

Appendix 2E

Surface Water Management Plan (SWMP)

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MWP

SURFACE WATER MANAGEMENT PLAN

Ballinlee Wind Farm

Ballinlee Green Energy Limited.

September 2025

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Appendix 1 – Surface Water Drawings

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1. Introduction

1.1 Development Description

Ballinlee Green Energy Ltd (the Applicant) propose to develop a wind farm (named Ballinlee Wind Farm) comprising seventeen (17) No. wind turbines located on privately-owned predominantly agricultural lands in east County Limerick.

The wind farm site under consideration is located within the townlands of Ballincurra, Ballinlee South, Ballingayrour, Ballinrea, Knockuregare, Ballinlee North, Carrigeen and Camas South approximately 18km south of Limerick City and 3km southwest of Bruff, Co. Limerick. The site is situated in a rural area characterised by agricultural holdings and one-off residential dwellings. Some patches of forestry plantation occur within the proposed development and some on neighbouring properties.

Table 1-1 sets out the characteristics of the project elements for which development consent is being sought and all other associated project components.

Table 1-1 Characteristics of the Proposed Project

Proposed Development for which consent is sought	Core Wind Farm Components - Seventeen (17) No. wind turbines (turbine tip height of 160m, and 150m (T6)) with associated foundations and crane hardstand areas. - One (1) No. Permanent Meteorological Mast (92m height) and associated foundation, hardstand area and ancillary main crane hardstand area. - One (1) No. Electrical Substation (110kV) including Eirgrid compound, IPP, maintenance compounds, ancillary building, security fencing and all associated works. - Nine (9) No. site entrances. - New and upgraded internal site service tracks (approximately 10.8km of new internal access tracks to be constructed). - New clear span bridge over the Morningstar River. - Underground electric collector cable systems between turbines within the wind farm site. - Underground electric cabling systems between the wind farm site and connection point at existing Killonan 220/110kV substation. Associated Components of the Proposed Development - New temporary access track via R516 to facilitate turbine delivery route located in the townland of Tullovin. - Three (3) No. temporary construction site compounds (one approximately 95m x 50m and two approximately 55m x 25m). - Two (2) No. borrow pits to be used as a source of stone material during construction and for storage of excess excavated materials. - Nine (9) No. permanent and two (2) temporary deposition areas. - Associated surface water management systems. - Tree felling required for wind farm infrastructure.
Other Associated Project Components	- Whooper Swan Management Area - Habitat Enhancement Areas - Landscaping, fencing and all associated works.

1.2 Scope of this Report

The purpose of the Surface Water Management Plan is to outline the requirement, function and operation of the surface water management systems and controls (features and devices) designed for the proposed development. The surface water systems, features and devices implemented are part of the design to manage surface water during the construction and operational phase of the wind farm. Example maintenance and inspection plans are also provided. This chapter should be read in conjunction with the surface water drawings included in **Appendix 1**, Construction Environmental Management Plan (EIAR **Volume III, Appendix 2A**) and EIAR **Chapter 04** Civil Engineering.

1.3 Site Location

The proposed development is located in a rural area of east Limerick, approximately 18km south of Limerick City and 3km southwest of Bruff. **Figure 1-1** outlines the location of the proposed development and the proposed development site boundary included in the planning application.

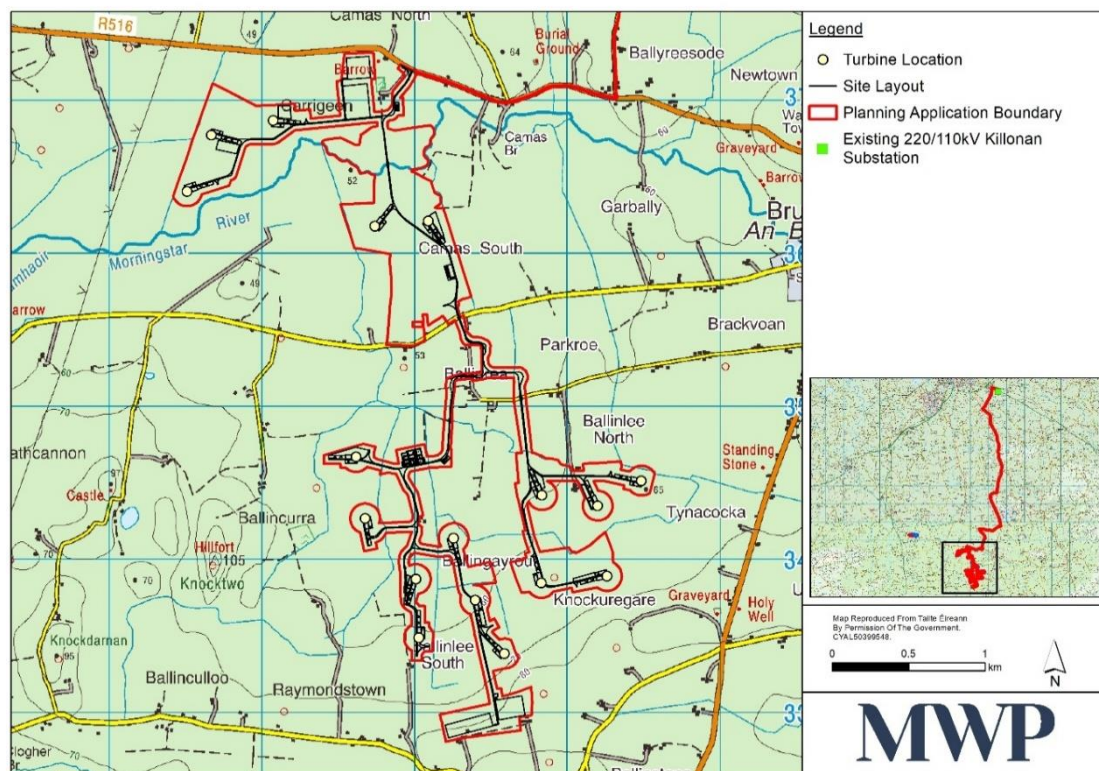


Figure 1-1: Location map of proposed Wind Farm

2. Surface Water Management Principles

2.1 Overview

The primary surface water management principles are designed integrally with the proposed wind farm infrastructure layout as a measure to ensure that the proposal will not change the existing flow regime across the site, will not deteriorate water quality and will safeguard existing water quality status of the catchments from sediment runoff.

A fundamental principle of the surface water management is that clean water (uncontaminated surface water) flowing in the upstream catchment, including overland flow and flow in existing drains, is allowed to bypass the works areas without being contaminated by silt or mixing with dirty water (sediment laden surface water) from the construction area. This will be achieved by intercepting the clean water and conveying it to the downstream side of the construction areas either by means of a conveyance swale and/or vegetated soil bunds.

Another principle is the treatment of the dirty water generated at the construction and operation stage. To manage the water quality the treatment system will consist of a series of settlement ponds at designated locations throughout the site. Additionally, a proprietary treatment device is proposed at the substation compound.

The final principle is attenuation, the creation of impermeable areas within the proposed project site has the effect of increasing rates of surface water runoff downstream into the existing surface water environment and this may increase flood risk and flood severity downstream. Attenuation for the compound and access tracks (other hardstand areas) will comprise of detention basins and ponds.

2.2 Separation

Separation of clean water (uncontaminated surface water) and dirty water (sediment laden surface water) is a key principle of surface water management. **Plate 2-1** shows a typical measure to be put in place for surface water management to ensure dirty water does not enter clean water drain or watercourses. For the proposed wind farm, the intention is to use vegetated soil bunds and conveyance swales to divert dirty water generated on the section of access tracks to a sediment settlement pond for treatment.



Plate 2-1: Example of conveyance swales and vegetated soil bund

Alternatively, where space/area constraints limit placing a vegetated soil bund, silt fences, as shown in **Plate 2-2** are proposed to be placed along the existing tracks within the watercourse buffer zone. These silt fences are proposed to run parallel to watercourses with a layer of stone placed along the bottom to prevent any seepage if there is a risk of silted runoff.



Plate 2-2: Example of a silt fence along existing tracks near watercourses

2.3 Treatment

Contaminated/sediment laden water will be generated at construction areas, these areas include site access tracks, borrow pits, substation compound, temporary compounds, deposition areas, forestry felling areas and the turbine hardstand areas. The construction stage treatment system will consist of a series of sediment settlement ponds at designated locations throughout the site. The outflow from the treatment system will be dispersed over vegetation in the same manner as the clean water dispersion and will become diluted through contact with the clean water runoff in the buffer areas before eventually entering the downstream watercourses see **Section 3.2.9**. The operation stage treatment system will also include a proprietary treatment device and a detention basin at the substation, providing primary and secondary treatment respectively, see **Section 3.2.1**.

2.4 Attenuation

The proposed wind farm is located within a large rural catchment with an open surface water network. The footprint of the impermeable areas and the associated increase in runoff rate is very small in the context of the catchment size. As detailed in **Volume III, Appendix 9A** Flood Risk Assessment, the proposed development represents a negligible increase in downstream flood risk.

The volume of water requiring attenuation relates to direct precipitation on the access tracks and other infrastructure footprint only. The developed surfaces have some permeability, and this reduces the attenuation requirement.

For the construction stage it is proposed to provide attenuation to limit the flow rate into the sediment settlement ponds during high intensity storm events so that they do not become overloaded. This will also attenuate the flow to the downstream watercourses. Conventional attenuation systems use proprietary flow control units, but these can become blocked with debris and vegetation and require regular maintenance. They are, therefore, not appropriate for use within agriculture/forestry environments or where long-term routine maintenance would not

be practical. It is proposed to provide attenuation within the conveyance swales by creating check dams within them at regular intervals see **Section 3.2.6**. Silt fences will also provide storage and flow control see **Section 3.2.7**.

Attenuation during the operational stage of the project will also include detention basins for the substation compounds. Proprietary flow control systems aren't appropriate here due the reasons listed above; therefore, a conventional flow control is proposed at the outlet structure of the detention basins.

3. Surface Water Management Plan

3.1 Surface Water Management Systems

3.1.1 General

Separating the clean and dirty water will minimise the volume of water requiring treatment. The clean water cut-off / conveyance swales, and/or vegetated soil bunds are all positioned upslope to prevent any mixing of the clean and dirty water. The dirty water from the works areas will be collected in a conveyance / attenuation swale, directed to a sediment settlement pond to be treated by removing the suspended solids before overland dispersal. Dirty water swales will be provided on one or both sides of the access tracks and along the periphery of the turbines, crane hardstands, substation compound, met mast area, deposition areas, borrow pits, forestry felling areas and the temporary construction compounds. **Plate 3-1** shows a clean and dirty water swale. The master surface water layout is presented in planning drawing **22635-MWP-00-00-DR-C-5051**.



Plate 3-1: Example of wind farm clean and dirty water swale

3.1.2 Construction Material

On-site experience in wind farm construction and forestry development across the country has shown that the most effective method of reducing the volume of sediment created by construction is the finishing of all service tracks with high quality, hard wearing crushed aggregate such as basalt, granite or limestone laid to a transverse grade as shown in **Plate 3-2**. When surface water traverses across a track constructed from hard wearing aggregate, as opposed to low class aggregate, the level of suspended solids is reduced significantly. The internal access tracks will be finished with a hard-wearing aggregate. Refer to planning drawing **22635-MWP-00-00-DR-C-5406** for further details on access track construction.



Plate 3-2: Example of a wind farm access track

3.1.3 Minor Watercourse /Surface Water Drain Crossing

Works within the watercourse buffer zone of 20m shall be avoided except for installing silt fences, watercourse / surface water drain crossings and associated access track construction. Working near watercourses during or after storm events shall be avoided, and work will cease entirely near watercourses when it is evident that there is a risk that pollution could occur.

Minor watercourse/surface water drain crossings will be needed where the crossing is unavoidable for an access track, turning head or wind turbine hardstand. Clear span pre-cast concrete culverts are the preferred installation for crossing minor watercourses / surface water drains. Detailed design will limit the extent of works area required. See **Plate 3-3** for an example of a pre-cast culvert which avoid the requirement for in-stream works. As spans increase the height can increase accordingly allowing significant light penetration under the culvert. The increase in height is complimentary to the vertical alignment requirements for access track design. Refer to planning drawing **22635-MWP-00-00-DR-C-5417** for further details.



Plate 3-3: Example of a pre-cast concrete culvert in place over an existing watercourse

Closed conduit, either pipe or box culvert may be installed, if the site conditions restrict the use of clear span pre-cast concrete culverts. The site restrictions can be, but are not limited to, boundary encroachment, existing vegetation or proximity to protected structure/feature.

If the appointed contractor proposes a closed conduit, either pipe or box culvert, for crossings over surface water drains, minor watercourses or watercourses that are periodically dry, the Office of Public Works and Inland Fishers Ireland will be consulted. All such crossings will be in accordance with this management plan and/or conditions attached to a grant of planning permission and agreed with the OPW and IFI prior to construction. **Plate 3-4**, is an example of a closed conduit watercourse crossing.



Plate 3-4: Example of a concrete pipe at a watercourse/surface water drain crossing

3.1.4 Surface Water Drains

Surface water drains in some instances need to be modified to facilitate construction works such as the location of access tracks, turning heads or wind turbine hardstand areas. These surface water drains are not listed on the EPA watercourse GIS map. Disruption to the existing natural surface water network (drains, minor watercourses) will be mitigated by the construction of swales. The swales will be constructed first prior to the removal of the existing surface water drain. Surface water runoff that would have utilised the existing surface water drain being removed will be collected by the swale. The swales will convey surface water to, or in close proximity to, the same discharge point as the existing surface water drain that's being removed. The surface water swales will provide the same function as the surface water drains being replaced. Further information on swales is contained in **Section 3.2.5.**

All surface water drains modified will be in accordance with this application and/or conditions attached to a grant of planning permission and agreed with the Office of Public Works and Inland Fisheries Ireland prior to construction. Further information on the locations of surface water drains to be modified is included in planning drawings **22635-MWP-00-00-DR-C-5052 to 22635-MWP-00-00-DR-C-5066.**

3.2 Surface Water Management Controls

3.2.1 Proprietary Treatment Device

Proprietary treatment devices are manufactured products that remove specified pollutants i.e. oil, chemical and solids from surface water runoff. They are often (but not always) subsurface structures and can often be complementary to landscaped features, reducing pollutant levels in the runoff and protecting the amenity and/or biodiversity functionality of downstream SuDS components. They can be useful in reducing the maintenance requirements of downstream SuDS or in avoiding the risk of disturbance of those areas during routine silt removal operations.

Two subsurface proprietary treatment devices are proposed at the substation compound, one for the EirGrid compound and the other for the independent power supplier compound. They are located upstream of the detention basins and within each of the compounds. Further information on the design of the proprietary treatment device are in **Section 4.16.1.2 Chapter 04 Civil Engineering** of this **EIAR**. **Figure 3-1** is an extract from the drawings showing the location of the Proprietary treatment devices. Full details of the locations are provided in planning drawing **22635-MWP-00-00-DR-C-5419**.

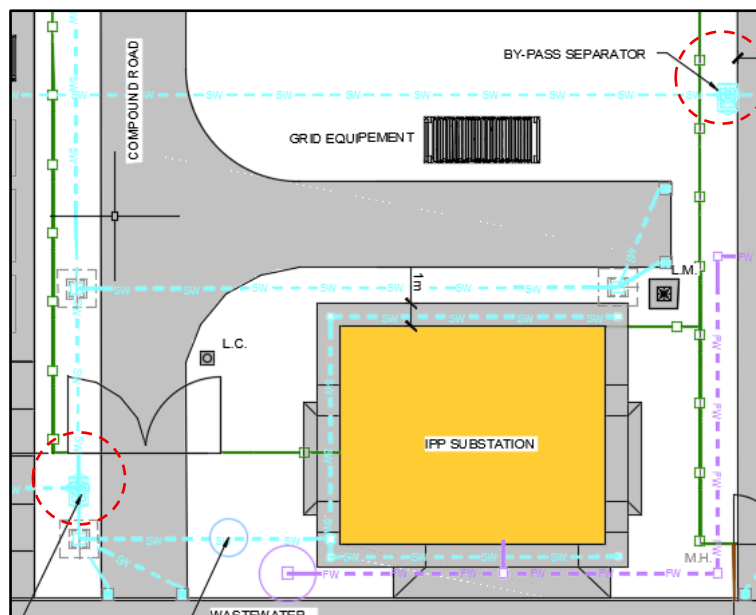


Figure 3-1: Extract from planning drawings showing proprietary treatment device locations

A proprietary treatment device takes oil, chemicals and solids from the full flow of surface water to ensure they cannot contaminate the nearby environment. A proprietary treatment device generally consists of 4 elements, but this depends on the manufacturer and model chosen. Proprietary treatment device details are included in planning drawing **22635-MWP-00-00-DR-C-5430**.

- Inlet Section: The contaminated water enters the separator through the inlet section, where initial separation of oil and pollutants begins.
- Coalescing Section: Smaller oil droplets combine to form larger ones, making them easier to separate from the water.

- Silt Trap: Heavier particles like silt and sediment are trapped in this section, preventing them from clogging the system.
- Outlet Section: The treated water exits the separator, ensuring it is safe for discharge into the environment.

Plate 3-5 is an example of proprietary treatment device prior to installation. During the construction phase the appointed contractor(s) is required to ensure the proprietary treatment device is constructed according to the design specification. During the operation phase the appointment maintenance contractor is required to comply with the surface water monitoring requirements which are included **Section 9.5.2 Chapter 09 Water** of this **EIAR** and the manufacturers operational and maintenance specifications.



Plate 3-5: Example of a proprietary treatment device

3.2.2 Detention Basin

Detention basins are landscaped depressions that are normally dry except during and immediately following storm events. They can be on-line components where surface water runoff from regular events is routed through the basin and when the flows rise, because the outlet is restricted, the basin fills and provides storage of surface water runoff and flow attenuation. They can also be off-line components into which runoff is diverted once flows reach a specified threshold.

Two detention basins are proposed at the substation compound, one for the EirGrid compound and the other for the independent power supplier compound. **Figure 3-2** is an extract from the drawings showing the location of the detention basins. Full details of the locations are provided in planning drawing **22635-MWP-00-00-DR-C-5419**.

