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ENVIRONMENTAL IMPACT ASSESSMENT REPORT
ADVANCED ENVIRONMENTAL SOLUTIONS (IRELAND) LTD
NENAGH
COUNTY TIPPERARY
WASTE LICENCE REG. W0240-01

Prepared For: -

Advanced Environmental Solutions (Ireland) Ltd,
Springfort Cross,
Solsborough,
Nenagh,
County Tipperary.

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NON-TECHNICAL SUMMARY

1.0 Introduction

1.1 The Applicant

Advanced Environmental Solutions (Ireland) Ltd (AES) operates a materials recovery and transfer facility at Solsborough, Springfort Cross, Nenagh, County Tipperary under planning permission granted by Tipperary County Council and a Waste Licence (Reg. No.W0240-01) granted by the Environmental Protection Agency (EPA).

1.2 Facility Overview

The facility is leased and encompasses 6,855 m² and is occupied by a main processing building, a garage, administration buildings, a quarantine area, a fuelling station, a vehicle/bin wash, and a weighbridge. There are two portakabin offices, one adjacent to the truck entrance and the second at the south-western corner of the main processing building. There is a wall along the southern site boundary, with a security fence surrounding the western, northern and eastern boundaries. The entire site, including the floors of the buildings and the open yard areas, are paved with concrete.

1.2.1 Site History

Prior to development as a waste management facility by O'Brien Waste Recycling in 1994, the lands were used for agricultural purposes. AES acquired the facility in 2001. In 2004, the Main Processing Building and Garage were extended, the Administration Building was constructed, the weighbridge installed; the diesel oil storage tank relocated to the fuelling station and all of the remaining unpaved areas were covered with concrete.

In 2004, AES obtained a Waste Permit from North Tipperary County Council. In 2007, Bord-na-Mona acquired AES. The Agency granted AES a Waste Licence in July 2009. In late 2009/early 2010, the wastewater drainage system was upgraded to connect to a new municipal sewer running outside the southern site boundary. The surface water drainage system was also upgraded, with the installation of an oil interceptor and manual shut off valve at the outfall point, which is in the north east of the site.

There is no record of any historic incidents at the facility that could have impacted on soil or groundwater quality.

1.2.2 Waste Activities

The site accepts non-hazardous household, commercial and construction and demolition waste, which is processed and transferred to other authorised recovery/disposal facilities.

1.3 Proposed Development

It is proposed to increase the amount of non-hazardous waste that can be accepted annually from 24,750 tonnes to 30,000 tonnes.

2.0 Planning and Waste Management Policy

2.1 Planning Policy

The North Tipperary County Development Plan (2010), which remains in place until a new plan is prepared for County Tipperary, sets out the policies and objectives for the sustainable future growth of the county. In relation to waste management, the objective is to implement the policies and recommendations of the Southern Region Waste Management Plan 2015-2021.

2.2.1 Nenagh and Environs Development Plan 2013-2019

The facility is located adjacent to the Nenagh and Environs Boundary, immediately to the west of an area zoned for commercial use. In relation to waste management it is policy to provide, maintain and improve infrastructure for re-use, recycling and disposal of residential waste.

2.2 Waste Management Policy

The foundation policy statement on waste management “Changing Our Ways” bases national policy on the EU Waste Management Hierarchy, which in descending order is:

- Prevention;
- Preparing for Reuse;
- Recycling;
- Other Recovery (including energy recovery);and
- Disposal

The most recent Policy Statement ‘A Resource Opportunity Waste Management Policy In Ireland 2012’ is also based on the EU Waste Management Hierarchy and sets out how the higher tiers can reduce Ireland’s reliance on finite resources, virtually eliminate reliance on landfill, and minimise the impact of waste management on the environment. It is a policy objective that when waste is generated, the maximum value must be extracted from it by ensuring that it is reused, recycled, or recovered.

2.2.1 Waste Management Plan for the Southern Region

The underlying strategic approach of the Plan is to improve the quality of waste along the entire treatment supply chain. Pre-treatment capacities, for example materials recovery facilities, are typically the first destination for waste and are vital in extracting and generating high-quality outputs for onward treatment.

2.2.3 Compliance with Policy Objectives

The proposed development is consistent with the current planning objectives and national and regional waste policy objectives, as it will increase the pre-treatment capacity to get the maximum value from the waste and will contribute to the achievement and maintenance of national and regional recycling and recovery targets.

