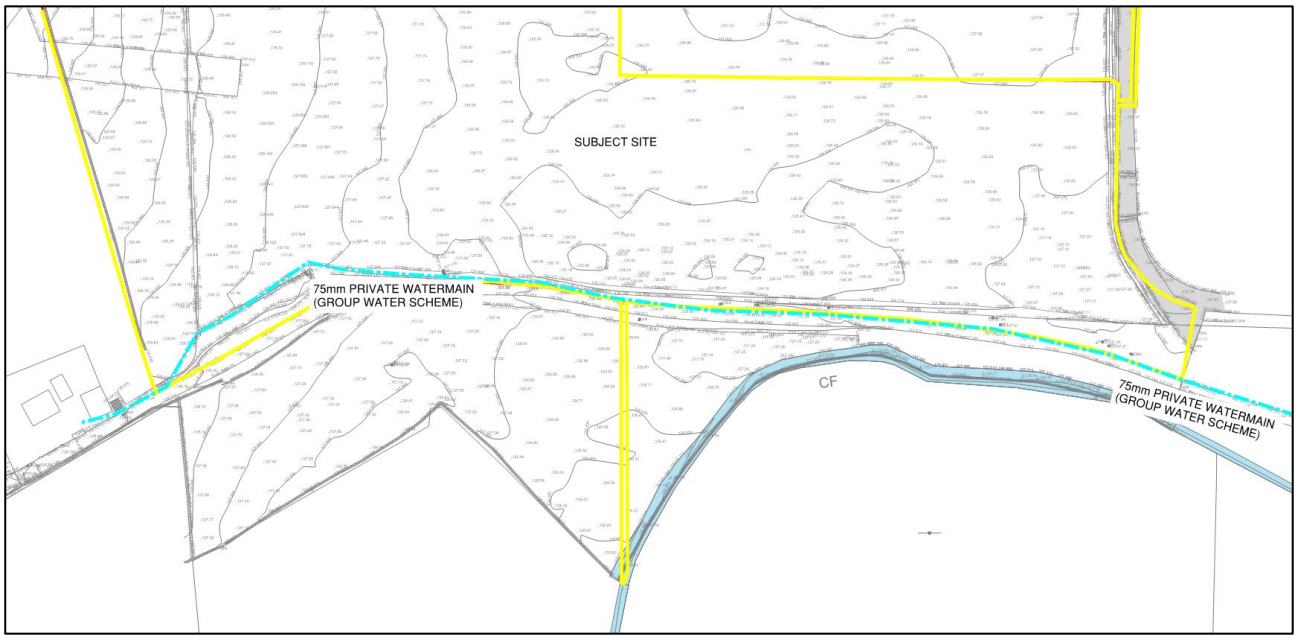

Figure 16.3: Existing Water Supply Infrastructure (Source: DOBA Design Drawing, annotated, DOBA)

16.4.6 ESB Utility Services

Currently, there are 110kV overhead cables traversing the adjacent lands to the north and west of the subject site originating from a substation to the northeast of the site as indicated in the below Figure 16.4. Members of the design team met ESB on the subject site to discuss the separation distances required from the existing overhead cables as well as the possibility of diverting the line. We would note that in this instance, ESB has confirmed that diverting the overhead lines would require a large scope of work which would only be considered by ESB during 2026 at the earliest. Due to this constraint, the site was redesigned in such a manner as to avoid the overhead cables and crossing thereof completely. The closest structure has more than 23m separation from the overhead cables as required by ESB.

There is a lamppost located in the southwestern corner of the subject site with an electricity feed from the western local infrastructure as shown in Figure 16.4 below.

The survey did not pick up any further ESB infrastructure within the boundaries of the subject site.

The subject site is further served by local sources of renewable energy. These include the existing Lisheen Mine Wind farm on the subject site, as well as a permitted solar farm (Tipperary Co. Co. Reg. Ref. 211128). There is capacity available within the ESB Grid Network to cater for the proposed development. Moreover, the Applicant has firm intentions to rather make use of the locally sourced renewable energy. Please refer to **Chapter 3 – Site Location and Context** for more information on these permitted schemes.