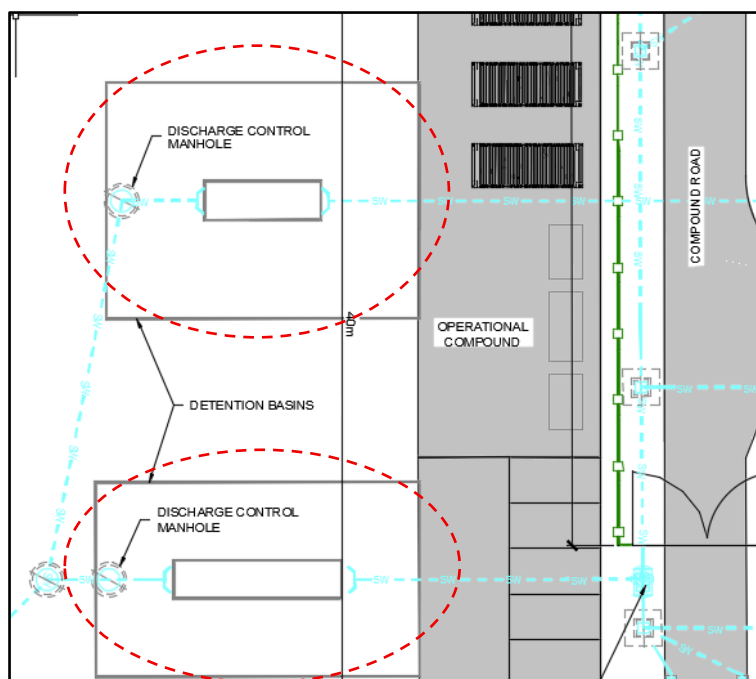


Figure 3-2: Extract from planning drawings showing detention basin locations

The proposed detention basins are on-line detention basins. Surface water runoff from the compound hardstand areas (roof areas, parking spaces, access track) are collected and conveyed through a pipe network to the inlet. The outlet headwall will convey the surface water to the flow control manhole which houses the flow control device. Further information on the design of the detention basin is included in **Section 4.16.1.3 Chapter 04** Civil Engineering of this **EIAR**. Detention basin details are included in planning drawing **22635-MWP-00-00-DR-C-5443**.

Plate 3-6 is an example of a well maintained detention basin. During the construction phase the appointed contractor(s) is required to ensure the detention basins are constructed according to the design specification. During the operation phase the appointed maintenance contractor is required to comply with the surface water monitoring requirements which are included in **Section 9.5.2 Chapter 09** Water of this **EIAR** and the maintenance details in **Section 5.1**.



Plate 3-6: Example of a detention basin

3.2.3 Proprietary Discharge Control Device

Outlet structures convey and control the flow out of the SuDS components, determining the ability of the system to manage both low and high flows. Flow control systems can be either orifices, perforated plates, small pipes, V-notch weirs, flat weirs or Vortex flow control systems. The flow control device can be contained within a manhole or across a spillway/weir through an embankment.

Two hydrobrake's are proposed, one for the EirGrid compound & one for the IPP compound. Following the detention basin, the surface water enters the discharge control manhole via the detention basin outlet headwall. The proprietary discharge control device is installed at the outlet within the manhole. **Figure 3-3** is an extract from the drawings showing the location of the hydrobrake's. Full details of the locations are provided in planning drawing 22635-MWP-00-00-DR-C-5419.

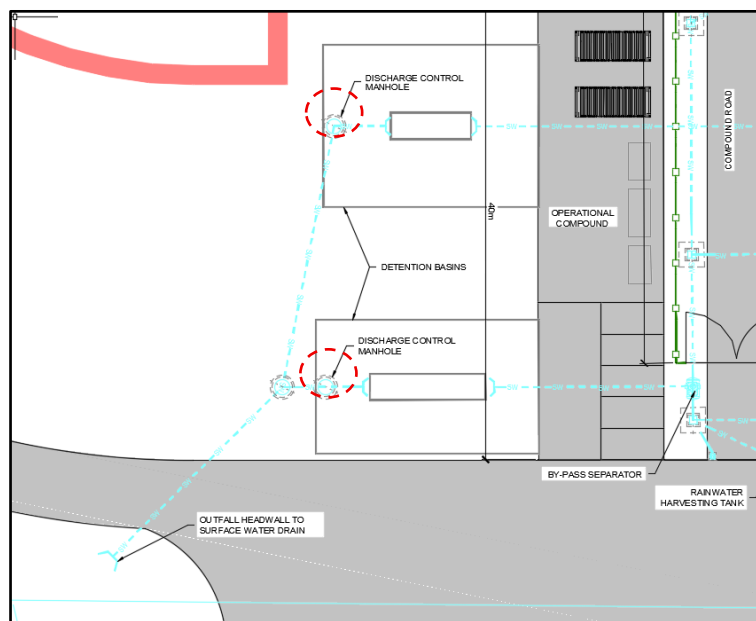


Figure 3-3: Extract from planning drawings showing discharge control manholes

The proprietary discharge control device restricts the flow of the surface water runoff, which results in the water surcharging then entering the detention basin as attenuated surface water. Further information on the design of the proprietary discharge control device is in **Section 4.16.1.4 Chapter 04 Civil Engineering** of this EIAR.

Plate 3-7 is an example of a hydrobrake discharge control device. During the construction phase the appointed contractor(s) is required to ensure the discharge control device are constructed according to the design specification. During the operation phase the appointed maintenance contractor is required to comply with the surface water monitoring requirements which are included in **Section 9.5.2 Chapter 09 Water** of this EIAR and the maintenance details in **Section 5.2**.



Plate 3-7: Example of a hydrobrake manhole

3.2.4 Outlet

The surface water runoff from the IPP & EirGrid compound areas outfalls to an existing surface water drain, via a precast concrete headwall. There is no watercourse buffer zone at the location of the outfall. Following the discharge control manholes and hydrobrake's, the surface water from the IPP & EirGrid compound areas combine in a manhole before outflow to the existing surface water drain via a precast concrete headwall. Full details of the location is provided in planning drawing **22635-MWP-00-00-DR-C-5419**.

Further information on the design of the outfall structure in **Section 4.16.1.5 Chapter 04** Civil Engineering of this **EIAR**. Precast concrete headwall details are included in the planning drawing **22635-MWP-00-00-DR-C-5441**. **Plate 3-8** is an example of a precast headwall with a galvanised grate. During the construction phase the appointed contractor(s) is required to ensure the outfall structure is constructed according to the design specification. During the operation phase the appointed maintenance contractor is required to comply with the surface water monitoring requirements which are included **Section 9.5.2 Chapter 09** Water of this **EIAR**.



Plate 3-8: Example of a outfall headwall

3.2.5 Swale

Swales are shallow, flat bottomed, vegetated open channels designed to convey, treat and often attenuate surface water runoff. When incorporated into site design, they can enhance the natural landscape and provide aesthetic and biodiversity benefits. The standard swale channel is broad and shallow and covered by vegetation, usually grass, to slow the water – facilitating sedimentation, filtration through the root zone and soil matrix, evapotranspiration and infiltration into the underlying soil. **Figure 3-4** is an extract from the drawings showing the location of the clean water conveyance / cut-off swales (blue) and dirty water conveyance / attenuation swales (purple). Full details of the locations are provided in planning drawings 22635-MWP-00-00-DR-C-5052 to 22635-MWP-00-00-DR-C-5056.

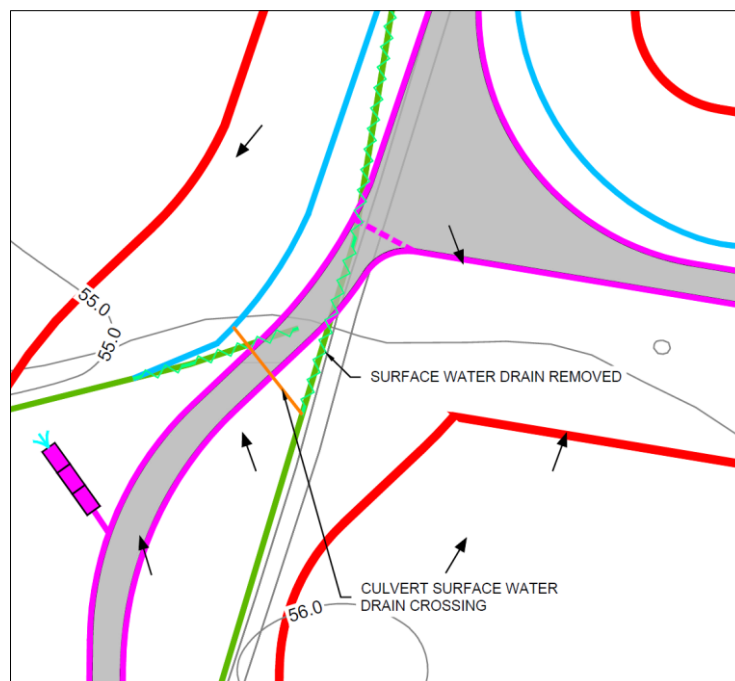


Figure 3-4: Extract from planning drawings showing conveyance swale locations

Surface water runoff from access tracks, hardstand areas and other infrastructure will be isolated from the clean catchment runoff by means of a series of conveyance / attenuation swales that will be constructed within the works areas, these swales will direct dirty water to sediment settlement ponds. Each swale will incorporate a series of check dams that will attenuate the flow and provide storage for the increased runoff from exceptional rainfall. Clean water cut-off swales and conveyance swales will be placed upstream of construction areas and divert the clean water away to continue into the clean water catchment. Clean water conveyance / cut-off swale and dirty water conveyance / attenuation swale details are included in planning drawing **22635-MWP-00-00-DR-C-5407**.

Plate 3-9 is an example of a dirty water conveyance swale with check dams. During the construction phase the appointed contractor(s) is required to ensure conveyance swales are constructed according to the design specification. During the operation phase the appointed maintenance contractor is required to comply with the surface water monitoring requirements which are included in **Section 9.5.1** and **Section 9.5.2 Chapter 09 Water** of this **EIAR** and the maintenance details in **Section 5.3**.



Plate 3-9: Example of a dirty water conveyance swale and check dam

3.2.6 Check Dam

Check dams, **Plate 3-10**, are used for surface water attenuation and as a flow control feature. Check dams are used to provide flow attenuation, reduce runoff velocity to promote settlement and to mitigate damage caused by scouring and erosion.



Plate 3-10: Example of a stone check dam with large aggregate on downstream side

Check dams will be placed in swales at regular intervals, the spacing of the dams is typically 100 metres, the spacings depend on gradient with steeper channels requiring shorter intervals. Check dams are relatively small and constructed with gravel, straw bales, or other suitable material and they allow small pools to develop behind them. Check dam details can be found in planning drawing **22635-MWP-00-00-DR-C-5407**.

During the construction phase the appointed contractor(s) is required to ensure the check dams are constructed according to the industry standard, regularly inspected and cleaned when required. During the operational phase the appointed contractor(s) is required to ensure the check dams are regularly inspected and cleaned when required.

3.2.7 Silt Fence

A silt fence is a surface water and environmental control feature used to contain dirty water from exiting the construction area and potentially negatively impacting the surrounding environment. An example of a silt fence is shown in **Plate 3-11**. Silt fences will be installed throughout the proposed wind farm, the locations include but are not limited to the following: protecting existing watercourses, containing dirty water during the construction of the substation compound, surrounding temporary and permanent deposition areas, at the top of cut/excavation and in swales.



Plate 3-11: Example of a silt fence used on wind farms

Silt fences placed along drains are an alternative method of reducing the volume of suspended sediment and will be placed at the end of any locally steep section of drain. They have the double benefit of effectively producing a localised swale to reduce scour effects and attenuating and filtering the discharge. Silt fencing details are included in planning drawing **22635-MWP-00-00-DR-C-5407**.

During the construction phase the appointed contractor(s) is required to ensure the silt fences are constructed according to the industry standard, regularly inspected and cleaned when required. Further maintenance details are in **Section 5.4**.

3.2.8 Vegetated Soil Bund

A vegetated soil bund is a surface water feature typically used to prevent surface water runoff entering an area, as such they are also an environmental control as they prevent dirty water from mixing with clean water. Vegetated soil bunds will be constructed throughout the proposed wind farm particularly at EPA watercourse crossing locations.

Vegetated soil bunds will be placed along either side of the access tracks that are within the hydrological buffer zones. Details of the watercourses buffer zones are identified in **Chapter 09** Water of this **EIAR**. Vegetated soil bunds details are included in planning drawing **22635-MWP-00-00-DR-C-5406**.

During the construction phase the appointed contractor(s) is required to ensure the vegetated soil bunds are constructed according to the industry standard, regularly inspected and repaired when required.

3.2.9 Sediment Settlement Pond

Sediment settlement ponds are surface water treatment features to remove suspended solids and hydrocarbons from dirty water. Sediment settlement ponds will be constructed throughout the proposed wind farm, **Figure 3-5** shows an extract of where sediment settlement ponds are located. Full details of the locations are provided in planning drawings **22635-MWP-00-00-DR-C-5052 to 22635-MWP-00-00-DR-C-5056**.

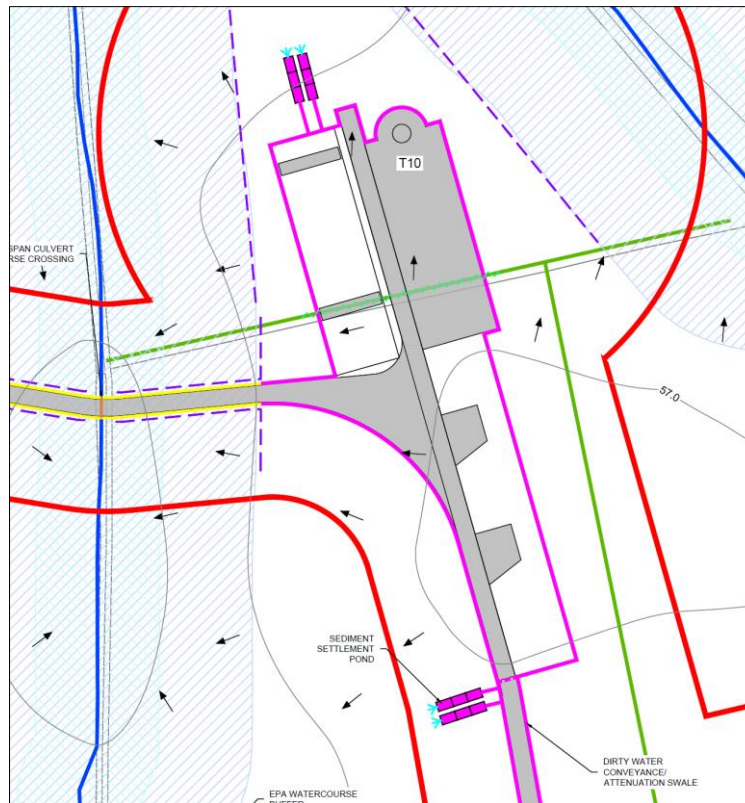


Figure 3-5: Extract from planning drawings showing sediment settlement pond locations

Plate 3-12 shows a well-constructed and maintained tiered sediment settlement pond, details of the sediment settlement pond are included in planning drawing **22635-MWP-00-00-DR-C-5407**. A similar settlement pond is intended for the proposed project, the dirty surface water enters the first bay, and the sediments settle at the bottom. As the water exits the last bay the turbidity of the surface water will be reduced. Further information on the design of the sediment settlement ponds are in **Section 4.15.2 Chapter 04 Civil Engineering** of this **EIAR**.

Turbidity requirements and other water quality details will be developed in conjunction with Inland Fisheries Ireland personnel and local authority engineers. The maintenance requirements during the construction phase is the responsibility of the appointed contractor(s), details of the surface water monitoring requirements are included **Section 9.5.1 Chapter 09 Water** of this **EIAR**.

During the construction phase the appointed contractor(s) is required to ensure the sediment settlement pond are constructed according to the design specification and complies with the surface water monitoring requirements which are included **Section 9.5.2 Chapter 09 Water** of this **EIAR** and the maintenance details in **Section 5.5**. During the operation phase the appointed maintenance contractor is required to comply with the details above.



Plate 3-12: Example of a sediment settlement pond with stone filter

3.2.10 Wheel Wash

Wheel washes are surface water facilities and environmental controls to prevent sediment from exiting the construction site and entering the public roads. Wheel washes will be provided for construction vehicles, particularly heavy haulage vehicles, exiting the site from all nine (9 No.) entrances, **Figure 3-6** is an extract that shows the wheel wash locations at the proposed entrances. Wheel wash locations are shown on planning drawing 22635-MWP-00-00-DR-C-5054, 5056, 5057 and 5073.

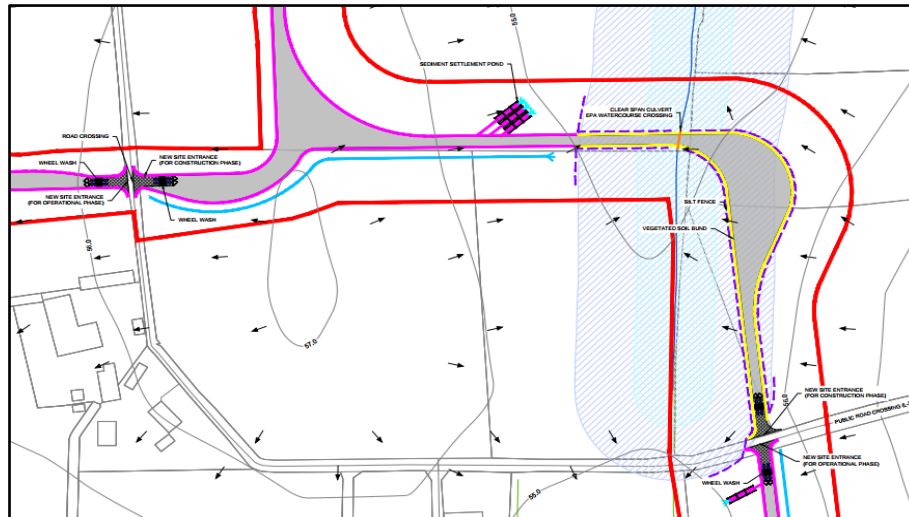


Figure 3-6: Extract from planning drawings showing wheel wash locations

Wheel washes can take the form of dry or wet wash facilities. In the case of a wet wheel wash a designated bunded and impermeable wheel wash area will be provided, and the resultant wastewater will be diverted to a settlement pond for settling out of suspended solids.