2.3 Need for the Development

The waste acceptance limits set in the current planning permission and EPA Licence prevent AES from competing for increased market share in its catchment area.

3. Alternatives Examined

The facility is specifically designed and has established use for waste activities and it has the capacity to accommodate the proposed increase in the amount of waste accepted. The only alternative would be to construct a new waste management facility at a different location, which offers no environmental advantage.

3.1 The Do Nothing Alternative

If the development does not proceed the facility will continue to operate in its current configuration and AES will not be able to expand its waste collection service.

4. Site Description

4.1 Site Location

The facility is located at Springfort Cross on the south western outskirts of Nenagh.

4.2 Site Layout

The facility encompasses 6,855m². There are two entrances on the southern site boundary. The western one is for waste collection and transport vehicles, while the eastern one is for the civic amenity area and customer access to the service support offices. There are six operational areas – Main Processing Building, Garage, Administration Buildings, Quarantine

Area Fuelling Station, Vehicle/Bin Wash, and Weighbridge. The entire site, including the floors of the buildings and the open yard areas, are paved with concrete.

4.3 Waste Activities

The operational hours are 7am to 8pm Monday to Saturday. The facility does not normally open on Sundays or Public Holidays, but can do so subject to EPA approval. All waste processing is carried out inside the Process Building and includes:

- Segregation of recyclable materials (paper, cardboards, plastic, wood, metals, glass);
- Bulking of Municipal Solid Waste (MSW);
- Transfer of recovered and residual materials to appropriately licensed recycling, recovery and disposal outlets.

4.4 Site Services and Materials Storage

The facility obtains water from the mains supply provided by Irish Water. Electricity is supplied by a utility company.

Wash water from the Vehicle/Bin Wash areas passes through an oil interceptor/silt trap into an underground pump sump from where it is pumped via a rising main to the Irish Water foul sewer located outside the site entrance. Some of the incoming wastes can contain small quantities of liquid and this is collected in a central drain in the floor of the Main Processing Building, which connects to the underground pump sump via an oil interceptor. Sanitary wastewater connects to the outfall from the central foul water silt trap/oil interceptor and enters the pump sump.

Diesel for the waste collection trucks and the mobile plant used to handle the waste is stored in above ground tanks located at the rear of the Main Processing Building and in the Garage respectively. Engine and hydraulic oil are stored in above ground tanks in the Garage, with smaller containers on a bunded pallet also inside Garage. Ad-blue is stored in an IBC in the Quarantine Area. Detergents and disinfectants used in the Vehicle/Bin Wash are stored on a bund in the Garage. Waste oil is also stored in the Garage in an above ground tank.

4.4 Drainage

Rainwater run-off from the paved yards, weighbridge and building roofs is collected and directed through a silt trap and oil interceptor before being discharged to an open drain that starts at the northeast site boundary. This drain, which is seasonal, is a tributary of the Ardgregane Stream that flows into Lough Derg, approximately 5km to the south of the facility.

4.5 Environmental Monitoring

The EPA Licence specifies emission limit values for the rain water run-off, dust and noise and requires regular surface water, dust and noise monitoring to confirm compliance with the emission limit values and if they are exceeded to ensure corrective actions are carried out.

4.6 Proposed Changes

It is proposed to increase the amount of waste that can be accepted from 24,750 tonnes per year to 30,000 tonnes. There will be no changes to the types of waste accepted and the proposed increase will not require either the construction of new buildings, or the provision of new equipment.

5 Climate

5.1 Receiving Environment

The climate in the area is mild and wet, with the prevailing wind direction from the south and south-west.

5.2 Impacts

The additional wastes will result in an increase in energy (diesel and electricity) consumption associated with their transport and processing, with a consequent increase in greenhouse gas emissions.

5.3 Do Nothing

If the development does not proceed there will be no increase in greenhouse gas emissions.

5.4 Mitigation

The mitigation measures include the use of energy efficient equipment, energy audits and the implementation of an energy management plan.

5.5 Assessment of Impacts

The proposed development will result in increased energy use, with a consequent increase in greenhouse gas emissions. All new greenhouse gas emissions contribute to a cumulative negative environmental effect, unless offset by mitigation or compensatory measures.

5.6 Residual Impacts

The proposed development will, in conjunction with current operations have an on-going, imperceptible, negative impact on climate.