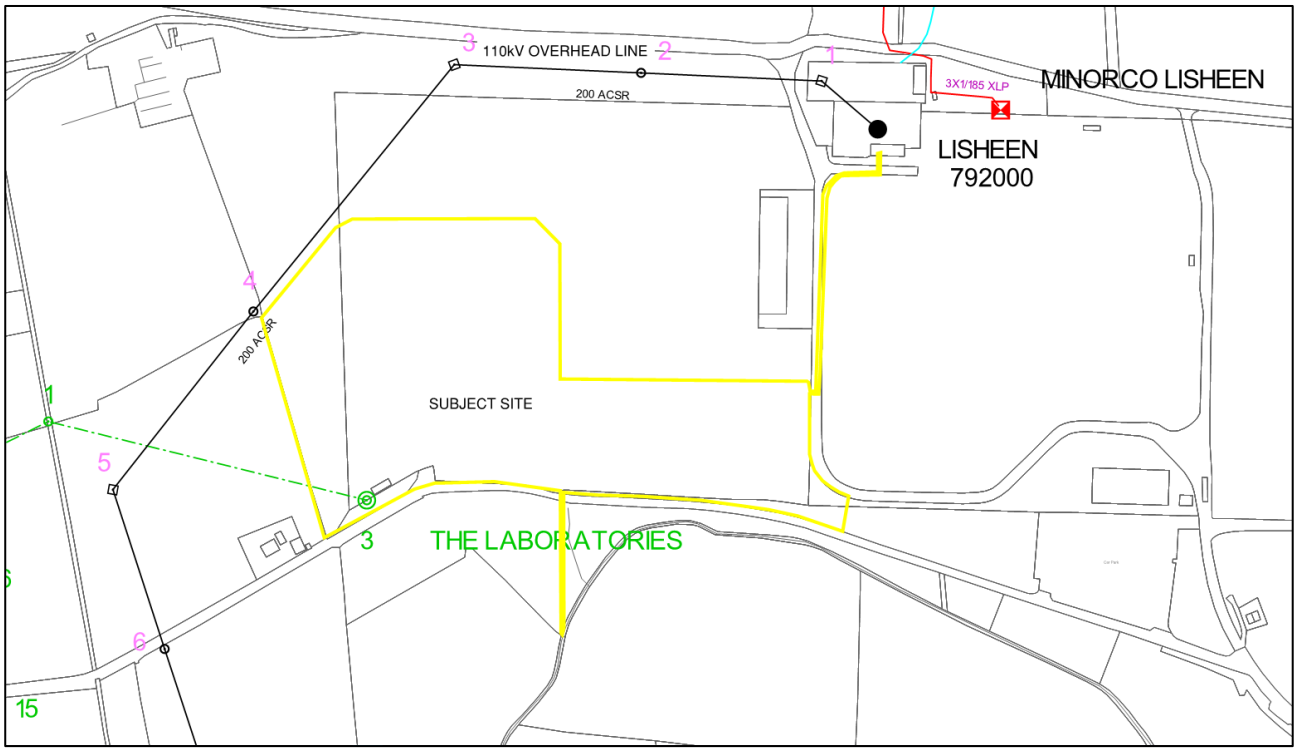

Figure 16.4: ESB Existing Infrastructure (Source: ESB Maps, annotated: DOBA)

16.5 Proposed Development

Nua Bioenergy Limited intends to apply for permission to construct a biomethane and bio-based fertiliser production facility, with an annual intake of up to 98,000 tonnes of feedstock per annum, at this site of c. 5.5 hectares at lands located at the former Lisheen Mine Site, Killoran, Moyne, Thurles, Co. Tipperary.

The application site is principally bounded by: lands associated with the former Lisheen Mine to the north south and east; and by agricultural lands to the to the west.

The development will consist of the construction of an anaerobic digestion plant comprising: 4 No. primary digester tanks (each measuring c. 7.6 m in height); 3 No. secondary digester tanks (each measuring c. 14.5 m in height); 4 No. feed hoppers; 4 No. technical rooms (ranging in size from c. 35 sq m to c. 85 sq m); 2 No. biogas conditioning units; process, storage and buffer tanks (comprising: 1 No. buffer digestate storage tank (c. 7.5 m in height), 1 No. suspension buffer tank (c. 8 m in height), 1 No. process area runoff storage tank (c. 4.5 m in height); 1 No. buffer digestate process tank (c. 4.5 m in height), 1 No. treated digestate liquids recycle storage tank (c. 4.5 m in height);

1 No. roofed liquids feed-mix tank (c. 3 m in height)); these components will be located within a containment bund constructed c. 3 m meters below ground level.

The proposed development will also consist of: feedstock storage (comprising 3 No. storage clamps (c. 1,050 sq m in area each) and 2 No. storage sheds (c. 500 sq m each)); a biomethane upgrading plant (including natural gas compression unit); a biomethane loading facility (comprising a 4 No. loading bays with associated gates and safety features measuring c. 490 sq m in area); a biomass boiler with its associated pellet storage silo (c. 12.5 m in height);Combined Heat and Power (CHP) plant and associated heat exchanger; a single storey bio-based fertiliser processing and storage unit (c. 3,630 sq m) (including digestate dewatering plant, fertiliser pasteurisation plant and bio-based fertiliser loading facilities); a single storey office building (c. 114.5 sq m) (including offices, meeting room, control room, laboratory, welfare facilities, storeroom and a first-aid facility); bin storage; 9 No. car parking spaces (including 5 No. standard parking spaces, 2 No. electric vehicle (EV) spaces and 1 No. accessible car parking space); electric vehicle (EV) charging infrastructure; 10 No. bicycle parking spaces; vehicular, cyclist and pedestrian access / egress and associated circulation routes; 2 No. weighbridges; a vehicle steam wash area; fuel storage tank and associated bund; an emergency flare (c. 7.6 m in height); a process area runoff lagoon; an attenuation pond; an ESB sub-station; boundary treatments [including gates, piers and fencing]; site lighting; all hard and soft landscaping; provision of sustainable urban drainage systems (SUDS); and all other associated site excavation, infrastructural and site development works above and below ground, including changes in level and associated retaining features, and associated site servicing [water and electricity supply].

The Surface Water Drainage strategy for the subject consists of 2 different drainage catchments. The Non-Process Area Runoff will outfall to a field boundary drain at a restricted rate whilst the Process Area Runoff will be fully harvested and reused on site and no outfall is proposed in this instance. It further outlines that the site is designed to cater for a 1:100-year storm event including 20% climate change and further discusses the SuDS provided at the subject site.

The wastewater at the site will be used in the biomethane production process and will therefore have **no outfall.**

The water supply serving the office and administration building only, will be taken from the Moyne Group Water Scheme.

A detailed description of all plant and equipment as part of this development can be seen in **Chapter 6 – Description of Proposed Development** and the engineering design and rationale is discussed in the Infrastructure Design Report (DOBA, 2024) which will be submitted under separate cover.

16.6 Potential Impacts of the Proposed Development

16.6.1 Do Nothing Scenario

If the Project was not undertaken, it is expected that there would be no significant change on the subject site regarding the surface water drainage, wastewater drainage, water supply or ESB Grid. The subject site falls within the landbank identified by Tipperary County Council to form part of the National Bioeconomy Campus Masterplan, and development of this nature is supported by TCC (TCC Development Plan 2022-2028, Policy 10 D).

Surface Water Drainage: In the absence of this Project, surface water runoff from the site would continue to flow to the existing field boundary drain located to the south of the site, and ultimately discharge to the Drish River. This would be considered a neutral, imperceptible and long-term effect.

Wastewater Drainage: In the absence of this Project, there would continue to be no wastewater drainage discharging from the subject site. This would be considered a neutral, imperceptible and long-term effect.

Water Supply: In the absence of this Project, there would be no demand for water usage from the local Group Water Scheme which is a neutral, imperceptible, long-term effect.

ESB Utility Services: There are no predicted impacts should the Project not proceed.

16.6.2 Construction Phase

The following section shall assess the effects of the receiving environment during the construction phase of the Project.

16.6.2.1 Surface Water Drainage

During the construction and demolition phase of the development, surface water from the existing development shall continue to discharge to the field boundary drain, located south of the subject site.