The operation and maintenance requirements vary depending on the chosen option, **Plate 3-13** is an example of one of the wheel wash options. During the construction phase the appointed contractor(s) is required to ensure the wheel wash is constructed according to the design specification, regularly inspected and cleaned when required. Further details on the optional and maintenance requirements of wheel wash are as per the manufacturer's specification.



Plate 3-13: Example of the multiple variations of wheel wash used on wind farms

4. Flood Risk Management and Response Procedures

There are a number of watercourses present within and in close proximity of the proposed development area. It was determined in the site-specific **Flood Risk Assessment (Appendix 9B)** that turbines 2-4 & 6 are located within Flood Zone A & B. Where possible, flood risk has been mitigated through design, including careful siting of infrastructure, provision of freeboard and consideration for the conveyance of floodwater. Temporary site

compounds, equipment storage and worker facilities will be located outside the areas identified as highest flood risk (Zones A and B). There shall be no oil or fuel storage, or refuelling activities within Flood Zone A or B as part of the proposed development.

To ensure that there is no unacceptable flood risk to the proposed development, several flood risk management and response procedures have been identified to support the flood risk design measures outlined in **Section 4.4.7** of the **Flood Risk Assessment**.

Intense rainfall events of a scale capable of causing flooding can typically be predicted in advance. To address this, an emergency response plan will be in place for the construction stage to manage periods of heavy rainfall that could give rise to flood conditions. Typically, high-intensity rainfall events can be identified three to five days ahead, with forecast accuracy improving within 24–48 hours of the event.

From the earliest indications of a potential severe rainfall event, preparatory actions will commence, allowing sufficient time to implement additional protective measures. The initial phase of mitigation pertains to ongoing monitoring of weather forecasts and weather warning. The Contractor or the site ECoW will be responsible for monitoring weather forecasts during the construction phase to ensure that workers and visitors are not exposed to unacceptable risks associated with flood events. There will be a 24-hour advance meteorological forecasting (Met Eireann download) linked to a trigger-response system.

When a pre-determined rainfall trigger levels is exceeded (e.g., sustained rainfall (any foreseen rainfall event longer than 4-hour duration) and/or any yellow or greater rainfall warning (>25mm/hour) issued by Met Eireann), planned responses will be undertaken.

Key responses will include:

- Suspension of construction activities for the duration of storm events and subsequent runoff.
- Works will only recommence once inspections confirm safe conditions, including the removal of standing water from excavations and the implementation of corrective actions, where required.
- Covering of exposed soils and work areas with plastic sheeting during significant rainfall or where works are paused, such as overnight or at weekends.

In designated flood-prone areas of the site, a managed retreat strategy will be employed during high rainfall or flood warning scenarios. This will involve:

- Firm compaction of exposed soil or subsoil surfaces using appropriate plant;
- Backfilling and compaction of any open trenches;
- Dismantling of sediment control structures that could otherwise be displaced by floodwaters;
- Scraping of access tracks and removal of soft material deposits; and
- Relocation of plant, equipment and machinery out of the flood zones.

With the proposed measures in place, the development is not expected to create adverse flooding impacts elsewhere. The residual risks have been evaluated and are considered to be within acceptable limits. Refer to the **Flood Risk Assessment** (Appendix 9B) for further detail.

5. Operational Stage

The measures for control of surface water runoff and sediment laden water relate to the construction phase of the project when there is a high volume of site vehicles and delivery vehicles moving around the wind farm site. Following construction, the amount of on-site traffic will be negligible and there will be no particular risk of sediment runoff. Runoff from the tracks, hardstands, and other works areas will continue to be directed to the settlement ponds, which will be left in place. Check dams within the drainage channels will remain in place. The retention of this part of the drainage infrastructure will ensure that runoff continues to be attenuated and dispersed across existing vegetation before recharge into the ground.

An important element of the surface water management plan is regular inspection and maintenance. All elements of the drainage system should be inspected following a major rainfall event. Maintenance of drainage devices should be carried out in accordance with the specifications outlined by the manufacturer. Maintenance of features such as swales, check dams, silt fences, settlement ponds and detention basins areas shall in line with best practice. A record of inspection and maintenance shall be kept and updated as required.

The operation & maintenance details described below are in accordance with CIRIA C753 the SuDS manual 2015.

5.1 Operation & Maintenance – Detention Basin

Maintenance should be carried out in tandem with the specification outlined by the manufacturer. As a general guide, based on CIRIA C753 Table 22.1, the following requirements should be met:

Table 5-1: Detention Basin Maintenance Schedule

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Remove litter and debris	Monthly (or as required)
	Cut the grass – public areas	Monthly (during growing season)
	Cut the meadow grass	Half yearly (spring, before nesting season, and autumn)
	Inspect marginal and bankside vegetation and remove nuisance plants (for first 3 years)	Monthly (at start, then as required)
	Inspect inlets, outlets, banksides, structures, pipework etc for evidence of blockage and/or physical damage	Monthly
	Inspect water body for signs of poor water quality	Monthly (May – October)
	Inspect silt accumulation rates in any forebay and in main body of the pond and establish appropriate removal frequencies; undertake contamination testing once some	Half yearly

	build-up has occurred, to inform management and disposal options	
	Check any mechanical devices, e.g. penstocks	Half yearly
	Hand cut submerged and emergent aquatic plants (at minimum of 0.1m above pond base; include max 25% of pond surface)	Annually
	Remove 25% of bank vegetation from water's edge to a minimum of 1m above water level	Annually
	Tidy all dead growth (scrub clearance) before start of growing season (Note: tree maintenance is usually part of overall landscape management contract)	Annually
	Remove sediment from any forebay.	Every 1–5 years, or as required
	Remove sediment and planting from one quadrant of the main body of ponds without sediment forebays.	Every 5 years, or as required
Occasional maintenance	Remove sediment from the main body of big ponds when pool volume is reduced by 20%	With effective pre-treatment, this will only be required rarely, e.g. every 25–50 years
Remedial actions	Repair erosion or other damage	As required
	Replant, where necessary	As required
	Aerate pond when signs of eutrophication are detected	As required
	Realign rip-rap or repair other damage	As required
	Repair / rehabilitate inlets, outlets and overflows.	As required

5.2 Operation & Maintenance – Discharge Control

Discharge controls can vary therefore the operational and maintenance requirements will be different, CIRIA C753 Table 28.1 shown below describes the different types.

Table 5-2: Different types of flow control

Component	Description
Flow control device	For most SuDS components, this will normally comprise a fixed orifice, V-notch weir or an alternative form of throttle such as a short pipe, culvert or vortex flow control with

	similar hydraulic characteristics. Its principal function is to throttle the discharge passed downstream and thereby enable the attenuation storage volume to fill.
Exceedance flow overflow weir	This provides the flood discharge route from the component when the available flood attenuation storage capacity has been filled. The weir and the flow route downstream are normally designed to pass a flow of a particular design return period. In the case of an offline SuDS component, an overflow weir may not be required if the inlet structure is designed in such a way that flows are reliably bypassed whenever the pond or basin is full. In some cases, it may be appropriate to combine the function with the emergency spillway.
Emergency spillway	The emergency spillway provides the ultimate safeguard against uncontrolled overflows. It may be the same structure as the overflow weir. A shallow grass weir with inclined slopes and suitable erosion protection is often sufficient

Maintenance should be carried out in tandem with the specification outlined by the manufacturer. As a general guide the following requirements should be met:

Table 5-3: Example of a Discharge Control Maintenance Schedule

Maintenance Schedule	Required Action	Typical Frequency
Routine Maintenance	Inspection	Monthly
	Litter/debris removal	Monthly or as required
Occasional Maintenance	Sediment removal – silt stores should be emptied	Every 6 months
Remedial Maintenance	Repair (as a result of damage or vandalism)	As required

5.3 Operation & Maintenance – Swale

Maintenance should be carried out in accordance with best practice and generally as a guide based on CIRIA C753 Table 17.1. The following minimum requirements should be met:

Table 5-4: Conveyance Swale Maintenance Schedule

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Remove litter and debris	Monthly, or as required
	Cut grass – to retain grass height within specified design range	Monthly (during growing season), or as required
	Manage other vegetation and remove nuisance plants	Monthly at start, then as required
	Inspect inlets, outlets and overflows for	Monthly

	blockages, and clear if required	
	Inspect infiltration surfaces for ponding, compaction, silt accumulation, record areas where water is ponding for > 48 hours	Monthly, or when required
	Inspect vegetation coverage	Monthly for 6 months, quarterly for 2 years, then half yearly
	Inspect inlets and facility surface for silt accumulation, establish appropriate silt removal frequencies	Half yearly
Occasional maintenance	Reseed areas of poor vegetation growth, alter plant types to better suit conditions, if required	As required or if bare soil is exposed over 10% or more of the swale treatment area
Remedial actions	Repair erosion or other damage by re-turfing or reseed	As required
	Relevel uneven surfaces and reinstate design levels	As required
	Scarify and spike topsoil layer to improve infiltration performance, break up silt deposits and prevent compaction of the soil surface	As required
	Remove build-up of sediment on upstream gravel trench, flow spreader or at top of filter strip	As required
	Remove and dispose of oils or petrol residues	As required

	using safe standard practices	
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5.4 Operation & Maintenance – Silt Fence

Maintenance should be carried in accordance with best practice. As a general guide, the following requirements should be met:

Table 5-5: Silt Fence Maintenance Schedule

Maintenance Schedule	Required Action	Typical Frequency
Routine Maintenance	Inspection	Monthly
	Litter/debris removal	Monthly or as required
Occasional Maintenance	Sediment removal – silt stores should be emptied	Every 6 months
Remedial Maintenance	Repair (as a result of damage or vandalism)	As required

5.5 Operation & Maintenance – Sediment Settlement Pond

Maintenance should be carried out in accordance with best practise. As a general guide, the following requirements should be met:

Table 5-6: Sediment Settlement Pond Maintenance Schedule

Maintenance Schedule	Required Action	Typical Frequency
Routine Maintenance	Inspection	Monthly
	Litter/debris removal	Monthly or as required
Occasional Maintenance	Sediment removal – silt stores should be emptied	Every 6 months
Remedial Maintenance	Repair (as a result of damage or vandalism)	As required

A template for recording maintenance and inspections is provided below.

[illegible]

Forests and Water, 2011, UK Forestry Standard Guidelines

Inland Fisheries Ireland, 2016, Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters

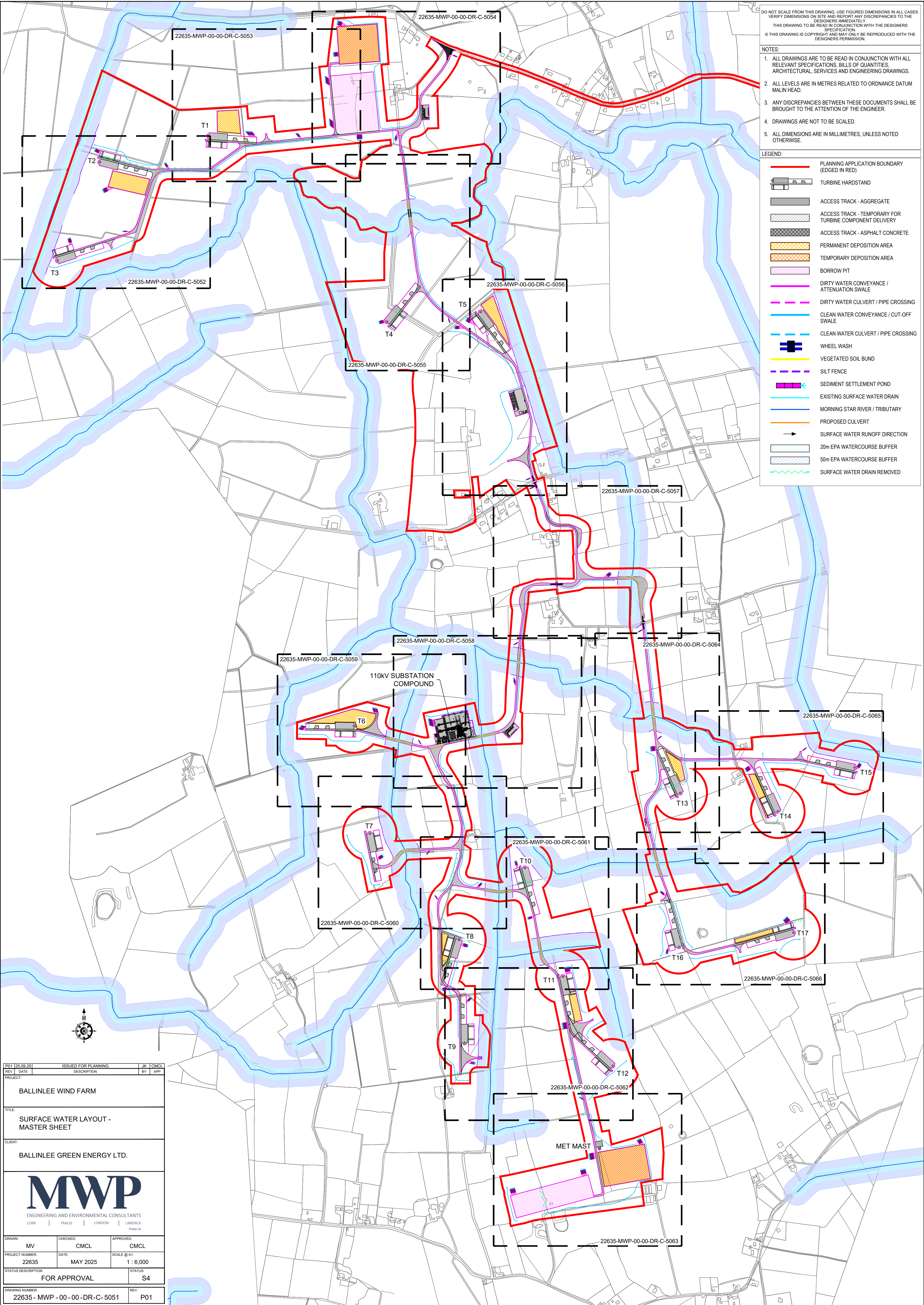
Office of Public Works - Construction, Replacement or Alteration of Bridges and Culverts 2019

Murnane, E., Heap, A. and A. Swain, 2006, Control of water pollution from linear construction projects. A Technical Guidance. A CIRIA publication.

CIRIA C753 SuDS Manual| 2015

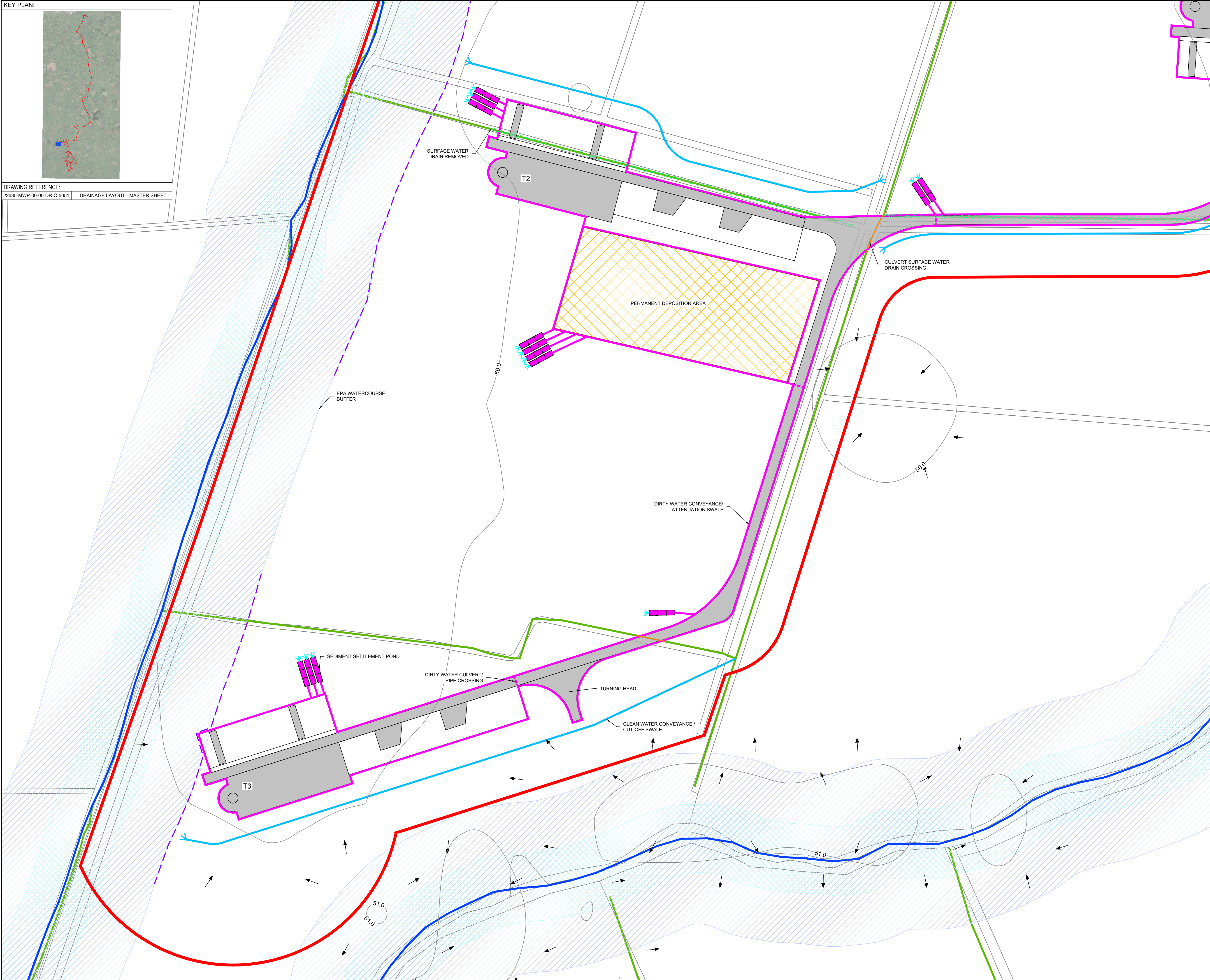
Appendix 2E

Appendix 1 Surface Water Drawings



KEY PLAN:

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22635-MWP-00-00-DR-C-5051 DRAINAGE LAYOUT - MASTER SHEET



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- PROPOSED CULVERT
- SURFACE WATER RUNOFF DIRECTION
- 20m EPA WATERCOURSE BUFFER
- 50m EPA WATERCOURSE BUFFER
- SURFACE WATER DRAIN REMOVED

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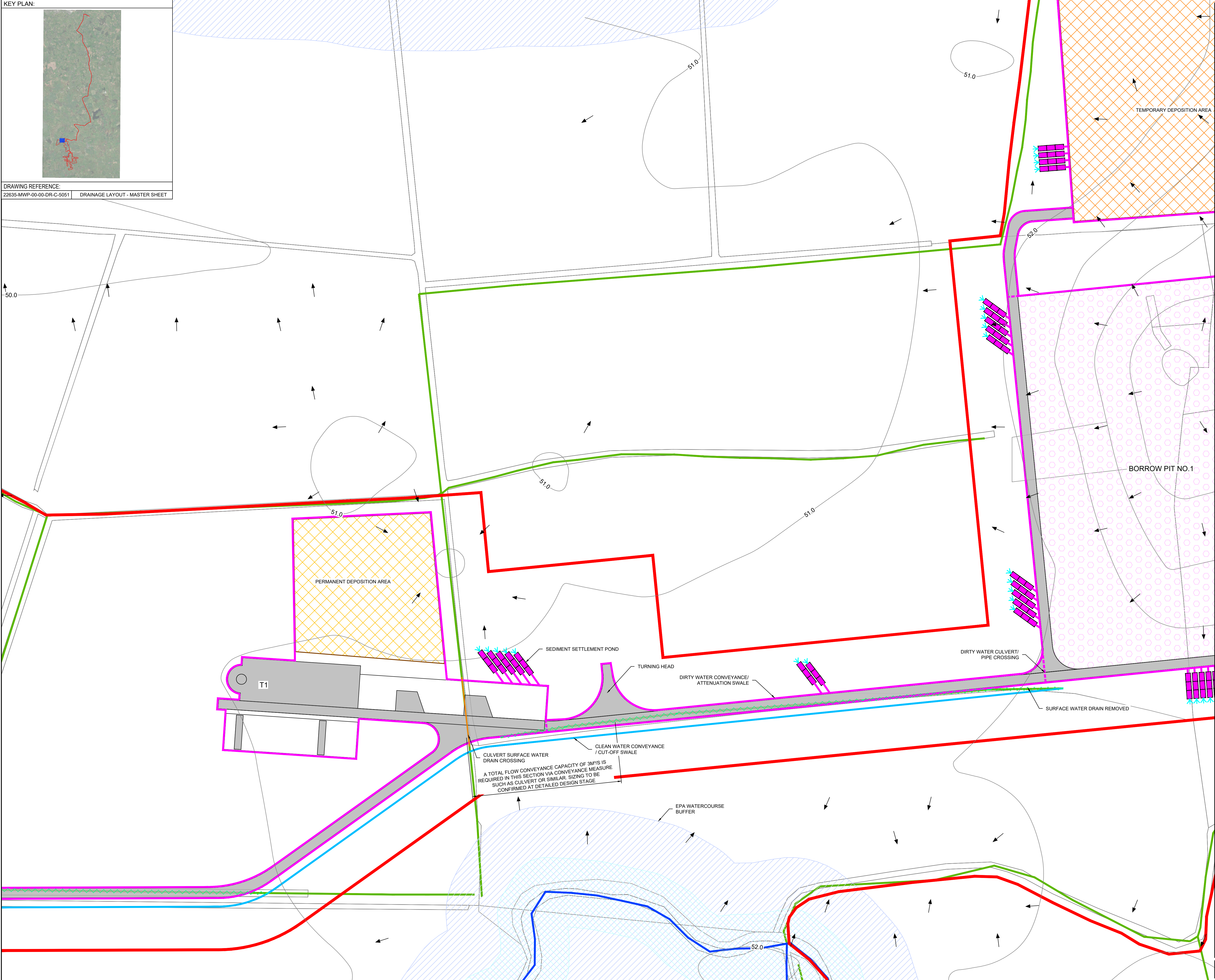
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CLIENT: BALLINLEE GREEN ENERGY LTD.				
 ENGINEERING AND ENVIRONMENTAL CONSULTANTS CORK TRALEE LONDON LIMERICK mwp.ie				
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PROJECT NUMBER: 22635	DATE: MAY 2025	SCALE @ A1: 1 : 1,000		
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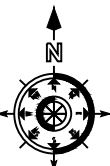
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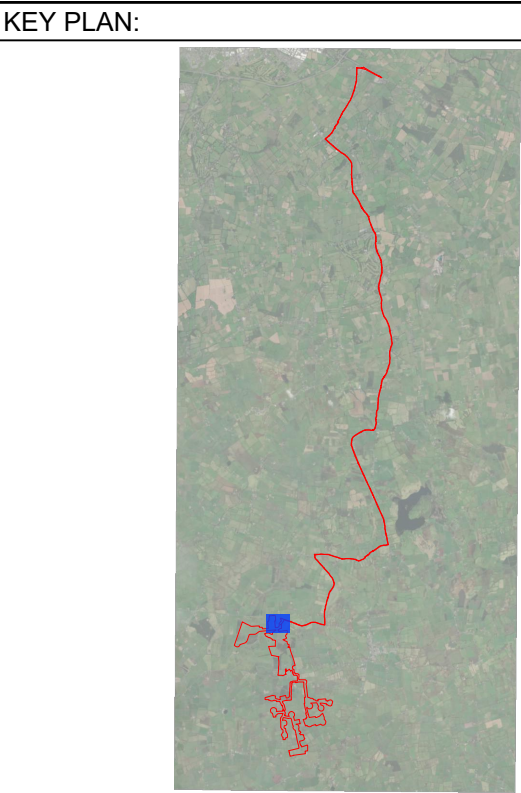
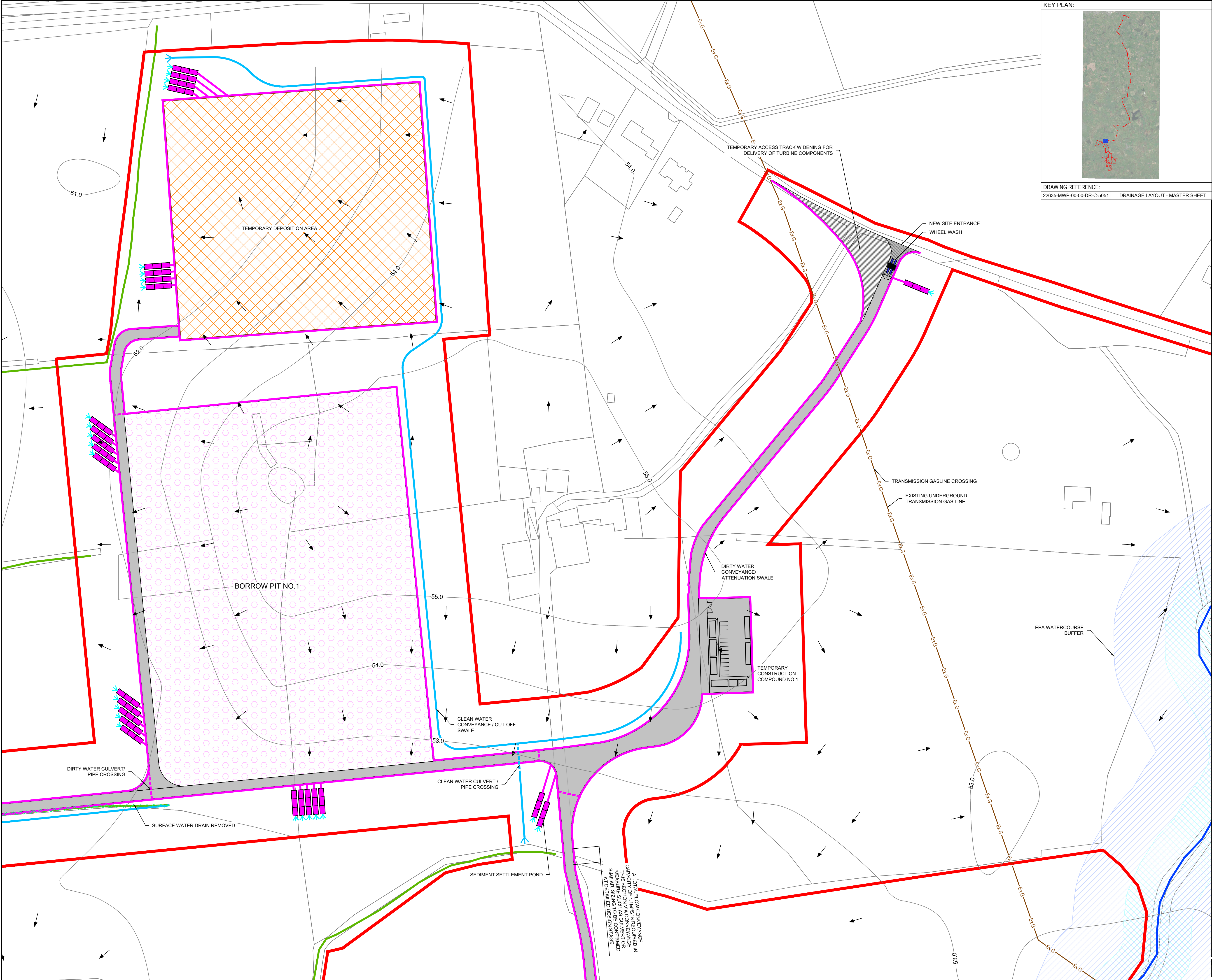
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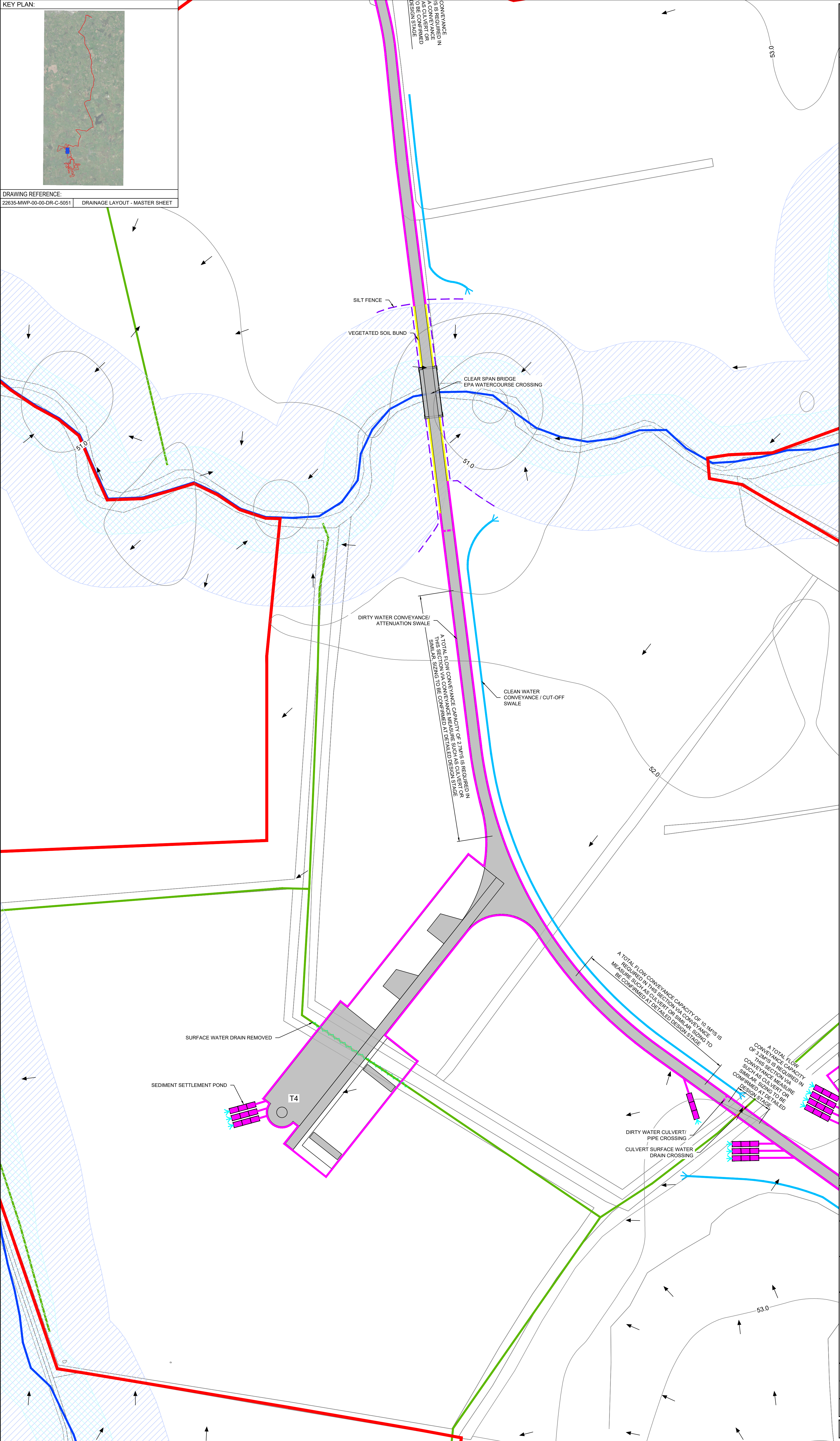
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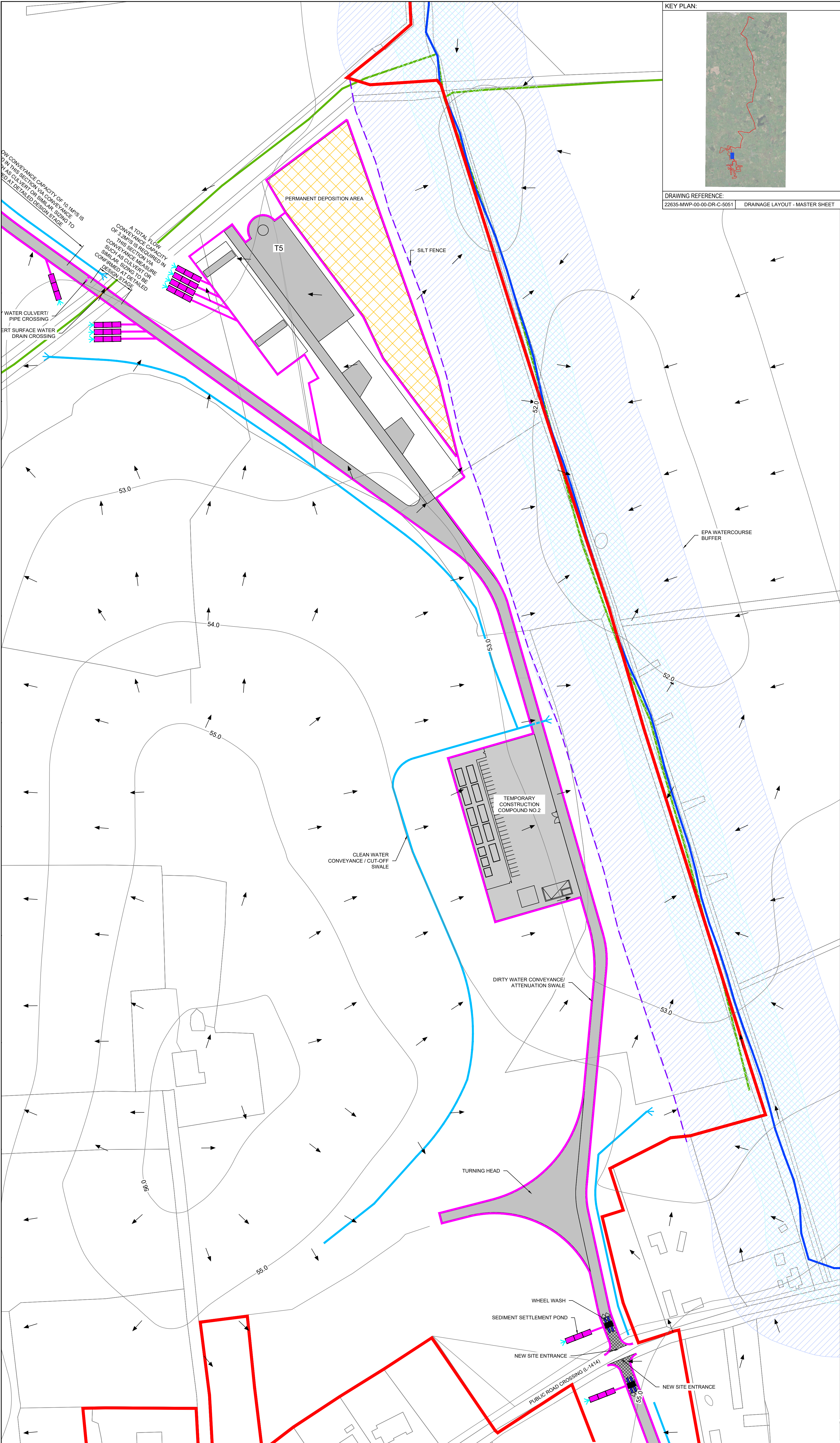
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- TEMPORARY DEPOSITION AREA
- BORROW PIT
- DIRTY WATER CONVEYANCE / ATTENUATION SWALE
- DIRTY WATER CULVERT / PIPE CROSSING
- CLEAN WATER CONVEYANCE / CUT-OFF SWALE
- CLEAN WATER CULVERT / PIPE CROSSING
- WHEEL WASH
- VEGETATED SOIL BUND
- SILT FENCE
- SEDIMENT SETTLEMENT POND
- EXISTING SURFACE WATER DRAIN
- MORNING STAR RIVER / TRIBUTARY
- PROPOSED CULVERT
- SURFACE WATER RUNOFF DIRECTION
- 20m EPA WATERCOURSE BUFFER
- 50m EPA WATERCOURSE BUFFER
- SURFACE WATER DRAIN REMOVED

FOR SITE DRAINAGE DETAILS REFER TO DRAWING NO. 22635-MWP-00-00-DR-C-5407
FOR WATERCOURSE CROSSING DETAILS REFER TO DRAWING NO. 22635-MWP-00-00-DR-C-5417


MAP REPRODUCED FROM TAILTE EIREANN BY PERMISSION OF THE GOVERNMENT. CYAL50465038.
TAILTE EIREANN SHEET NO:
4744-D, 4804-D, 4744-C, 4804-A, 4804-C, 4867-A, 4867-B, 4867-D, 4528-B, 4869-D, 5048-B, 5048-D, 5108-A, 5109-A, 5109-B, 4928-D, 4869-C, 5049-B, 5108-B, 5049-C, 4988-D, 4866-B, 4866-C, 5108-D, 5048-C, 4929-B, 4804-B, 4866-D, 4929-D, 4988-B, 4869-B, 5049-D, 5108-C, 4866, 4867, 4988, 4869, 4928, 4929, 5048, 5049, 5108, 5108-B, 5108-D, 5109, 5109-C, 5231-B, 5231, 5232, 5232-A, 5169, 5169-B, 5169-D, 5170, 5170-A and 5170-C

P01	25.09.25	ISSUED FOR PLANNING	JK	CMCL
REV	DATE	DESCRIPTION	BY	APP
PROJECT: BALLINLEE WIND FARM				
TITLE: SURFACE WATER LAYOUT - SHEET 4				
CLIENT: BALLINLEE GREEN ENERGY LTD.				
 ENGINEERING AND ENVIRONMENTAL CONSULTANTS CORK TRALEE LONDON LIMERICK mwp.ie				
DRAWN: MV	CHECKED: CMCL	APPROVED: CMCL		
PROJECT NUMBER: 22635	DATE: MAY 2025	SCALE @ A1: 1 : 1,000		
STATUS DESCRIPTION: FOR APPROVAL			STATUS: S4	
DRAWING NUMBER: 22635 - MWP - 00 - 00 - DR - C - 5055			REV: P01	



KEY PLAN:

DRAWING REFERENCE:
22635-MWP-00-00-DR-C-5051 DRAINAGE LAYOUT - MASTER SHEET

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NOTES:

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- ALL DIMENSIONS ARE IN METERS, UNLESS NOTED OTHERWISE.