6 Traffic

6.1 Receiving Environment

Dark Road forms the eastern site boundary and to the east of this is a partially developed Commercial Park. The lands to the north and west are used for agricultural purposes. A local access road forms the southern site boundary and south of this is a service garage and private residences. The nearest private dwelling is 30 m from the south western boundary on the opposite side of the public road.

The site is bounded by local roads and green fields, with the L-1119 to the south, the L-1148 to the east and green fields to the west and north. Access to the facility is from the regional road the R445 which connects to the N52 at a roundabout to the west of the site.

A scoping exercise with Tipperary County Council identified three junctions for assessment in the traffic survey year 2016, the operating year 2017 and the design years 2022 and 2032 for both the morning and afternoon peak hours.

Junction 1 is located to the north of the Grallagh local road, L-1119, with a designated speed limit of 60km/h. Traffic arrives to the site from the east via the priority junction with the L-1119 / L-1148 Dark Road (Junction 2) and from the R445 priority junction with the L-1148 (Junction 3) to the south.

Junction 2 is an existing priority junction east of the AES site on the L-1119 with the local road, L-1048 Dark Road. The junction is in a 60km/h designated speed limit. Junction 3 is an existing priority junction located approximately 30m south of Junction 2, at the junction of the L-1148 with the R445. The designated speed limit on the L-1148 and the R445 is 60km/h.

Traffic varies for both light vehicles (LV) and heavy vehicles (HV) for the AM and PM peak hours at a midpoint between the three junctions. The morning peak hour LV movements are higher in June (Junction 2) than in September and the HV movements are slightly higher in September (Junction 3). The afternoon peak hour traffic counts found higher movements in June at Junction 2 than in September at Junction 3. The variation in traffic counts corresponds with the AES weighbridge records, which indicates that the use of the actual highest movement flow low is more robust than a seasonal adjustment.

6.2 Impacts

To assess the impacts on the road network in the vicinity of the site, Junctions 1, 2 and were assessed using computer models for traffic associated with the existing operation (24,750 tonnes / annum) and the proposed operation (30,000 tonnes / annum).

The parameters examined were the Ratio of Flow to Capacity (RFC) Value, the maximum queue length on any approach to the junctions, and the average delay for each vehicle passing through the junction. The performance of the junctions in the critical morning and afternoon peak hours was assessed for the current year, 2017, and the design years (2022 and 2032),

which are 5 and 15 years after the expected opening/operation. At all Junctions the traffic in the 2022 and 2032 design years will be below the maximum desired RFC value of 0.85 and also below capacity in both the morning and evening peak hours.

At Junction 1, the longest delay for a vehicle will be the same for all assessment years and is 9.26 seconds and occurs in the morning peak. The proposed development will not result in a queue on any of the junction arms.

At Junction 2, the longest delay will be the same for all assessment years and is 9.47 and 9.17 seconds in the morning and afternoon peaks respectively on Arm B. The queue length of 0.1 vehicles (i.e. less than 1 vehicle) will be the same for both the existing and proposed operations.

At Junction 3 in the morning peak in 2032, the high volume of inbound traffic to Nenagh along with the large number of left turners onto the R445 (i.e. in the same direction) will result in the longest delay of 15.08 seconds. The maximum queue lengths in 2016 and 2022 will be 0.4 vehicles and this will increase to 0.5 vehicles in 2032.

It is not proposed to alter the existing site entrances. As these entrances are located within a designated speed limit of 60km/h the required visibility splays are 2.4 x 59 metres. At the commercial access (i.e. western entrance) the required visibility is present to the east and can be achieved to the west by clearing the overgrown hedgerow bounding the adjacent green field. At the entrance to the civic amenity area, the required visibility is present to the west; however to the east the plants in the landscaped area near the entrance affects the visibility.

6.3 Do Nothing Scenario

If the development does not proceed there will be no change in the volumes of traffic associated with the facility.

6.4 Prevention & Mitigation Measures

The visibility splays west of the main entrance will be maintained by cutting back vegetation in the hedgerow. At the entrance to the civic amenity area the visibility splay to the east will be achieved by keeping plant heights in the landscaped area at less than 1.05m. At Junction 2 to improve safety, additional signage will be erected to warn road users of the slow moving large vehicles.