The following are the potential impacts of the proposed scheme during the construction phase:

- Mobilisation of sediments and harmful substances during the construction phase, due to exposed soil, and earth movement/ excavations, which may be flushed into the watercourses currently serving the site.
- Accidental spills of harmful substances such as petrol/ diesel or oil during the delivery and storage of harmful substances or by leakages from construction machinery. Construction materials such as concrete and cement are alkaline and corrosive and can cause pollution to watercourses.

- Potential from building materials or silts to be washed into field boundary drain, to the south of the site, causing pollution. Waterborne silts can arise from dewatering excavations, exposed ground, stockpiles and site haul roads. Heavy siltation or grit in the surface water runoff would lead to maintenance issues such as desilting or dredging of the receiving watercourses.

In the absence of mitigation measures, these potential impacts are considered to be adverse, significant and temporary.

16.6.2.2 Wastewater Drainage

During the construction and demolition phase of the development, the contractor shall install temporary welfare and toilet facilities. The discharge from these facilities shall be removed from the site using tankers. There shall be no effects on the surrounding environment. This is due to no formal Wastewater Drainage Network currently serving the site.

16.6.2.3 Water Supply

During the construction and demolition phase of the development, the contractor shall install temporary facilities on site for construction personnel. The water demands during the Demolition and Construction phase arising from the contractor's welfare facilities on the existing water supply networks are considered to have a neutral and imperceptible effect with a short-term duration.

16.6.2.4 ESB Utility Services

Electricity will be required for the construction activities for temporary lighting, equipment use etc. It is anticipated that a temporary connection will be taken from the existing LV supply which will facilitate electricity supply to the site during construction, subject to the appropriate agreements. The power demands during the construction phase on the existing electricity network are considered to be imperceptible, neutral and have a short-term effect.

Where the excavation strategy or temporary works require any temporary diversion of local services or utilities on the site perimeter, this would be undertaken with the prior agreement of the relevant service provider. A negative, moderate, short-term effect is identified where utility diversions are required.

16.6.3 Operational Phase

The following section shall assess the effects of the receiving environment during the operational phase of the Project.

16.6.3.1 Surface Water Drainage

The subject site is currently in a brownfield condition consisting of made ground. Historically, the Lisheen Mine was located on the subject site.The Lisheen Mine was a significant zinc and lead mine that operated from 1999 until its closure in 2015. It was one of the largest producers of zinc concentrate in Europe. The infrastructure at Lisheen Mine was demolished in accordance with the "Closure, Restoration & Aftercare Management Plan – C.R.A.M.P" (The Lisheen Mine, 2016) as part of the site's decommissioning process, which began in 2016 following the cessation of mining operations in December 2015. The active closure phase continued until February 2018. The decommissioning included the removal of all surface and underground plant and equipment.

The existing lands are currently drained by discharging via overland flow routes as indicated in **Figure 16.1** to the existing field boundary drain to the south of the site at an unrestricted flow rate. This field boundary drain ultimately drains in a southern direction and outfalls into the Black River which joins into the Drish River further downstream.

The proposed surface water drainage strategy, as outlined in the Engineering Infrastructure Design Report (DOBA, 2024), will entail the construction of a new internal surface water drainage network comprising SUDS features to collect surface water runoff from relevant hardstanding areas where possible. As infiltration of SW runoff to the ground is not feasible as outlined above, SUDS features will discharge excess runoff to a dedicated surface water collection network. The network will discharge to the adjacent field boundary drain located c. 90m south of the subject site at a controlled Qbar rate with storage for excess runoff volumes being provided in an above-ground storage basin.

The subject site has been subdivided into 2 overall catchment areas for attenuation purposes. These catchment areas define the site as:

- Surface water runoff originating from all areas not directly relating to the biomethane process (**Non-Process Area Runoff**) such as roofs and entrance roads and,
- Surface water runoff originating from areas directly relating to the biomethane production process (**Process Area Runoff**), such as the bund, yard areas and certain internal roads used by process equipment might consist of excess material.

The **Non-Process Area Runoff** is indicated in blue in the Figure 16.5 below. The runoff from this catchment is proposed to be kept separate and attenuated within its own above-ground depression whereafter it outfalls into the field boundary drain to the south at a restricted rate equal to the sitewide Qbar.

The **Process Area Runoff** is indicated in yellow in Figure 16.5 below. Runoff from this area will be kept completely separate and routed by a network of underground pipes to a separate above-ground storage lagoon. The runoff will be harvested and recirculated into the process on site. **There is no outfall required for this surface water catchment.**