LEGEND:

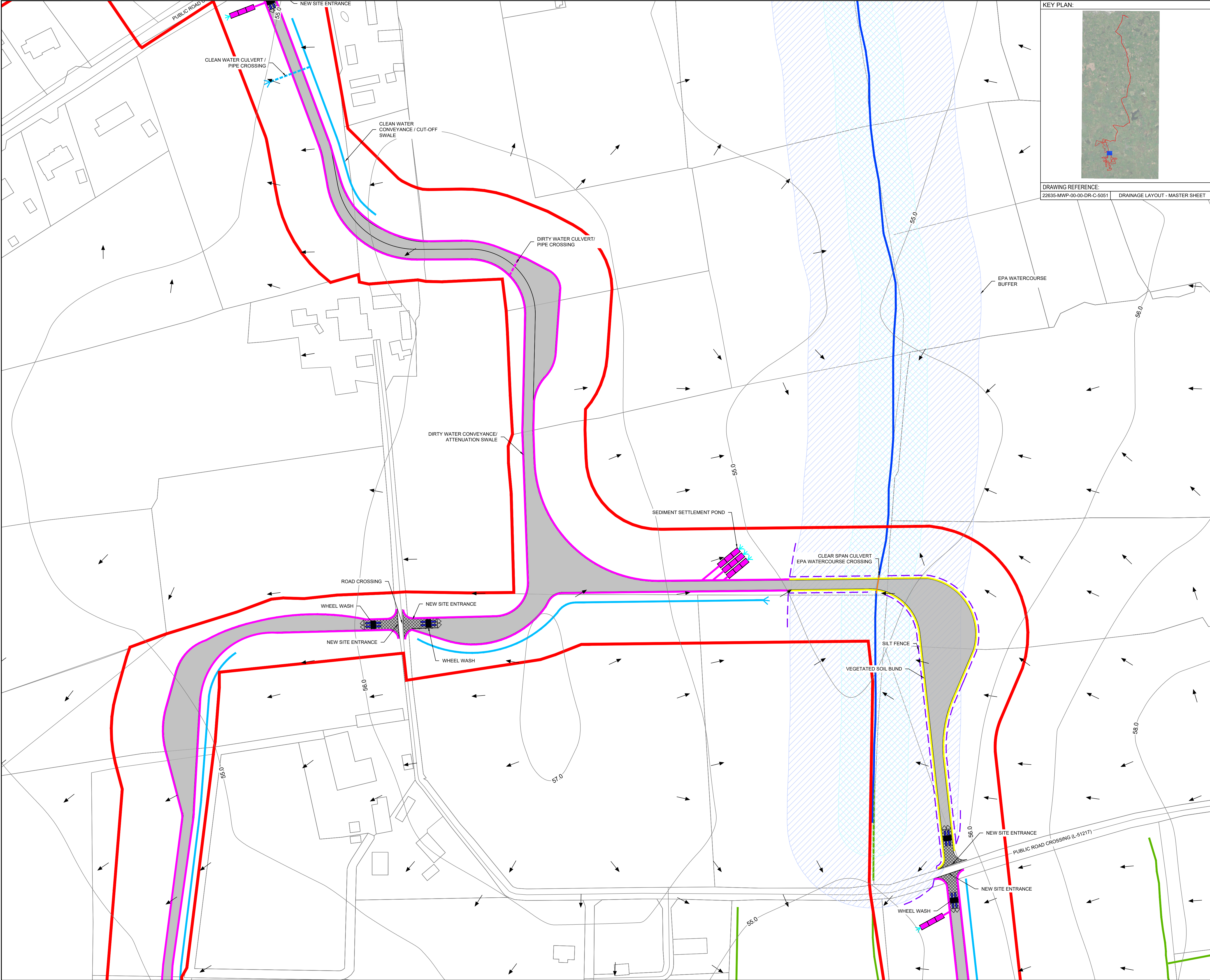
- PLANNING APPLICATION BOUNDARY (EDGED IN RED)
- TURBINE HARDSTAND
- ACCESS TRACK - AGGREGATE
- ACCESS TRACK - TEMPORARY FOR TURBINE COMPONENT DELIVERY
- ACCESS TRACK - ASPHALT CONCRETE
- PERMANENT DEPOSITION AREA
- TEMPORARY DEPOSITION AREA
- BORROW PIT
- DIRTY WATER CONVEYANCE / ATTENUATION SWALE
- DIRTY WATER CULVERT / PIPE CROSSING
- CLEAN WATER CONVEYANCE / CUT-OFF SWALE
- CLEAN WATER CULVERT / PIPE CROSSING
- WHEEL WASH
- VEGETATED SOIL BUND
- SILT FENCE
- SEDIMENT SETTLEMENT POND
- EXISTING SURFACE WATER DRAIN
- MORNING STAR RIVER / TRIBUTARY
- PROPOSED CULVERT
- SURFACE WATER RUNOFF DIRECTION
- 20m EPA WATERCOURSE BUFFER
- 50m EPA WATERCOURSE BUFFER
- SURFACE WATER DRAIN REMOVED

FOR SITE DRAINAGE DETAILS REFER TO DRAWING NO. 22635-MWP-00-00-DR-C-5407
FOR WATERCOURSE CROSSING DETAILS REFER TO DRAWING NO. 22635-MWP-00-00-DR-C-5417

MAP REPRODUCED FROM TAILTE ÉIREANN BY PERMISSION OF THE GOVERNMENT. CYAL50465038.

TAILTE ÉIREANN SHEET NO:
4744-D, 4804-D, 4744-C, 4804-A, 4804-C, 4867-A, 4867-B, 4867-D, 4928-B, 4989-D, 5048-B, 5048-D, 5108-A, 5109-A, 5109-B, 4928-D, 4989-C, 5048-B, 5108-B, 5049-C, 4988-D, 4866-B, 4866-C, 5108-D, 5048-C, 4929-B, 4804-B, 4866-D, 4929-D, 4988-B, 4989-B, 5049-D, 5108-C, 4866, 4867, 4988, 4989, 4928, 4929, 5048, 5049, 5108, 5108-B, 5108-D, 5109, 5109-C, 5231-B, 5231, 5232, 5232-A, 5169, 5169-B, 5169-D, 5170, 5170-A and 5170-C

P01	25.09.25	ISSUED FOR PLANNING	JK	CMCL
REV	DATE	DESCRIPTION	BY	APP
PROJECT: BALLINLEE WIND FARM				
TITLE: SURFACE WATER LAYOUT - SHEET 5				
CLIENT: BALLINLEE GREEN ENERGY LTD.				
MWP ENGINEERING AND ENVIRONMENTAL CONSULTANTS CORK TRALEE LONDON LIMERICK mwp.ie				
DRAWN: MV	CHECKED: CMCL	APPROVED: CMCL		
PROJECT NUMBER: 22635	DATE: MAY 2025	SCALE @ A1: 1 : 1,000		
STATUS DESCRIPTION: FOR APPROVAL			STATUS: S4	
DRAWING NUMBER: 22635 - MWP - 00 - 00 - DR - C - 5056			REV: P01	



KEY PLAN:

DRAWING REFERENCE:

22635-MWP-00-00-DR-C-5051

DRAINAGE LAYOUT - MASTER SHEET

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LEGEND:

PLANNING APPLICATION BOUNDARY (EDGED IN RED)

TURBINE HARDSTAND

ACCESS TRACK - AGGREGATE

ACCESS TRACK - TEMPORARY FOR TURBINE COMPONENT DELIVERY

ACCESS TRACK - ASPHALT CONCRETE

PERMANENT DEPOSITION AREA

TEMPORARY DEPOSITION AREA

BORROW PIT

DIRTY WATER CONVEYANCE / ATTENUATION SWALE

DIRTY WATER CULVERT / PIPE CROSSING

CLEAN WATER CONVEYANCE / CUT-OFF SWALE

CLEAN WATER CULVERT / PIPE CROSSING

WHEEL WASH

VEGETATED SOIL BUND

SILT FENCE

SEDIMENT SETTLEMENT POND

EXISTING SURFACE WATER DRAIN

MORNING STAR RIVER / TRIBUTARY

PROPOSED CULVERT

SURFACE WATER RUNOFF DIRECTION

20m EPA WATERCOURSE BUFFER

50m EPA WATERCOURSE BUFFER

SURFACE WATER DRAIN REMOVED

FOR SITE DRAINAGE DETAILS REFER TO DRAWING NO. 22635-MWP-00-00-DR-C-5407
FOR WATERCOURSE CROSSING DETAILS REFER TO DRAWING NO. 22635-MWP-00-00-DR-C-5417

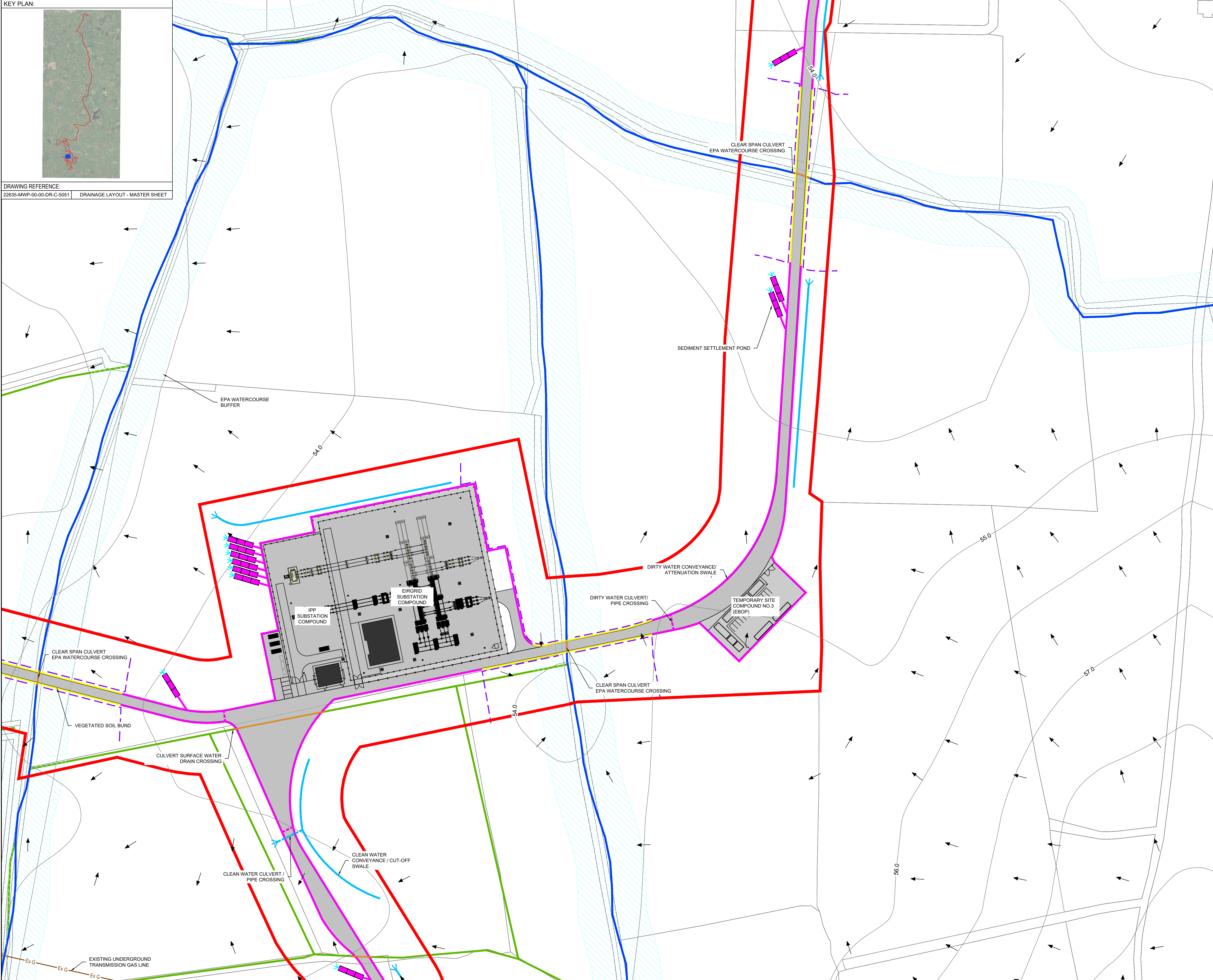
MAP REPRODUCED FROM TAILTE ÉIREANN BY PERMISSION OF THE GOVERNMENT. CYAL50465038.

TAILTE ÉIREANN SHEET NO:
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P01	25.09.25	ISSUED FOR PLANNING	JK	CMCL
REV	DATE	DESCRIPTION	BY	APP
PROJECT: BALLINLEE WIND FARM				
TITLE: SURFACE WATER LAYOUT - SHEET 6				
CLIENT: BALLINLEE GREEN ENERGY LTD.				
ENGINEERING AND ENVIRONMENTAL CONSULTANTS CORK TRALEE LONDON LIMERICK mwp.ie				
DRAWN: MV	CHECKED: CMCL	APPROVED: CMCL		
PROJECT NUMBER: 22635	DATE: MAY 2025	SCALE @ A1: 1 : 1,000		
STATUS DESCRIPTION: FOR APPROVAL			STATUS: S4	
DRAWING NUMBER: 22635 - MWP - 00 - 00 - DR - C - 5057			REV: P01	

KEY PLAN:


DRAWING REFERENCE:
22635-MWP-00-00-DR-C-5051 | DRAINAGE LAYOUT - MASTER SHEET



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LEGEND:

- PLANNING APPLICATION BOUNDARY (EDGED IN RED)
- TURBINE HARDSTAND
- ACCESS TRACK - AGGREGATE
- ACCESS TRACK - TEMPORARY FOR TURBINE COMPONENT DELIVERY
- ACCESS TRACK - ASPHALT CONCRETE
- PERMANENT DEPOSITION AREA
- TEMPORARY DEPOSITION AREA
- BORROW PIT
- DIRTY WATER CONVEYANCE / ATTENUATION SWALE
- DIRTY WATER CULVERT / PIPE CROSSING
- CLEAN WATER CONVEYANCE / CUT-OFF SWALE
- CLEAN WATER CULVERT / PIPE CROSSING
- WHEEL WASH
- VEGETATED SOIL BUND
- SILT FENCE
- SEDIMENT SETTLEMENT POND
- EXISTING SURFACE WATER DRAIN
- MORNING STAR RIVER / TRIBUTARY
- PROPOSED CULVERT
- SURFACE WATER RUNOFF DIRECTION
- 20m EPA WATERCOURSE BUFFER
- 50m EPA WATERCOURSE BUFFER
- SURFACE WATER DRAIN REMOVED

FOR SITE DRAINAGE DETAILS REFER TO DRAWING NO. 22635-MWP-00-00-DR-C-5407
FOR WATERCOURSE CROSSING DETAILS REFER TO DRAWING NO. 22635-MWP-00-00-DR-C-5417