6.5 Assessment of Impacts

At Junction 1, the predicted traffic for all design years will be below the maximum desired RFC (0.85) and within capacity for both the morning and evening peaks. There will be no queue length and maximum delay will be 9.26 seconds in the morning peak on Arm B.

At Junction 2 the predicted traffic for all design years will be below the maximum desired RFC of 0.85 and within capacity for both the morning and afternoon peaks. The longest delay will be the same for all assessment years -9.47 and 9.17 seconds in the morning and peak

respectively on Arm B. The queue length of 0.1 vehicles will be the same for both the existing and proposed operations.

At Junction 3 the predicted traffic for all design years in both the morning and afternoon peaks will be below the maximum desired RFC of 0.85. The longest delay will arise in 2023 and will be 15.08 seconds in the morning peak on Arm B. The maximum queue lengths in 2016 and 2022 will be 0.4 vehicles and this will increase to 0.5 vehicles in 2032.

6.6 Residual Impacts

The development will result in extra traffic movements, but the local road network and junctions have the capacity to accommodate the increase. The development will have an on-going, slight, negative impact on the road network.

7. Soils and Geology

7.1 Receiving Environment

The site is entirely covered by buildings and concrete paving. The subsoils in the locality are glacial tills that are between 0 and 3m thick. The underlying bedrock is a lime mudstone.

7.2 Impacts

The proposed change does not require either the construction of any new buildings, or any ground disturbance. There are not and will not be any direct or indirect emissions to ground. There is the potential for leaks from the underground oil interceptors, wastewater pump sump and the foul sewers. The potential pathways to the soil and bedrock for contaminants released at the ground surface are infiltration in areas where the paving has been damaged, and leaks from the surface water drains.

7.3 Do Nothing Scenario

If the proposed increase in the amounts of waste accepted does not proceed the facility will continue to operate as a waste management facility, with no change to the potential impacts on the soil and geology.

7.4 Prevention & Mitigation

The current prevention and mitigation measures include the provision of impermeable paving across the operational areas; the inspection and repair of the paved areas; the provision and maintenance of spill containment for the above ground oil storage tanks and other oil storage areas; the routine inspection and survey of the surface water and foul water drains; the adoption of an emergency response procedure, and staff training on appropriate spill response actions.

7.5 Assessment of Impacts

The entire site is and will remain either paved with concrete, or occupied by buildings that prevent infiltration to ground. The proposed development will not involve any ground disturbance.

7.6 Residual Impacts

The proposed development will, in conjunction with the current operations, have no residual impact on the soils and geology.

8. Water

8.1 Receiving Environment

Rainwater run-off from the paved yards, weighbridge and building roofs discharges to an open drain that starts at the north-east site boundary. This drain, which is seasonal, joins the Ardregane Stream that flows into Lough Derg approximately 5 km to the north west of the facility. The bedrock beneath the site is classified as a locally important aquifer, which is only moderately productive in local zones. The aquifer vulnerability to pollution from sources at the ground surface is Extreme.

The site is entirely covered with buildings and paving, which effectively prevents groundwater recharge. The direction of groundwater flow is expected to be to the north-west, towards the Ardregane Stream.

8.2 Impacts

The proposed change does not require any excavations, construction works or alteration to the existing foul and surface water drainage, and will not result in any change to the quality or quantity of the rainwater run-off to the drainage ditch and ultimately the Ardregane Stream. There are no current direct or indirect emissions to ground and the proposed development will not result in any new emissions.

There is the potential for leaks from the above ground oil storage tanks and drums, the underground oil interceptor and wastewater sumps and the foul sewers. The potential pathways to off-site water courses is the surface water drainage system. The pathways to groundwater for contaminants released at the ground surface are infiltration through damaged paving and leaks from the storm water drains.

8.3 Do Nothing Scenario

If the development does not proceed the facility will continue to operate as a waste management facility, with no change to the potential impacts on water.

8.4 Prevention & Mitigation

The current prevention and mitigation measures include the provision of an oil interceptor on the surface water drains; the inspection and repair of the paved areas; impermeable paving across the operational areas; the provision and maintenance of spill containment for the above ground oil storage and wastewater holding tanks; the routine inspection and survey of the surface water and foul water drains; the adoption of an emergency response procedure, and staff training on appropriate spill response actions.

8.5 Assessment of Impacts

The routine surface water quality monitoring carried out by AES has established that the quality of the run-off to the drain is good and does not present a risk to the Ardgregane Stream. The proposed development will not result in any changes to the current emissions to the drain and, will not give rise to any new emission to ground and ground water, and will have no discernible impact on surface water and groundwater.