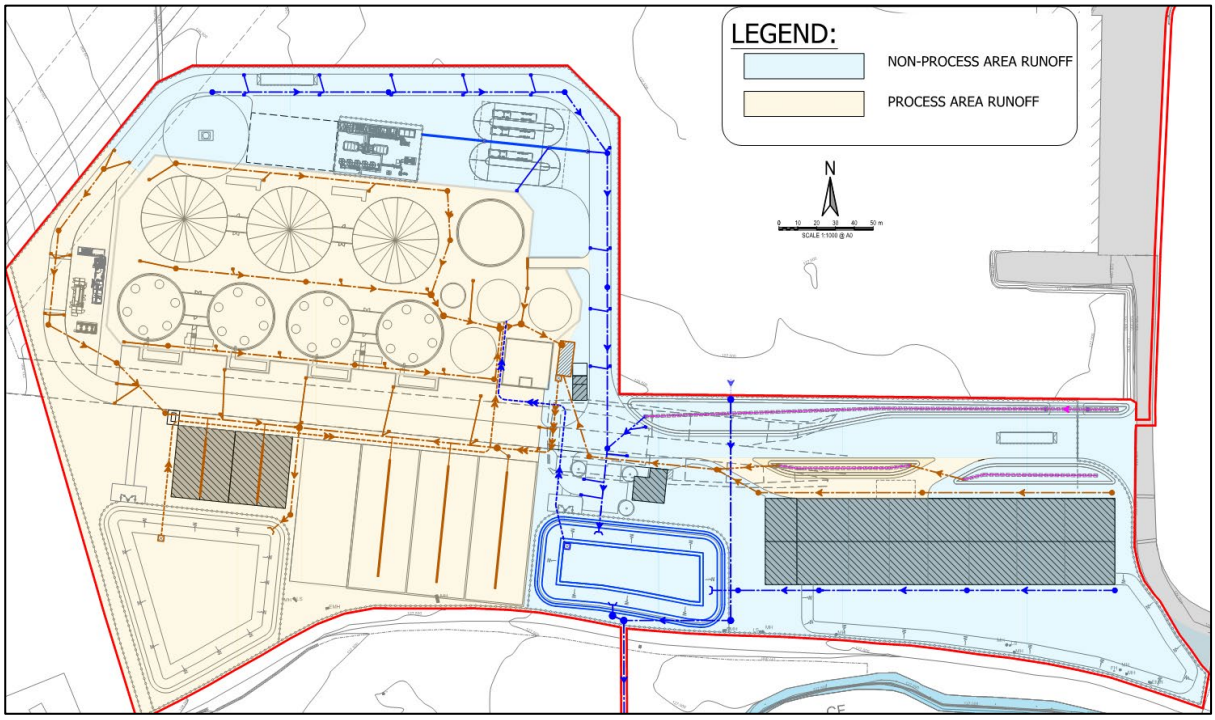

Figure 16.5: Surface Water Catchments – Operational Phase

The table below indicates a summary of the flow characteristics of each catchment:

Catchment	Soil Type	Analysed Area	Allowable Discharge (Qbar)	Proposed Discharge Rate
Non-Process Area Runoff	Type 3 & 4	c. 25,784m^2	16.1 l/s	34.05 l/s
Process Area Runoff	Type 3 & 4	c. 28,749m^2	17.95 l/s	0 l/s
Total		**c. 54,533m^2**	**34.05 l/s**	**34.05 l/s**

Table 16.1: Catchment Summary with Proposed Discharge Rates

The total site area is proposed to be used for the calculation of permissible outflow due, however, it is noted that the **Process Area Runoff** would be reused and has no outfall. It is only the Non-Process Area Runoff that will outflow at this restricted rate.

The design of the site has adopted, where possible, the application of more nature-based SUDS solutions where possible. A combination of the following will be utilised at the subject operational stage:

- Bioretention Swales,
- Above-Ground Attenuation Systems,
- Rainwater Harvesting Lagoon,
- Petrol Interceptor (Class 1),

The proposed surface water that will ultimately outfall into the existing Field Boundary Drain will be of higher water quality due to the provision of SuDS. The impacts on surface water discharge from the site are considered to be positive, significant and permanent. (Please refer to DOBA Drawing 2429-DOB-XX-SI-DR-C-0200)

16.6.3.2 Wastewater Drainage

The wastewater relating to the subject office and administrative building is the only origin of wastewater at the subject site. It is proposed that the wastewater be routed to a singular domestic pump station with 24hr storage capacity to the east of the office building. The wastewater will be pumped via a rising main to the primary digester in the bund and recirculated back into the process. (Please refer to DOBA Drawing 2429-DOB-XX-SI-DR-C-0300). There is therefore no outfall from the subject site and the operational impact on the environment would be considered negligible.

16.6.3.3 Water Supply

The Water use proposed for the subject site shall be in three various systems:

- Process water for general operations and process circulation
- Firefighting water in the event of a fire within the site
- Potable water for general staff consumption.

The subject site has a 75mm watermain located adjacent to the private access road, within the red line boundary of the subject site. in the private access road along the southern boundary of the subject site. This water supply is a private main and is managed by a local area Group Water Scheme.

It is proposed, as part of the development to supply the site from the existing 75mm Moyne Group Water Scheme network adjacent to the private access road, within the red line boundary of the subject site. This main is proposed to serve the site with potable water only. Supply for process water and firefighting will not be permitted and will be generated by means of rainwater harvesting and storing of same. The below sections outline the extent of water demand/ supply networks proposed as part of the site development. (Please refer to DOBA 2429-DOB-XX-SI-DR-C-0400).

16.6.3.3.1 Process Water

It is proposed that the subject site Process water usage is 60m^3 per day. The full amount of water will be provided by means of rainwater harvesting and storing of same. Each of the drainage catchments will harvest the runoff originating from roofs, hardstanding areas and yards. The primary source of water would be from the Process Area Runoff lagoon; however, the Non-Process Area Runoff storage basin has been adequately sized to allow for permanent storage of water which could be used to supplement the process in the event of a drought. In this case, 2,200m3 of storage (36 days) is available for usage.

The available supply of water via rainwater harvesting outweighs the demand over the course of a year. Any surplus rainwater from the Non-Process Area Catchment will be directed to the site's surface water system and outfall at a restricted rate into the field boundary drain to the south. (Please refer to DOBA Drawing 2429-DOB-XX-SI-DR-C-0200)

16.6.3.3.2 Firefighting Water

It is required to provide fire flow requirements/storage which can provide a constant flow of 35 l/s for a total of 120 minutes on-site for firefighting purposes. Due to the site not being served by any public water supply infrastructure or hydrants, this is proposed to be provided within the surface water attenuation storage as a permanent water level consisting of rainwater harvested runoff. In this instance, in order to satisfy the requirements, 252 m3 should be provided at all times.

As part of the site attenuation strategy, it is proposed to provide a permanent water storage volume of 310m3 which satisfies this requirement. In the case of a firefighting emergency, the attenuation basin can be directly used as a draw-down location.

16.6.3.3.3 Potable Water

It is proposed that a 50mm water supply to the site office and administration building is taken from the Moyne Group Water Scheme 75mm main located to the south of the subject site, adjacent the existing private road, within the boundary of the subject site. The Group Water Scheme has been contacted in this instance and a letter of consent has been received.

It is expected that a maximum of 6 No staff will be on-site permanently and is estimated to have a daily usage of 60 l/day. The usage of 360 l/day has been agreed with the Group Water Scheme. (Please refer to DOBA Drawing 2429-DOB-XX-XX-DR-C-0400).