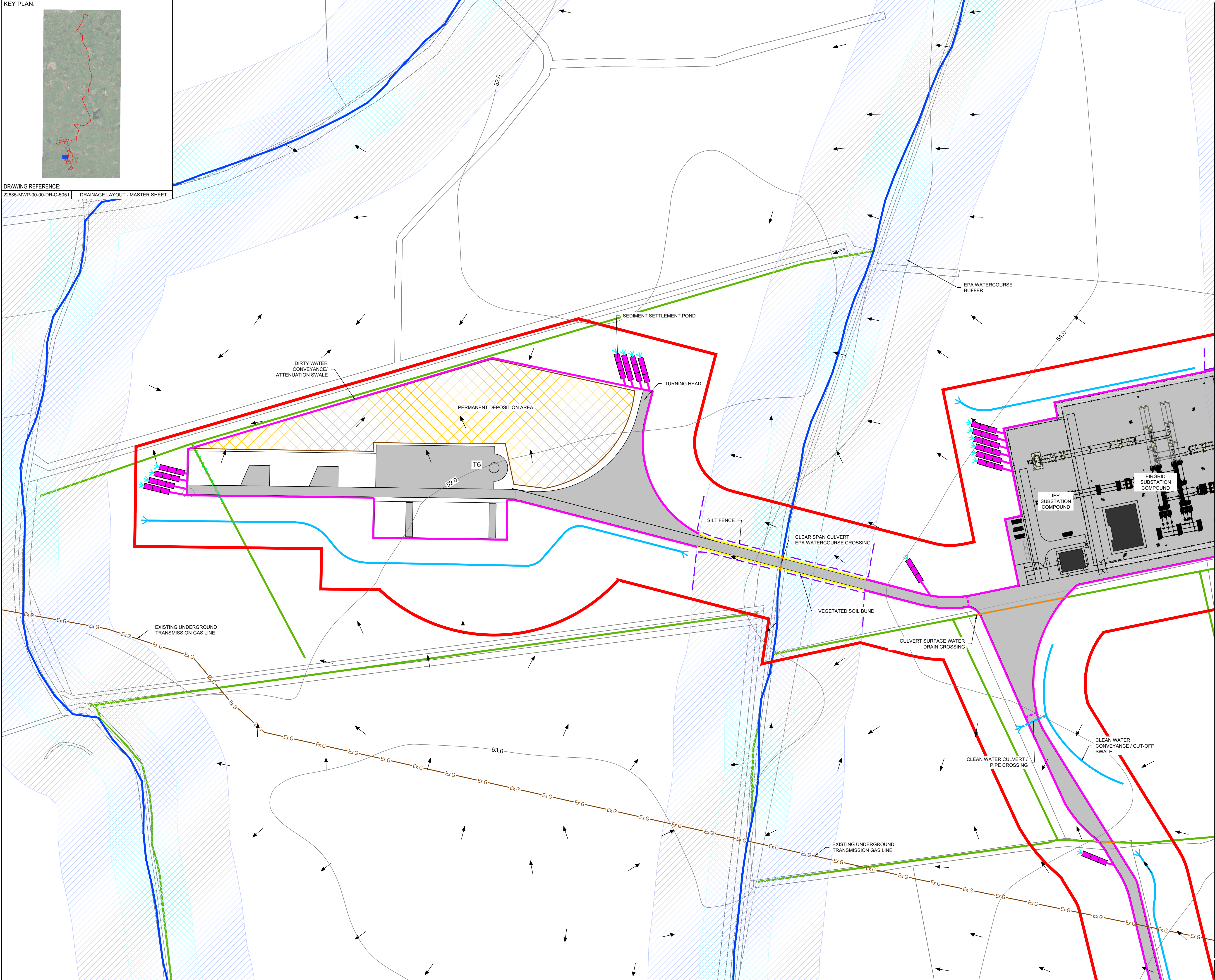
MAP REPRODUCED FROM TAILTE ÉIREANN BY PERMISSION OF THE GOVERNMENT. CYAL50465038.

TAILTE ÉIREANN SHEET NO:
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P01	25.09.25	ISSUED FOR PLANNING	JK	CMCL
REV	DATE	DESCRIPTION	BY	APP
PROJECT: BALLINLEE WIND FARM				
TITLE: SURFACE WATER LAYOUT - SHEET 7				
CLIENT: BALLINLEE GREEN ENERGY LTD.				
				
DRAWN: MV	CHECKED: CMCL	APPROVED: CMCL		
PROJECT NUMBER: 22635	DATE: MAY 2025	SCALE @ A1: 1 : 1,000		
STATUS DESCRIPTION: FOR APPROVAL			STATUS: S4	
DRAWING NUMBER: 22635 - MWP - 00 - 00 - DR - C - 5058			REV: P01	

KEY PLAN:


DRAWING REFERENCE:
22635-MWP-00-00-DR-C-5051 DRAINAGE LAYOUT - MASTER SHEET



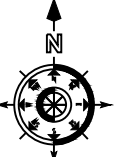
DO NOT SCALE FROM THIS DRAWING. USE FIGURED DIMENSIONS IN ALL CASES. VERIFY DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE DESIGNERS IMMEDIATELY.
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LEGEND:

- PLANNING APPLICATION BOUNDARY (EDGED IN RED)
- TURBINE HARDSTAND
- ACCESS TRACK - AGGREGATE
- ACCESS TRACK - TEMPORARY FOR TURBINE COMPONENT DELIVERY
- ACCESS TRACK - ASPHALT CONCRETE
- PERMANENT DEPOSITION AREA
- TEMPORARY DEPOSITION AREA
- BORROW PIT
- DIRTY WATER CONVEYANCE / ATTENUATION SWALE
- DIRTY WATER CULVERT / PIPE CROSSING
- CLEAN WATER CONVEYANCE / CUT-OFF SWALE
- CLEAN WATER CULVERT / PIPE CROSSING
- WHEEL WASH
- VEGETATED SOIL BUND
- SILT FENCE
- SEDIMENT SETTLEMENT POND
- EXISTING SURFACE WATER DRAIN
- MORNING STAR RIVER / TRIBUTARY
- PROPOSED CULVERT
- SURFACE WATER RUNOFF DIRECTION
- 20m EPA WATERCOURSE BUFFER
- 50m EPA WATERCOURSE BUFFER
- SURFACE WATER DRAIN REMOVED

FOR SITE DRAINAGE DETAILS REFER TO DRAWING NO. 22635-MWP-00-00-DR-C-5407
FOR WATERCOURSE CROSSING DETAILS REFER TO DRAWING NO. 22635-MWP-00-00-DR-C-5417

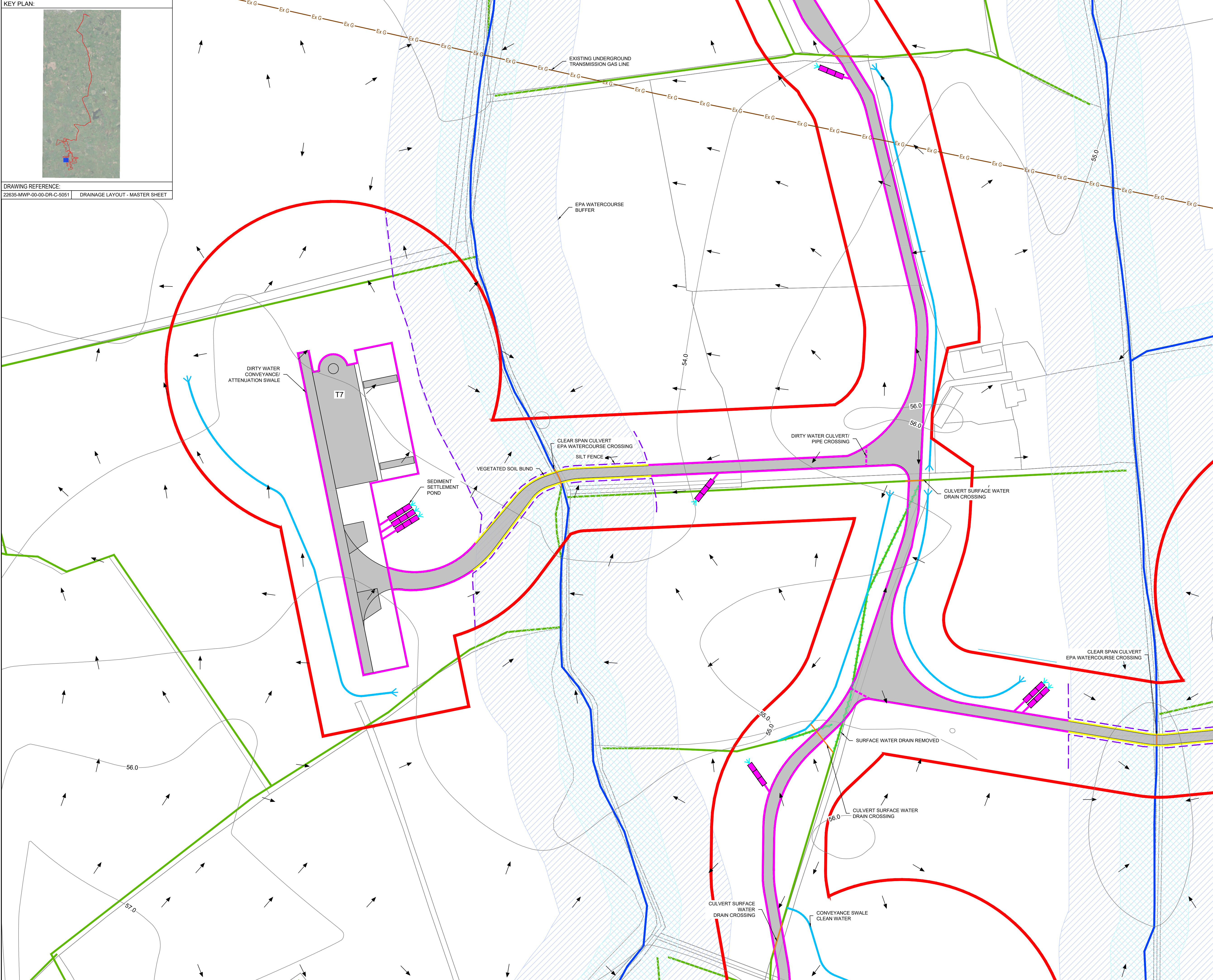

MAP REPRODUCED FROM TAILTE ÉIREANN BY PERMISSION OF THE GOVERNMENT. CYAL50465038.

TAILTE ÉIREANN SHEET NO:
4744-D, 4804-D, 4744-C, 4804-A, 4804-C, 4867-A, 4867-B, 4867-D, 4928-B, 4988-D, 5045-B, 5048-D, 5108-A, 5109-A, 5109-B, 4928-D, 4988-C, 5049-B, 5108-B, 5049-C, 4988-D, 4866-B, 4866-C, 5108-D, 5048-C, 4928-B, 4804-B, 4866-D, 4929-D, 4988-B, 4988-C, 5049-D, 5108-C, 4866, 4867, 4988, 4989, 4928, 4929, 5048, 5049, 5108, 5108-B, 5108-D, 5109, 5109-C, 5231-B, 5231, 5232, 5232-A, 5169, 5169-B, 5169-D, 5170, 5170-A and 5170-C

P01	25.09.25	ISSUED FOR PLANNING	JK	CMCL
REV	DATE	DESCRIPTION	BY	APP
PROJECT: BALLINLEE WIND FARM				
TITLE: SURFACE WATER LAYOUT - SHEET 8				
CLIENT: BALLINLEE GREEN ENERGY LTD.				
				
DRAWN: MV	CHECKED: CMCL	APPROVED: CMCL		
PROJECT NUMBER: 22635	DATE: MAY 2025	SCALE @ A1: 1 : 1,000		
STATUS DESCRIPTION: FOR APPROVAL			STATUS: S4	
DRAWING NUMBER: 22635 - MWP - 00 - 00 - DR - C - 5059			REV: P01	

KEY PLAN:


DRAWING REFERENCE:
22635-MWP-00-00-DR-C-5051 DRAINAGE LAYOUT - MASTER SHEET



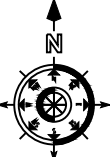
DO NOT SCALE FROM THIS DRAWING. USE FIGURED DIMENSIONS IN ALL CASES. VERIFY DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE DESIGNERS IMMEDIATELY.
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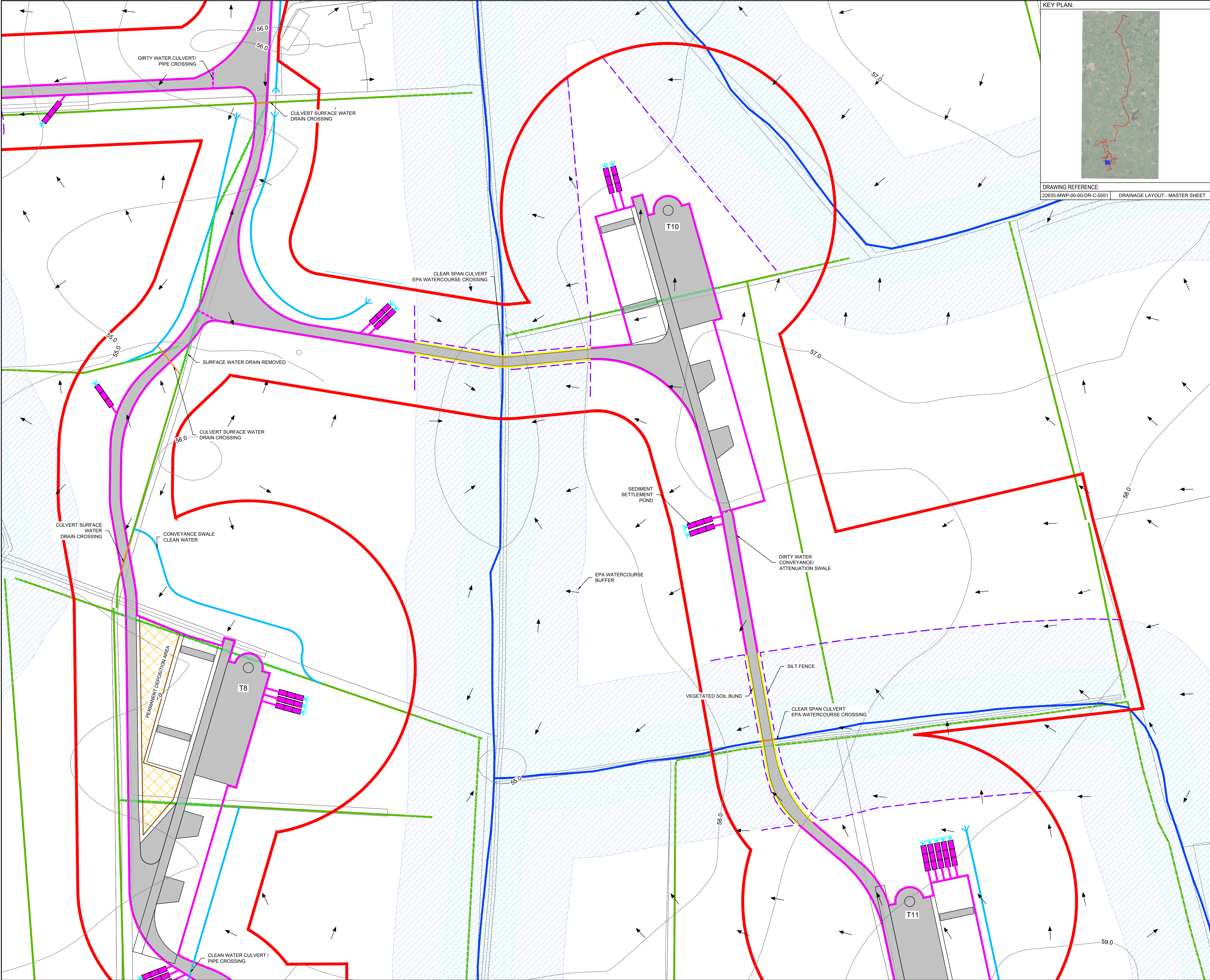
LEGEND:

- PLANNING APPLICATION BOUNDARY (EDGED IN RED)
- TURBINE HARDSTAND
- ACCESS TRACK - AGGREGATE
- ACCESS TRACK - TEMPORARY FOR TURBINE COMPONENT DELIVERY
- ACCESS TRACK - ASPHALT CONCRETE
- PERMANENT DEPOSITION AREA
- TEMPORARY DEPOSITION AREA
- BORROW PIT
- DIRTY WATER CONVEYANCE / ATTENUATION SWALE
- DIRTY WATER CULVERT / PIPE CROSSING
- CLEAN WATER CONVEYANCE / CUT-OFF SWALE
- CLEAN WATER CULVERT / PIPE CROSSING
- WHEEL WASH
- VEGETATED SOIL BUND
- SILT FENCE
- SEDIMENT SETTLEMENT POND
- EXISTING SURFACE WATER DRAIN
- MORNING STAR RIVER / TRIBUTARY
- PROPOSED CULVERT
- SURFACE WATER RUNOFF DIRECTION
- 20m EPA WATERCOURSE BUFFER
- 50m EPA WATERCOURSE BUFFER
- SURFACE WATER DRAIN REMOVED

FOR SITE DRAINAGE DETAILS REFER TO DRAWING NO. 22635-MWP-00-00-DR-C-5407
FOR WATERCOURSE CROSSING DETAILS REFER TO DRAWING NO. 22635-MWP-00-00-DR-C-5417


MAP REPRODUCED FROM TAILTE ÉIREANN BY PERMISSION OF THE GOVERNMENT. CYAL50465038.
TAILTE ÉIREANN SHEET NO:
4744-D, 4804-D, 4744-C, 4804-A, 4804-C, 4867-A, 4867-B, 4867-D, 4928-B, 4988-D, 5045-B, 5048-D, 5108-A, 5109-A, 5109-B, 4928-D, 4988-C, 5049-B, 5108-B, 5049-C, 4988-D, 4866-B, 4866-C, 5108-D, 5046-C, 4929-B, 4804-B, 4866-D, 4929-D, 4988-B, 4988-B, 5049-D, 5108-C, 4866, 4867, 4988, 4989, 4928, 4929, 5048, 5049, 5108, 5108-B, 5108-D, 5109, 5109-C, 5231-B, 5231, 5232, 5232-A, 5169, 5169-B, 5169-D, 5170, 5170-A and 5170-C

P01	25.09.25	ISSUED FOR PLANNING	JK	CMCL
REV	DATE	DESCRIPTION	BY	APP
PROJECT: BALLINLEE WIND FARM				
TITLE: SURFACE WATER LAYOUT - SHEET 9				
CLIENT: BALLINLEE GREEN ENERGY LTD.				
				