16.6.3.4 ESB Utility Services

It is proposed that a new underground 10kV cable be constructed between the existing ESB substation to the northeast of the subject site, to a new private substation within the subject site to facilitate mains power and electricity supply to the operation.
ESB Networks has confirmed that the proposed new development will be fed from the substation to the northeast of the site. The site will be served by a 10kV underground power supply via connection to the national grid at the ESB substation to the north of the site with the capacity to cater for the development. The ESB infrastructure is to be designed and constructed in strict accordance with the latest ESB National Code of Practice Specification 2021 document and drawings.

(The subject site location is adjacent to an operational wind farm producing energy for the national ESB grid. Further to this, there is also an existing planning permission (Tipperary Co. Co. Reg. Ref. 211128) for a 122MW Solar Electricity farm on the lands to the east of the site. There are plenty of energy sources available at the subject site to provide energy to the proposed facility. The Applicant has firm intentions to rather make use of the locally sourced renewable energy).

16.7 Mitigation

16.7.1 Construction Phase

During construction, the appointed contractor will implement precautions to protect known utility infrastructure from damage in accordance with best practice methodologies and the requirements of the utility companies, where practicable. Protection measures will include warning signs and markings indicating the location of utility infrastructure, safe digging techniques near known utilities, and, when possible, isolation of the section of infrastructure during works in the immediate vicinity. Additional methods that will be used to mitigate the risk of damage to existing services will be as outlined below.

- Review the service records of the existing assets to determine their depth, precise location, and their proximity to the planned cable trenches.
- The use of Ground Penetration Radar (GPR), to provide greater confirmation of the locations of existing assets.
- Using trial holes or slit trenches to provide more precise information about the exact location of existing assets.

16.7.1.1 Surface Water Drainage

In order to mitigate against the potential impacts outlined in the above section, the following measures are proposed for the construction stage of the project:

- Groundwater or run-off that collects in excavations or foundation trenches will be drained or pumped to a construction site water treatment arrangement. The water is to be directed into a settlement basin/tank, with a proprietary 'silt bag' to intercept bulk silt volumes. This process entails sediment-laden water being pumped into a filter bag, which traps the solids inside and allows the filtered water to flow freely out through the Geotextile fabric to disperse into the collection point. The proposed collection point shall be a series of silt trap fences and filter drain arrangements, adjacent to the constructed pond which will act as a temporary settling pond during the construction. The water and silt within the pond are to be emptied into water vacuum tanker and is to be disposed of off-site to a licenced facility.
- To mitigate against unwanted silt discharge, Silt traps in the form of silt fences or hay bale structures will be adopted across lengths of the site to intercept runoff and provide a stage of treatment and runoff filtration.
- Runoff filtered through the silt trap fence shall be then intercepted by a temporary filter drain which will run directly parallel to the downstream side of the silt trap fence. The collected, filtered runoff shall

discharge to the constructed ponds which shall act as temporary settlement structures during the construction phase. The use of filter drains and temporary settlement ponds shall further treat any potential contaminated/ polluted runoff prior to discharge to a Silt Bag arrangement which will provide maximum treatment of surface water runoff entering the field boundary drain.

- Control and Management of surface water runoff.
- Control and management of shallow groundwater during excavation and dewatering.
- Management and control of soil and materials.
- Appropriate fuel and chemical handling, transport and storage.
- Management of accidental release of contaminants at the site.
- Control and handling of cementitious materials.

Please also refer to **Chapter 10 – Hydrology and Hydrogeology** for further details.

A summary of the proposed series of silt/ pollution prevention has been provided in **Figure 16.6** below.