DRAWN: MV	CHECKED: CMCL	APPROVED: CMCL		
PROJECT NUMBER: 22635	DATE: MAY 2025	SCALE @ A1: 1 : 1,000		
STATUS DESCRIPTION: FOR APPROVAL			STATUS: S4	
DRAWING NUMBER: 22635 - MWP - 00 - 00 - DR - C - 5060			REV: P01	



DRAWING REFERENCE:
22635-MWP-00-00-DR-C-5051 DRAINAGE LAYOUT - MASTER SHEET

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LEGEND:

- PLANNING APPLICATION BOUNDARY (EDGED IN RED)
- TURBINE HARDSTAND
- ACCESS TRACK - AGGREGATE
- ACCESS TRACK - TEMPORARY FOR TURBINE COMPONENT DELIVERY
- ACCESS TRACK - ASPHALT CONCRETE
- PERMANENT DEPOSITION AREA
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- SILT FENCE
- SEDIMENT SETTLEMENT POND
- EXISTING SURFACE WATER DRAIN
- MORNING STAR RIVER / TRIBUTARY
- PROPOSED CULVERT
- SURFACE WATER RUNOFF DIRECTION
- 20m EPA WATERCOURSE BUFFER
- 50m EPA WATERCOURSE BUFFER
- SURFACE WATER DRAIN REMOVED

FOR SITE DRAINAGE DETAILS REFER TO DRAWING NO. 22635-MWP-00-00-DR-C-5407
FOR WATERCOURSE CROSSING DETAILS REFER TO DRAWING NO. 22635-MWP-00-00-DR-C-5417

MAP REPRODUCED FROM TAILTE ÉIREANN BY PERMISSION OF THE GOVERNMENT. CYAL50465038.

TAILTE ÉIREANN SHEET NO:
4744-D, 4804-D, 4744-C, 4804-A, 4804-C, 4867-A, 4867-B, 4867-D, 4928-B, 4988-A, 5045-B, 5048-D, 5108-A, 5109-A, 5109-B, 4928-D, 4988-C, 5049-B, 5108-B, 5049-C, 4988-D, 4866-B, 4866-C, 5108-D, 5048-C, 4928-B, 4804-B, 4866-D, 4928-D, 4988-B, 4988-B, 5049-D, 5108-C, 4866, 4867, 4988, 4989, 4928, 4929, 5048, 5049, 5108, 5108-B, 5108-D, 5109, 5109-C, 5231-B, 5231, 5232, 5232-A, 5169, 5169-B, 5169-D, 5170, 5170-A and 5170-C

REV	DATE	DESCRIPTION	BY	APP
P01	25.09.25	ISSUED FOR PLANNING	JK	CMCL

PROJECT: BALLINLEE WIND FARM

TITLE: SURFACE WATER LAYOUT - SHEET 10

CLIENT: BALLINLEE GREEN ENERGY LTD.

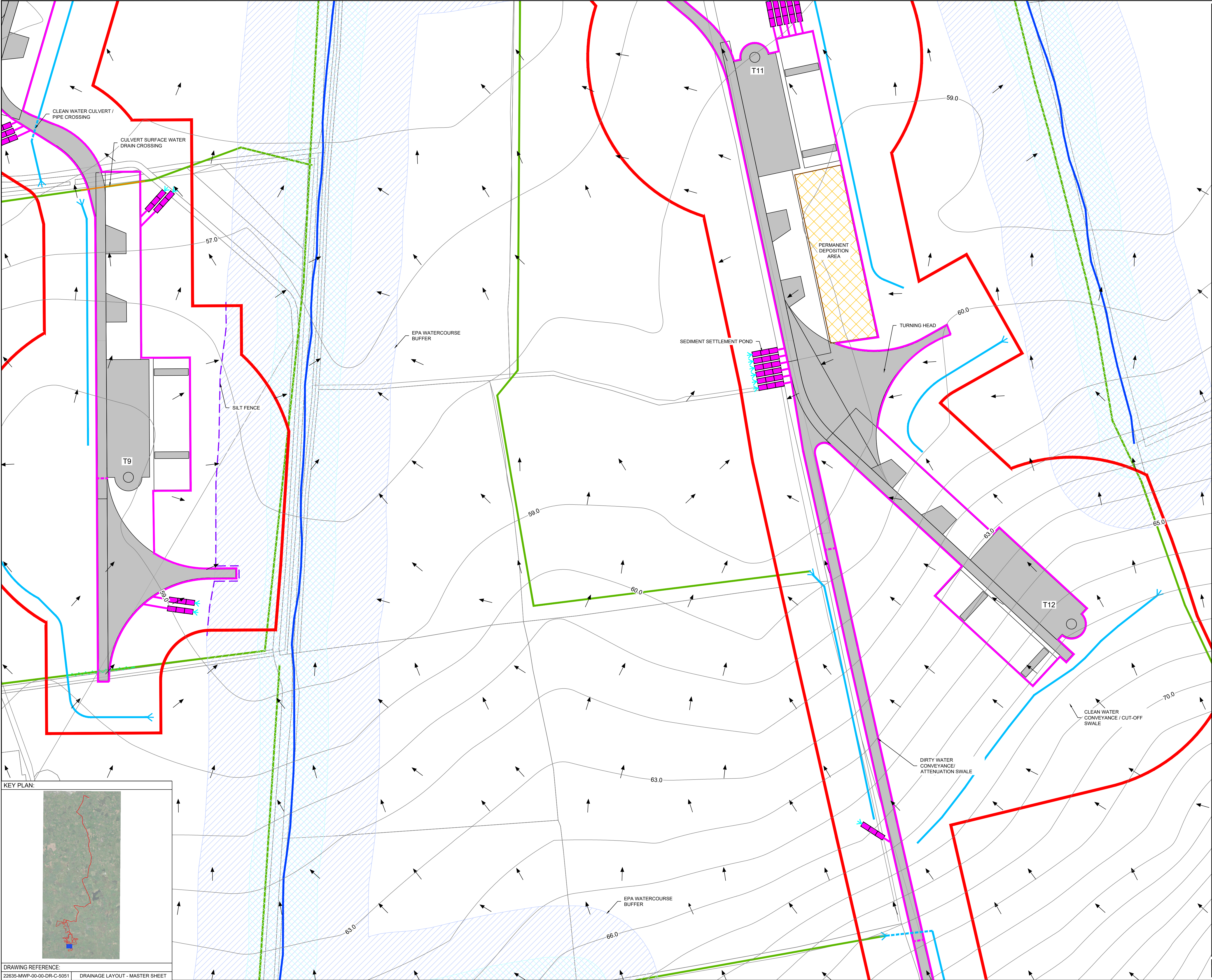
MWP
ENGINEERING AND ENVIRONMENTAL CONSULTANTS
CORK | TRALEE | LONDON | LIMERICK
mwp.ie

DRAWN:	CHECKED:	APPROVED:
MV	CMCL	CMCL

PROJECT NUMBER:	DATE:	SCALE @ 1:
22635	MAY 2025	1,000

STATUS DESCRIPTION	STATUS:
FOR APPROVAL	S4

DRAWING NUMBER	REV:
22635 - MWP - 00 - 00 - DR - C - 5061	P01



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LEGEND:

	PLANNING APPLICATION BOUNDARY (EDGED IN RED)
	TURBINE HARDSTAND
	ACCESS TRACK - AGGREGATE
	ACCESS TRACK - TEMPORARY FOR TURBINE COMPONENT DELIVERY
	ACCESS TRACK - ASPHALT CONCRETE
	PERMANENT DEPOSITION AREA
	TEMPORARY DEPOSITION AREA
	BORROW PIT
	DIRTY WATER CONVEYANCE / ATTENUATION SWALE
	DIRTY WATER CULVERT / PIPE CROSSING
	CLEAN WATER CONVEYANCE / CUT-OFF SWALE
	CLEAN WATER CULVERT / PIPE CROSSING
	WHEEL WASH
	VEGETATED SOIL BUND
	SILT FENCE
	SEDIMENT SETTLEMENT POND
	EXISTING SURFACE WATER DRAIN
	MORNING STAR RIVER / TRIBUTARY
	PROPOSED CULVERT
	SURFACE WATER RUNOFF DIRECTION
	20m EPA WATERCOURSE BUFFER
	50m EPA WATERCOURSE BUFFER
	SURFACE WATER DRAIN REMOVED

FOR SITE DRAINAGE DETAILS REFER TO DRAWING NO. 22635-MWP-00-00-DR-C-5407

FOR WATERCOURSE CROSSING DETAILS REFER TO DRAWING NO. 22635-MWP-00-00-DR-C-5417

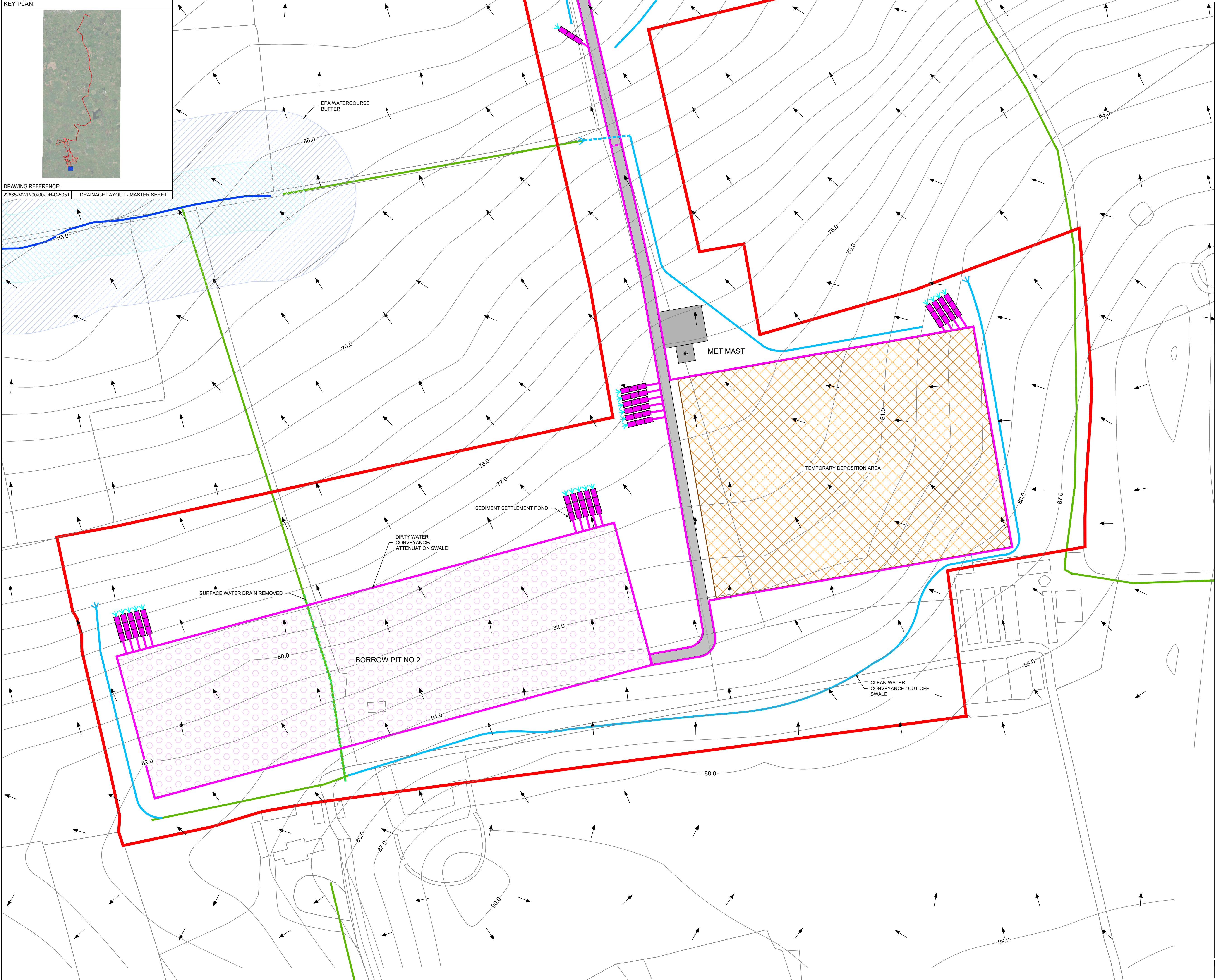
MAP REPRODUCED FROM TAILTE ÉIREANN BY PERMISSION OF THE GOVERNMENT. CYAL50465038.

TAILTE ÉIREANN SHEET NO:
4744-D, 4804-D, 4744-C, 4804-A, 4804-C, 4867-A, 4867-B, 4867-D, 4928-B, 4988-D, 5045-B, 5048-D, 5108-A, 5109-A, 5109-B, 4928-D, 4988-C, 5049-B, 5108-B, 5049-C, 4988-D, 4866-B, 4866-C, 5108-D, 5048-C, 4928-B, 4804-B, 4866-D, 4928-D, 4988-B, 4988-B, 5049-D, 5108-C, 4866, 4867, 4988, 4989, 4928, 4929, 5048, 5049, 5108, 5108-B, 5108-D, 5109, 5109-C, 5231-B, 5231, 5232, 5232-A, 5169, 5169-B, 5169-D, 5170, 5170-A and 5170-C

P01	25.09.25	ISSUED FOR PLANNING	JK	CMCL
REV	DATE	DESCRIPTION	BY	APP
PROJECT: BALLINLEE WIND FARM				
TITLE: SURFACE WATER LAYOUT - SHEET 11				
CLIENT: BALLINLEE GREEN ENERGY LTD.				
MWP ENGINEERING AND ENVIRONMENTAL CONSULTANTS CORK TRALEE LONDON LIMERICK mwp.ie				
DRAWN: MV	CHECKED: CMCL	APPROVED: CMCL		
PROJECT NUMBER: 22635	DATE: MAY 2025	SCALE @ A1: 1 : 1,000		
STATUS DESCRIPTION: FOR APPROVAL			STATUS: S4	
DRAWING NUMBER: 22635 - MWP - 00 - 00 - DR - C - 5062			REV: P01	

KEY PLAN:


DRAWING REFERENCE:
22635-MWP-00-00-DR-C-5051 | DRAINAGE LAYOUT - MASTER SHEET



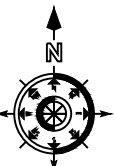
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5. ALL DIMENSIONS ARE IN METERS, UNLESS NOTED OTHERWISE.

LEGEND:

- PLANNING APPLICATION BOUNDARY (EDGED IN RED)
- TURBINE HARDSTAND
- ACCESS TRACK - AGGREGATE
- ACCESS TRACK - TEMPORARY FOR TURBINE COMPONENT DELIVERY
- ACCESS TRACK - ASPHALT CONCRETE
- PERMANENT DEPOSITION AREA
- TEMPORARY DEPOSITION AREA
- BORROW PIT
- DIRTY WATER CONVEYANCE / ATTENUATION SWALE
- DIRTY WATER CULVERT / PIPE CROSSING
- CLEAN WATER CONVEYANCE / CUT-OFF SWALE
- CLEAN WATER CULVERT / PIPE CROSSING
- WHEEL WASH
- VEGETATED SOIL BUND
- SILT FENCE
- SEDIMENT SETTLEMENT POND
- EXISTING SURFACE WATER DRAIN
- MORNING STAR RIVER / TRIBUTARY
- PROPOSED CULVERT
- SURFACE WATER RUNOFF DIRECTION
- 20m EPA WATERCOURSE BUFFER
- 50m EPA WATERCOURSE BUFFER
- SURFACE WATER DRAIN REMOVED

FOR SITE DRAINAGE DETAILS REFER TO DRAWING NO. 22635-MWP-00-00-DR-C-5407
FOR WATERCOURSE CROSSING DETAILS REFER TO DRAWING NO. 22635-MWP-00-00-DR-C-5417

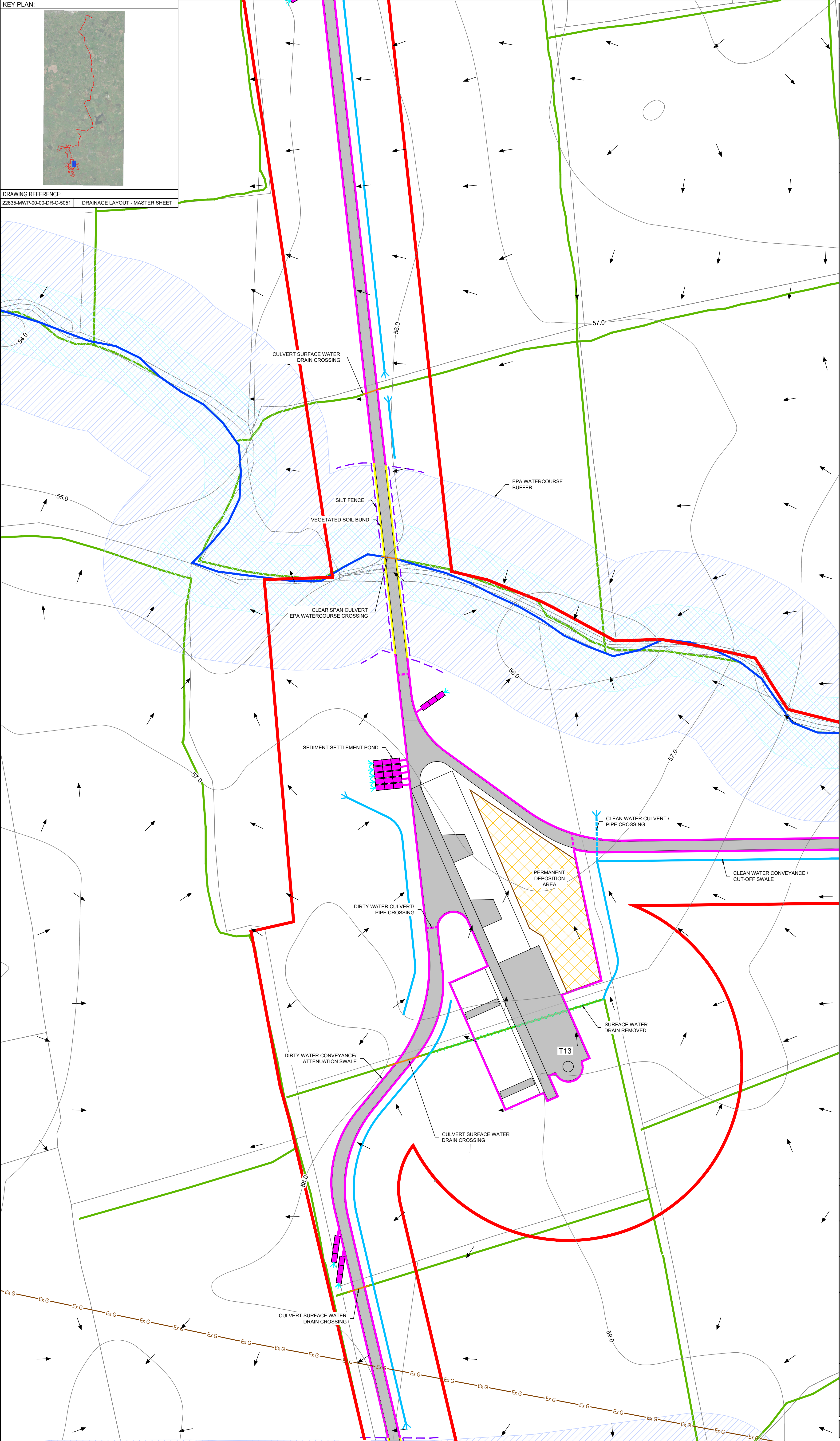

MAP REPRODUCED FROM TAILTE ÉIREANN BY PERMISSION OF THE GOVERNMENT. CYAL50465038.