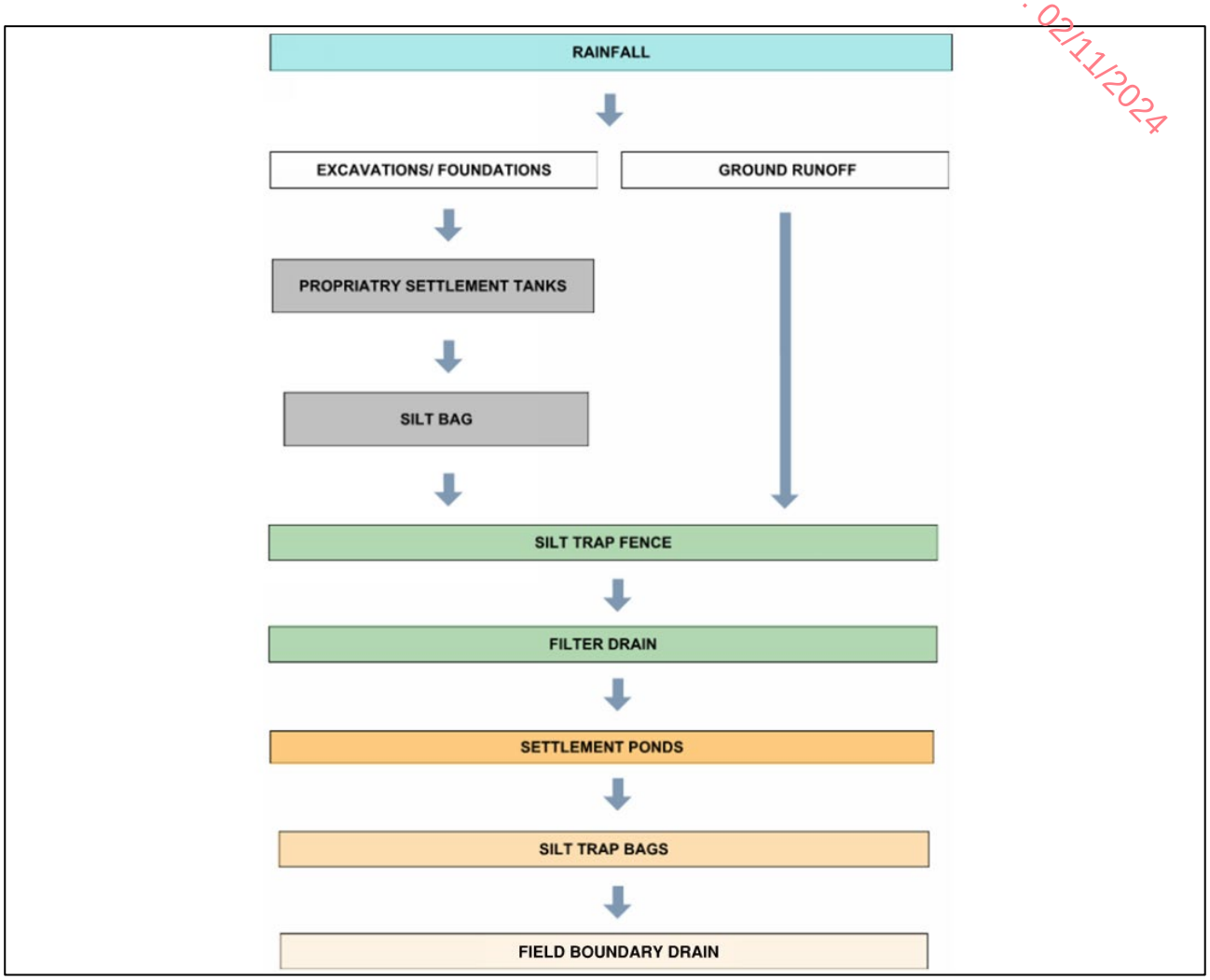

Figure 16.6: Proposed Surface Water Mitigation during Construction

16.7.1.2Wastewater Drainage

There is no existing wastewater drainage in close proximity to the subject site. Care will be taken in order to ensure no accidental spillage of wastewater during the emptying of welfare facilities.

Any trenches should be backfilled as soon as possible to prevent any infiltration to the subsurface.

16.7.1.3Water Supply

When working in close proximity to the existing private water supply along the site's southern boundary, particular care will be taken. All existing infrastructure will be clearly marked on the ground, and open trenches will be appropriately fenced to ensure safety and protect the integrity of the water supply.

Open trenches will be backfilled promptly to prevent any infiltration into the subsurface. Full coordination with the Moyne Group Water Scheme's owners will be maintained, and any work affecting the water supply or conducted near it will proceed only with their prior consent and cooperation.

16.7.1.4ESB Utility Services

The ESB shall install all of the new incoming supplies to the proposed development unless otherwise agreed in writing. The Contractor shall ensure that construction works on site adhere to the ESB Networks / HSA "Code of Practice for Avoiding Danger from Underground Services". If works do require an outage these shall be planned by the Contractor in advance and the ESB shall liaise with customers advising them of the same. Where any construction activities pass beneath the existing high-voltage overhead cables, suitable fencing, goalposts, and guarding will be installed during construction in accordance with best practices.

16.7.2 Operational Phase

16.7.2.1Surface Water Drainage

Surface water runoff from the Project will be managed in accordance with the requirements of the Greater Dublin Strategic Drainage Study (GDSDS), with surface water attenuation and retention included as part of the main surface water drainage system. The surface water management proposals shall serve to significantly reduce the overall impact of the Project on the existing environment and shall reduce the risk of flooding in the receiving public surface water network. The proposed SuDs strategy shall also provide cleansing of all surface water prior to the discharge to the field boundary drain, increasing the sustainability of the design. The following measures have been applied to ensure adequate usage during the operational phase:

- The Process and Non-Process Area has been designed to remain completely separate,

- Utilise spill kits, bunded pallets, and secondary containment units as necessary.

16.7.2.2 Wastewater Drainage

The wastewater pump station has been designed with 24-hour emergency storage and a standby pump in the event of failure of the primary pump.

In the event of failure of one of the processing tanks, the bunded area is designed with a temporary storage capacity of 110% of the largest tank within it, whereafter it can be pumped back into the processing feed or temporarily stored in the buffer storage tank.

16.7.2.3 Water Supply

The only potable water usage during the operational stage will be the office and administration building. The water usage is anticipated to be minimal and no mitigation is required in this instance.

The biomethane process is proposed to re-use harvested water being stored in above-ground depressions. Both of these will be supplied with a standby pump in the event of failure of the primary pumps.

16.7.2.4 ESB Utility Services

The new network shall be commissioned and subject to a regular operational inspection and maintenance regime, in accordance with the utility providers' procedures and national rules for electrical installations I.S 10101: 2020, to ensure the system keeps operating within the design specifications.

The proposed development will be utilising the ESB National Grid, however, it is noted that the subject site is located in close proximity to various renewable energy sources and it is the client’s full intention to rather use these as primary sources of electricity. The subject site has a CHP unit in case of any power outages.

16.8 Residual Impacts

16.8.1.1 Surface Water Drainage

The provision of a Sustainable Urban Drainage System (SUDS) for the Project will provide betterment of the existing scenario. Rainwater harvesting, ponds and swales will facilitate a reduction in surface water runoff volumes discharged from the site. Collection of surface water runoff via bio-retention areas provides improvement to water quality. The provision of attenuation storage and flow control will reduce surface water runoff rates discharged from the site. The impact on surface water is a positive, significant and long-term effect.

16.8.1.2 Wastewater Drainage

There is no discharge off site and the residual impact is therefore negligible.

16.8.1.3 Water Supply

It is considered that the residual effects on the watermain network on the Group Water Scheme's private water supply will be neutral, not significant and permanent.

16.8.1.4 ESB Utility Services

It is considered that the residual effects on the local Substation will be neutral, not significant and permanent.

16.9 Indirect and/or Secondary Impacts

These effects may not be immediately apparent and can arise from the interactions between the project and its surrounding environment. Unlike direct impacts, which are the immediate consequences of the project's activities, secondary impacts often occur as a response to changes caused by the project.

Assessing secondary impacts is crucial for understanding the broader implications of a project, ensuring that decision-makers are aware of both direct and indirect consequences for sustainable development.

16.9.1.1 Surface Water Drainage

The provision of a Sustainable Urban Drainage System (SUDS) for the Project will provide a better water quality of the final discharged surface water and could lead to a positive effect on the downstream streams and rivers.

16.9.1.2 Wastewater Drainage

There is no discharge off site and the secondary impact is therefore negligible. There is however a positive secondary effect due to not having a discharge off-site. The further downstream wastewater network would therefore be less congested.

16.9.1.3 Water Supply

It is considered that the effects on the watermain network on the Group Water Scheme's private water supply will be neutral, not significant and permanent.

16.9.1.4 ESB Utility Services

It is considered that the residual effects on the local Substation, however, if the proposed development is ultimately served by the local ESB grid, the overall availability in capacity would be less.

16.10 Monitoring

16.10.1 Surface Water Drainage

Routine inspections to the on-site drainage features such as the pumps, manholes, silt traps and flow control devices, especially after large storm events.
The EPA will be invited for regular inspections as required.

16.10.2 Wastewater Drainage

The Project's facility management shall carry out operational inspection and maintenance regimes to ensure the system keeps operating within the design specifications.
Regular inspections and maintenance are to be carried out on the wastewater pump station serving the offices.

16.10.3 Water Supply

The Project's management company shall carry out operational inspection and maintenance regimes to ensure the system keeps operating within the design specifications.

16.10.4 ESB Utility Services

The proposed subject primary energy source will be the ESB Grid or local renewable energy suppliers. However, a standby CHP unit is proposed if the main electricity feed has an outage. The proposed CHP unit will be regularly serviced as required by the manufacturer's guidelines. No additional monitoring will be required in this instance.

16.11 Interactions

16.11.1 General

The design team has produced a coordinated design to minimise environmental impacts and to ensure a sustainable approach to the design of the Project. In compiling this chapter, reference has been made to the project description provided by the project coordinators, project drawings and design reports provided by the project engineers and information relating to construction activities provided by the engineers. Reference can be made to the relevant chapters for additional information.

Table 16.2: Interaction Matrix

Source	Interaction	Receptor																									
		Pop & Human Health		Biodiversity		Land and Soils		Hydrology and Hydrogeology		Air Quality		Climate		Noise and Vibration		Traffic and Transportation		Material Assets: Waste		Material Assets: Utilities		Archaeology and Cultural Heritage		Landscape and Visual		Risk Management	
		Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op	Con	Op
	Population & Human Health																										
	Biodiversity																										
	Land, Soils & Geology																										
	Hydrology & Hydrogeology																										
	Air Quality																										
	Climate																										
	Noise and Vibration																										
	Traffic and Transportation																										
	Material Assets: Waste					X		X	X	X	X		X			X	X										
	Material Assets: Utilities																										
	Archaeology & Cultural Heritage																										
	Landscape and Visual																										
	Risk Management																										

16.11.2 Lands, Soil, Geology – Chapter 9

Utilities and Lands, Soil and Geology are closely interrelated. During the duration of the project, excavations for utilities are designed to be balanced by means of cut/fill to ensure that there are no requirements for carting material off-site. A neutral impact is therefore assumed.

16.11.3 Hydrology and Hydrogeology – Chapter 10

There is an inter-relationship between hydrology (addressed in Chapter 10) and utilities. There will be no potential cumulative impacts on the bedrock as excavations are relatively shallow with no large-scale dewatering required and the aquifer is poor with little importance regionally.

Surface water run-off may have limited potential to enter soil and groundwater. Implementation of appropriate mitigation measures as outlined in Chapter 10 (Hydrology) will eliminate the potential for the influx of surface contaminants into the underlying geology and hydrogeology.

16.11.4 Air Quality – Chapter 11

The sitewide groundworks has been designed in such a way to minimise off site carting and subsequently lower the emissions produced by construction traffic. It is anticipated that the associated impact will be long-term, localised, neutral and imperceptible.

16.11.5 Climate – Chapter 12

Climate change has the potential to increase flood risk over time. However, adequate attenuation and drainage have been provided to account for increased rainfall in future years, as part of the design of the proposed development, and it has been concluded that the associated impact will be long-term, localised, neutral and imperceptible.

16.11.6 Traffic and Transport – Chapter 14

The construction of the proposed infrastructure related to utilities may impact traffic flow and transportation routes in the surrounding areas. The mitigation measures of these are summarised in Chapter 14.

16.12 Cumulative Impacts

Cumulative effects can be defined as the effects on the environment that result from incremental changes caused by the combination of the proposed development together with other past, present and reasonably foreseeable future developments. Cumulative effects may arise from:

- The interaction between the various impacts within a single project.
- The interaction between all of the different existing and/or approved projects in the same area as the proposed project.

This section sets out the interaction that the proposed development has with different existing and/or approved projects in the same area.

We would note that the only material assets that would be likely to contribute to the cumulative impacts would be the **Water Supply** and the **ESB Utility Services** as the subject site does not have a wastewater discharge and proposes to discharge surface water at Qbar/Greenfield runoff.

The Tipperary County Development Plan 2022-2028 identifies the application site as a location for a Bioeconomy Campus. At the time of writing, there are no further plans for development within the areas which might negatively impact the utilities at/or surrounding the site.

A comprehensive list of "other existing and/or approved projects" that could potentially impact the cumulative effects assessment was reviewed. A screening process was conducted to evaluate whether each of these projects has the potential to create significant cumulative effects in relation to material assets when combined with the proposed development. The list for the review is summarised in the below Table.

Table 16.3: Exhaustive List of Projects Reviewed

Project No.	Project Name / Type	EIA Factor												
		Pop & Human Health	Biodiversity	Land and Soils	Hydrology and Hydrogeology	Air Quality	Climate	Noise and Vibration	Traffic and Transportation	Waste	Utilities	Archaeology and Cultural Heritage	Landscape and Visual	Risk Management
1	Acorn Recycling Workshop and Truck Washout										✓			
2	Irish Bioeconomy Foundation Research and Development Unit										✓			
3	Glanbia Biorefinery (1)										✓			

Project No.	Project Name / Type	EIA Factor												
		Pop & Human Health	Biodiversity	Land and Soils	Hydrology and Hydrogeology	Air Quality	Climate	Noise and Vibration	Traffic and Transportation	Waste	Utilities	Archaeology and Cultural Heritage	Landscape and Visual	Risk Management
4	Glanbia Biorefinery (2) (Modifications to Application Reg. Ref. 18601296)										✓			
5	Soleirtricity Solar PV Farm										✓			
6	Revive Environmental										✓			
7	O'Grady Agricultural Shed and Milking Unit										X			
8	O'Grady Livestock Underpasses										X			
9	Cooleeny Cheese										✓			
10	Cooleeny Cheese										✓			
11	Cooleeny Cheese										✓			
12	NaringTech										X			
13	Hogan's Drain & Pipe Cleaning										X			
14	Derryville Environmental Solutions										X			
15	Derryville Environmental Solutions										X			
16	LISHEEN III WIND FARM LIMITED										X			
17	LISHEEN III WIND FARM LIMITED										X			
18	BRUCKANA WINDFARM LIMITED										X			
19	Templederry Energy Resources Solar Farm										X			
20	Engie Developments Solar Farm										X			