TAILTE ÉIREANN SHEET NO:
4744-D, 4804-D, 4744-C, 4804-A, 4804-C, 4867-A, 4867-B, 4867-D, 4928-B, 4988-D, 5045-B, 5048-D, 5108-A, 5109-A, 5109-B, 4928-D, 4988-C, 5049-B, 5108-B, 5049-C, 4988-D, 4866-B, 4866-C, 5108-D, 5048-C, 4928-B, 4804-B, 4866-D, 4928-D, 4988-B, 4988-C, 5049-D, 5108-C, 4866, 4867, 4868, 4869, 4928, 4929, 5048, 5049, 5108, 5108-B, 5108-D, 5109, 5109-C, 5231-B, 5231, 5232, 5232-A, 5169, 5169-B, 5169-D, 5170, 5170-A and 5170-C

P01	25.09.25	ISSUED FOR PLANNING	JK	CMCL
REV	DATE	DESCRIPTION	BY	APP
PROJECT: BALLINLEE WIND FARM				
TITLE: SURFACE WATER LAYOUT - SHEET 12				
CLIENT: BALLINLEE GREEN ENERGY LTD.				
				
DRAWN: MV	CHECKED: CMCL	APPROVED: CMCL		
PROJECT NUMBER: 22635	DATE: MAY 2025	SCALE @ A1: 1 : 1,000		
STATUS DESCRIPTION: FOR APPROVAL			STATUS: S4	
DRAWING NUMBER: 22635 - MWP - 00 - 00 - DR - C - 5063			REV: P01	

KEY PLAN:

DRAWING REFERENCE:
22635-MWP-00-00-DR-C-5051 DRAINAGE LAYOUT - MASTER SHEET



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LEGEND:

- PLANNING APPLICATION BOUNDARY (EDGED IN RED)
- TURBINE HARDSTAND
- ACCESS TRACK - AGGREGATE
- ACCESS TRACK - TEMPORARY FOR TURBINE COMPONENT DELIVERY
- ACCESS TRACK - ASPHALT CONCRETE
- PERMANENT DEPOSITION AREA
- TEMPORARY DEPOSITION AREA
- BORROW PIT
- DIRTY WATER CONVEYANCE / ATTENUATION SWALE
- DIRTY WATER CULVERT / PIPE CROSSING
- CLEAN WATER CONVEYANCE / CUT-OFF SWALE
- CLEAN WATER CULVERT / PIPE CROSSING
- WHEEL WASH
- VEGETATED SOIL BUND
- SILT FENCE
- SEDIMENT SETTLEMENT POND
- EXISTING SURFACE WATER DRAIN
- MORNING STAR RIVER / TRIBUTARY
- PROPOSED CULVERT
- SURFACE WATER RUNOFF DIRECTION
- 20m EPA WATERCOURSE BUFFER
- 50m EPA WATERCOURSE BUFFER
- SURFACE WATER DRAIN REMOVED

FOR SITE DRAINAGE DETAILS REFER TO DRAWING NO. 22635-MWP-00-00-DR-C-5407
FOR WATERCOURSE CROSSING DETAILS REFER TO DRAWING NO. 22635-MWP-00-00-DR-C-5417

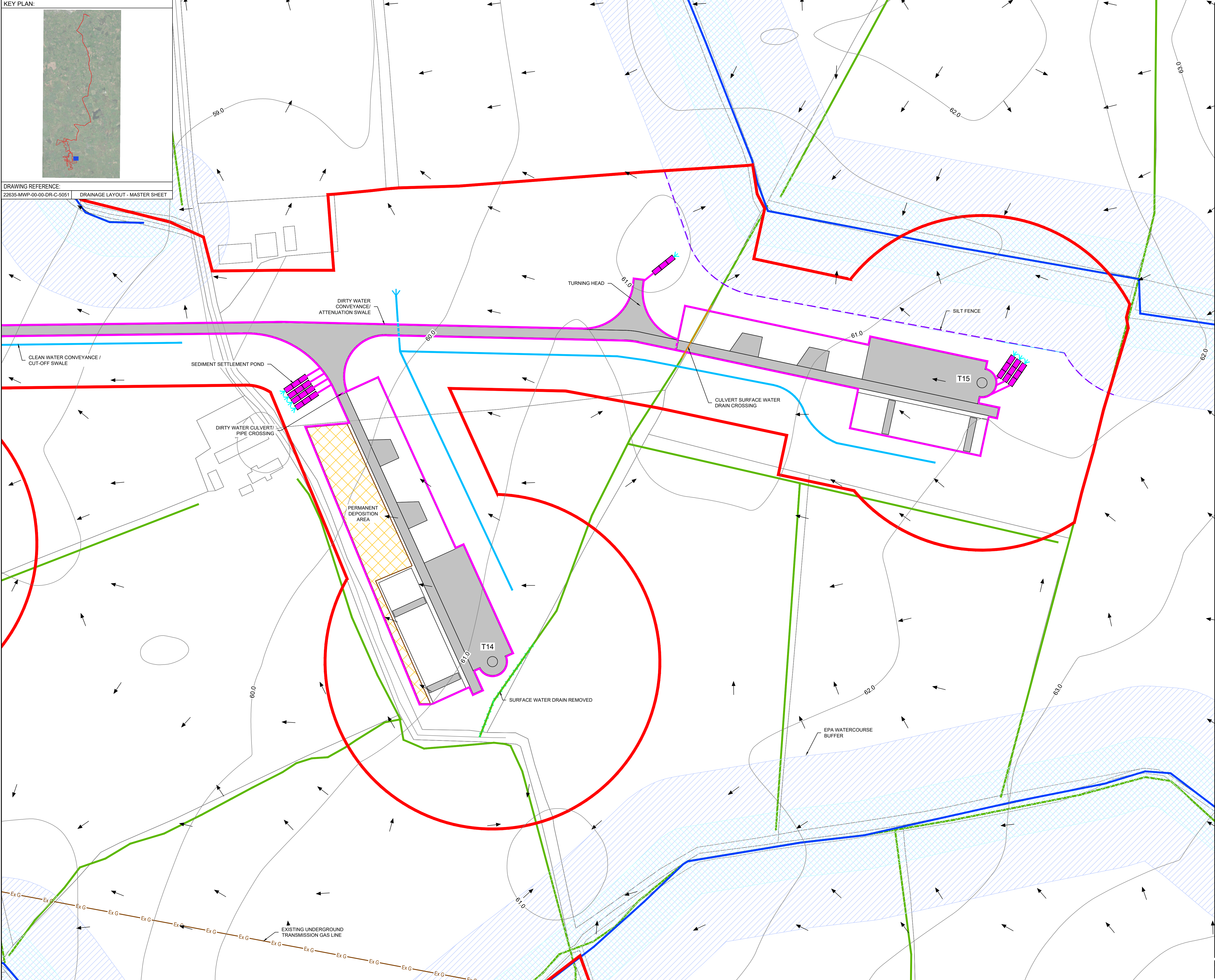
MAP REPRODUCED FROM TAILTE ÉIREANN BY PERMISSION OF THE GOVERNMENT. CYAL50465038.

TAILTE ÉIREANN SHEET NO:
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P01	25.09.25	ISSUED FOR PLANNING	JK	CMCL
REV	DATE	DESCRIPTION	BY	APP
PROJECT: BALLINLEE WIND FARM				
TITLE: SURFACE WATER LAYOUT - SHEET 13				
CLIENT: BALLINLEE GREEN ENERGY LTD.				
DRAWN: MV	CHECKED: CMCL	APPROVED: CMCL		
PROJECT NUMBER: 22635	DATE: MAY 2025	SCALE @ A1: 1 : 1,000		
STATUS DESCRIPTION: FOR APPROVAL			STATUS: S4	
DRAWING NUMBER: 22635 - MWP - 00 - 00 - DR - C - 5064			REV: P01	

KEY PLAN:

DRAWING REFERENCE:
22635-MWP-00-00-DR-C-5051 DRAINAGE LAYOUT - MASTER SHEET



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LEGEND:

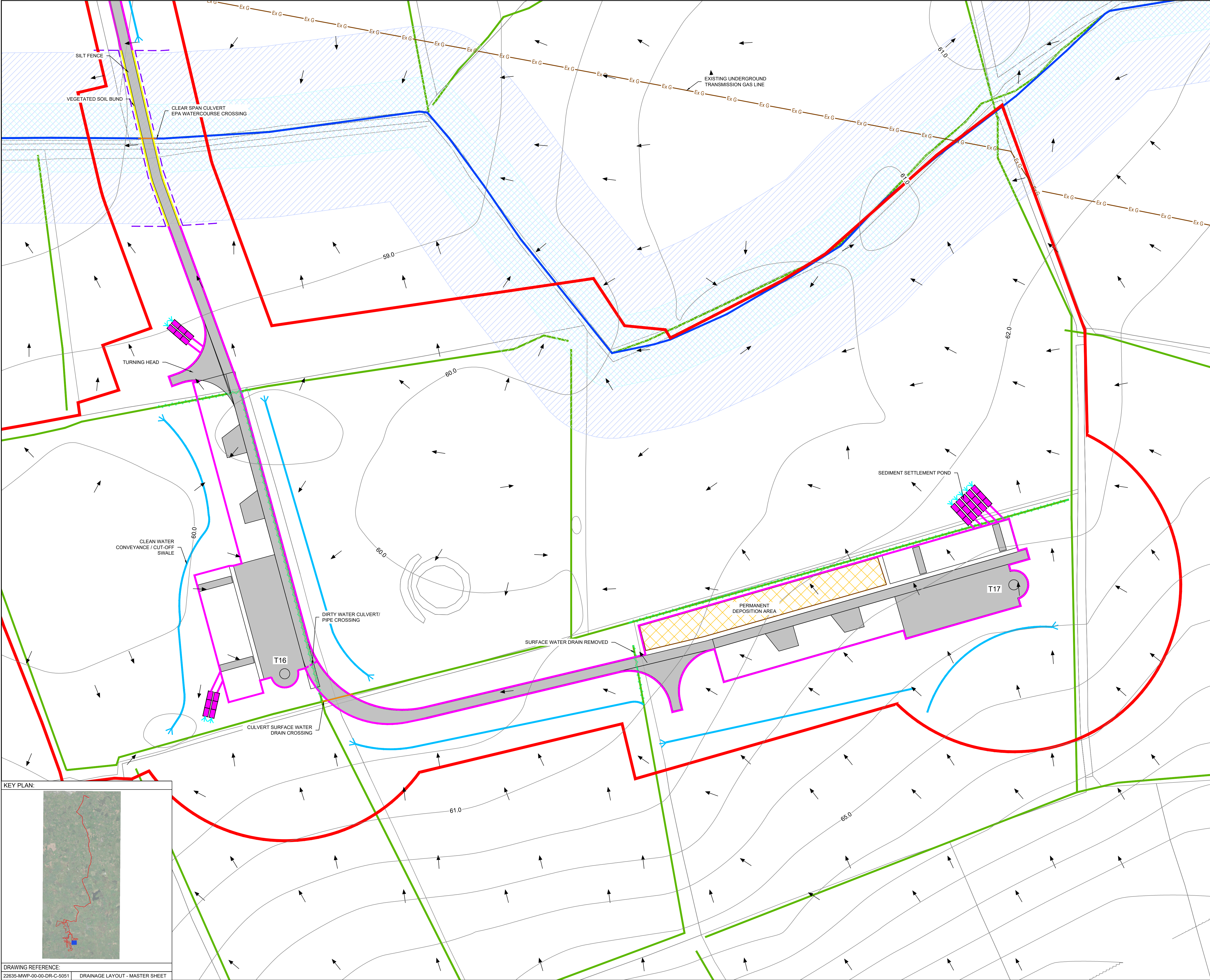
- PLANNING APPLICATION BOUNDARY (EDGED IN RED)
- TURBINE HARDSTAND
- ACCESS TRACK - AGGREGATE
- ACCESS TRACK - TEMPORARY FOR TURBINE COMPONENT DELIVERY
- ACCESS TRACK - ASPHALT CONCRETE
- PERMANENT DEPOSITION AREA
- TEMPORARY DEPOSITION AREA
- BORROW PIT
- DIRTY WATER CONVEYANCE / ATTENUATION SWALE
- DIRTY WATER CULVERT / PIPE CROSSING
- CLEAN WATER CONVEYANCE / CUT-OFF SWALE
- CLEAN WATER CULVERT / PIPE CROSSING
- WHEEL WASH
- VEGETATED SOIL BUND
- SILT FENCE
- SEDIMENT SETTLEMENT POND
- EXISTING SURFACE WATER DRAIN
- MORNING STAR RIVER / TRIBUTARY
- PROPOSED CULVERT
- SURFACE WATER RUNOFF DIRECTION
- 20m EPA WATERCOURSE BUFFER
- 50m EPA WATERCOURSE BUFFER
- SURFACE WATER DRAIN REMOVED

FOR SITE DRAINAGE DETAILS REFER TO DRAWING NO. 22635-MWP-00-00-DR-C-5407
FOR WATERCOURSE CROSSING DETAILS REFER TO DRAWING NO. 22635-MWP-00-00-DR-C-5417

MAP REPRODUCED FROM TAILTE ÉIREANN BY PERMISSION OF THE GOVERNMENT. CYAL50465038.

TAILTE ÉIREANN SHEET NO:
4744-D, 4904-D, 4744-C, 4904-A, 4804-C, 4867-A, 4867-B, 4867-D, 4928-B, 4988-D, 5045-B, 5048-D, 5108-A, 5109-A, 5109-B, 4928-D, 4988-C, 5049-B, 5108-B, 5049-C, 4988-D, 4866-B, 4866-C, 5108-D, 5048-C, 4929-B, 4804-B, 4866-D, 4929-D, 4988-B, 4988-C, 5049-D, 5108-C, 4866, 4867, 4988, 4989, 4928, 4929, 5048, 5049, 5108, 5108-B, 5108-D, 5109, 5109-C, 5231-B, 5231, 5232, 5232-A, 5169, 5169-B, 5169-D, 5170, 5170-A and 5170-C

P01	25.09.25	ISSUED FOR PLANNING	JK	CMCL
REV	DATE	DESCRIPTION	BY	APP
PROJECT: BALLINLEE WIND FARM				
TITLE: SURFACE WATER LAYOUT - SHEET 14				
CLIENT: BALLINLEE GREEN ENERGY LTD.				
 ENGINEERING AND ENVIRONMENTAL CONSULTANTS CORK TRALEE LONDON LIMERICK				
DRAWN: MV	CHECKED: CMCL	APPROVED: CMCL		
PROJECT NUMBER: 22635	DATE: MAY 2025	SCALE @ A1: 1 : 1,000		
STATUS DESCRIPTION: FOR APPROVAL			STATUS: S4	
DRAWING NUMBER: 22635 - MWP - 00 - 00 - DR - C - 5065			REV: P01	



KEY PLAN:

DRAWING REFERENCE:
22635-MWP-00-00-DR-C-5051 DRAINAGE LAYOUT - MASTER SHEET

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LEGEND:

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- TURBINE HARDSTAND
- ACCESS TRACK - AGGREGATE
- ACCESS TRACK - TEMPORARY FOR TURBINE COMPONENT DELIVERY
- ACCESS TRACK - ASPHALT CONCRETE
- PERMANENT DEPOSITION AREA
- TEMPORARY DEPOSITION AREA
- BORROW PIT
- DIRTY WATER CONVEYANCE / ATTENUATION SWALE
- DIRTY WATER CULVERT / PIPE CROSSING
- CLEAN WATER CONVEYANCE / CUT-OFF SWALE
- CLEAN WATER CULVERT / PIPE CROSSING
- WHEEL WASH
- VEGETATED SOIL BUND
- SILT FENCE
- SEDIMENT SETTLEMENT POND
- EXISTING SURFACE WATER DRAIN
- MORNING STAR RIVER / TRIBUTARY
- PROPOSED CULVERT
- SURFACE WATER RUNOFF DIRECTION
- 20m EPA WATERCOURSE BUFFER
- 50m EPA WATERCOURSE BUFFER
- SURFACE WATER DRAIN REMOVED

FOR SITE DRAINAGE DETAILS REFER TO DRAWING NO. 22635-MWP-00-00-DR-C-5407
FOR WATERCOURSE CROSSING DETAILS REFER TO DRAWING NO. 22635-MWP-00-00-DR-C-5417

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P01	25.09.25	ISSUED FOR PLANNING	JK	CMCL
REV	DATE	DESCRIPTION	BY	APP
PROJECT: BALLINLEE WIND FARM				
TITLE: SURFACE WATER LAYOUT - SHEET 15				
CLIENT: BALLINLEE GREEN ENERGY LTD.				
DRAWN: MV	CHECKED: CMCL	APPROVED: CMCL		
PROJECT NUMBER: 22635	DATE: MAY 2025	SCALE @ A1: 1 : 1,000		
STATUS DESCRIPTION: FOR APPROVAL			STATUS: S4	
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