Project No.	Project Name / Type	EIA Factor												
		Pop & Human Health	Biodiversity	Land and Soils	Hydrology and Hydrogeology	Air Quality	Climate	Noise and Vibration	Traffic and Transportation	Waste	Utilities	Archaeology and Cultural Heritage	Landscape and Visual	Risk Management
21	Shannon Resources (former Galmoy Zinc and Lead Mine)										X			
22	Overhead electricity line from Thurles to the Borrisoleigh.										X			
23	Borrisbeg Wind Farm										X			
24	Gromane Limited										X			

Several projects were excluded from consideration due to factors such as their location, scale, and nature of the proposed development. The projects that passed the screening process were further evaluated, and the findings are discussed/assessed in the Table below. These projects generally have proposed works of a similar nature to that of the proposed development site with a focus on Material Assets only. The below table summarises the findings, and mitigation measures if required.

Table 16.4: Review Findings and Mitigation

Project No.	Project Name	Planning Ref.	Review Findings and Mitigation
1	Acorn Recycling Workshop and Truck Washout	Tipperary Co. Co. Reg. Ref. 2360281	**Water Supply** – No cumulative effect as the proposed facility utilises rainwater harvesting, **ESB Utility Services** – Additional Solar Panels proposed. No significant increase in ESB Grid Demand. **Overall**, no combined mitigation is required for the Cumulative scenario.
2	Irish Bioeconomy Foundation Research and Development Unit	Tipperary Co. Co. Reg. Ref. 211171	**Water Supply** – The proposed offices require 1.8m3 per day. Cumulatively the development would have a medium long-term effect impacting the overall water demand available. **ESB Utility Services** – Minor electricity feed required serving offices. This is estimated to have a negligible impact on the surrounding ESB Grid demand. **Overall,** groundwater monitoring and levels of same should be monitored by the Moyne Group Water Scheme, however, due to the proposed cumulative usage being low, no additional mitigation is required.

Project No.	Project Name	Planning Ref.	Review Findings and Mitigation
3	Glanbia Biorefinery (1)	Tipperary Co. Co. Reg. Ref. 18601296	**Water Supply** – The proposed development has an existing borehole and would not be connected to the local Group Water Scheme. No significant impact is anticipated. **ESB Utility Services** – Although the development would have a significant demand, it is believed that it will be powered primarily by a CHP plant. **Overall,** no further mitigation is required due to supplementary sources being utilised for both water and energy supply.
4	Glanbia Biorefinery (2)	Tipperary Co. Co. Reg. Ref. 20129	**Water Supply** – The proposal is to utilise a new borehole 1.5km northeast of the subject site. This would have a negligible impact. **ESB Utility Services** – Although the development would have a significant demand, it is believed that it will be powered primarily by a CHP plant. **Overall,** no further mitigation is required due to supplementary sources being utilised for both water and energy supply.
5	Soleirtricity Solar PV Farm	Tipperary Co. Co. Reg. Ref. 211128	**Water Supply** – Minimal staff is anticipated at this PV facility and minor water demand is required. **ESB Utility Services** – A significant positive impact is predicted as the Solar Farm proposes to produce 122 MW for the local grid. **Overall,** no mitigation is required due to a combined positive impact on the general area.
6	Revive Environmental	Tipperary Co. Co. Reg. Ref. 21709	**Water Supply** – Water supply is proposed from a new borehole. No significant impact on the Group Water Scheme is expected, **ESB Utility Services** – A large electricity feed is required and would have a negative cumulative impact on the development. **Overall,** although a large energy feed is required, an overall low impact is anticipated and no mitigation is required. The proposed planning application Nua Bioenergy Ltd is preparing will endeavour to utilise renewable alternatives rather than depending on the ESB Grid.
9-11	Cooleeny Cheese	Tipperary Co. Co. Reg. Ref. 2360018	**Water Supply** – N/A due to distance from local Group Water Scheme, **ESB Utility Services** – A large electricity feed is required and would have a negative cumulative impact on the development.

Project No.	Project Name	Planning Ref.	Review Findings and Mitigation
			Overall, although a large energy feed is required, an overall low impact is anticipated and no mitigation is required. The proposed planning application Nua Bioenergy Ltd is preparing will endeavour to utilise renewable alternatives rather than depending on the ESB Grid.

The nature of the projects identified is of such a scale that there are no largely negative residual impacts. We would note that a large feed from the ESB Grid is required for some of the projects reviewed. However, due to the source of renewable energy (existing and proposed) within the area, the overall residual effect still remains low. In general, the overall cumulative impact is considered low with a low residual impact.

16.13 Difficulties Encountered

No difficulties were encountered in the preparation of this Chapter of the EIAR.

16.14 References

- The Greater Dublin Region Code of Practice for Drainage Works, 2012,
- Greater Dublin Strategic Drainage Study, 2005,
- I.S. EN752: 2017 Drain & Sewer Systems outside Buildings, 2017, National Standards Authority of Ireland
- I.S. EN12056: 2000 Gravity Drainage Systems inside Buildings, 2000, National Standards Authority of Ireland
- I.S. EN752: 2017 Drain & Sewer Systems outside Buildings, 2017, National Standards Authority of Ireland
- Wastewater Treatment Manuals, 1999, Environmental Protection Agency
- Control of Water Pollution from Construction Sites, 2001, Construction Industry Research and Information Association
- Technical Guidance Document H Drainage & Wastewater Disposal, 2016, Department of Housing, Planning, Community and Local Government
- The SuDS Manual, 2015, Construction Industry Research and Information Association
- Civil Engineering Design Report, 2024, Donnachadh O'Brien & Associates Consulting Engineers
- Site-Specific Flood Risk Assessment Report, Donnachadh O'Brien & Associates Consulting Engineers
- Construction Management Plan, 2024, Donnachadh O'Brien & Associates Consulting Engineers