8.6 Residual Impacts

The proposed changes will, in conjunction with the current operation, have no impact on the water quality in the Ardgregane Stream and will have no impact on groundwater.

9 Biodiversity

9.1 Receiving Environment

There are no habitats of ecological importance within the site boundary and the site is not in or close to a Special Area of Conservation (SAC), Special Protected Areas (SPA) or National Heritage Area (NHA). The closest protected area is the Lough Derg SPA which is 5 km north-west of the site. The Ardgregane Stream, which receives rainwater run-off from the site, is a tributary of Lough Derg.

9.2 Impacts

The proposed development does not require any construction works and will not result in any loss of habitats either within, or outside the site boundary. It will not result in any new or additional emissions to the drain/Ardgregane Stream and will not require any changes to the current operational hours.

9.3 Do Nothing Scenario

If the development does not proceed the site will continue to operate as a waste management facility, with no change to the potential impacts on habitats, flora and fauna.

9.5 Prevention & Mitigation.

The current mitigation measures include the provision of separate surface water and foul water drainage systems; the provision of an oil interceptor on the storm drains; the provision and maintenance of spill containment for the above ground oil storage tanks and drums; the routine inspection and survey of the surface water and foul water drains; the adoption of an emergency response procedure and staff training on appropriate spill response actions.

9.6 Assessment of Impacts

The routine monitoring carried out by AES has established that the quality of the run-off to the drain is good does not present a risk to the Ardgregane Stream and Lough Derg. The proposed development will not result in any changes to the current emissions to surface water and will have no discernible impact on surface water.

9.7 Residual Impacts

The increase in the waste acceptance rate will have no impact on the ecosystems within the site boundary and will not give rise to disturbance in the habitats outside the boundary.

10. Air

10.1 Receiving Environment

The facility is located on the outskirts of Nenagh Town. Dark Road forms the eastern boundary and to the east of this is a partially developed Commercial Park. The lands to the north and west are used for agricultural purposes. A local access road forms the southern site boundary and south of this is a service garage and private residences. The nearest private dwelling is 30m from the south western boundary on the opposite side of the public road.

10.2 Impacts

The impacts on air quality associated with the operation of waste management sites that accept and process biodegradable waste in general include odours, particulates (dust) and exhaust gases from vehicles.

The EPA Licence requires AES to carry out dust deposition monitoring at four locations within the site boundary and also specified dust deposition limits. The limits are occasionally exceeded; however these are due to contamination with insect matter or bird faeces and not waste activities.

10.3 Do Nothing Scenario

If the proposed development does not proceed, the current operation will continue with no change to the potential impacts on air quality.

10.4 Prevention & Mitigation

The prevention and mitigation measures currently applied include handling the waste inside the Main Processing Building; regular inspection and cleaning of waste handling areas; provision of dust curtains on the doors of the Main Processing Building; removal of putrescible waste within 48 hours; cleaning yards using a road sweeper and damping them down in dry weather; a 20km/h speed limit on all vehicle movements inside the site boundary, and the use of a fuel additive to minimise nitrous oxides in exhausts from heavy goods vehicles. Furthermore the EPA Licence makes provision for the installation of an odour control system comprising the extraction and treatment of air from the Main Processing Building, if this is considered necessary.

10.6 Assessment of Impacts

In the past three years the facility has not received any complaints from neighbours concerning odours and dusts. Compliance inspections conducted by the EPA have never identified any concerns that odours/dusts could give rise to nuisance outside the facility boundary and the EPA has not required AES to install an odour control system. The proposed change does not involve taking in any new potentially odorous waste types or introducing any new processes that would be an additional source of dust emissions.

10.7 Residual Impacts

The proposed development, in conjunction with the current operations, will have an on-going slight, negative impact on air quality associated with increase in vehicle exhaust gases.

11 Noise

11.1 Receiving Environment

The facility is located on the outskirts of Nenagh Town. Dark Road forms the eastern boundary and to the east of this is a partially developed Commercial Park. The lands to the north and west, are used for agricultural purposes. A local access road forms the southern site boundary and south of this is a service garage and private residences. The nearest private dwelling is 30m from the south western boundary on the opposite side of the public access road.

11.2 Impacts

The sources of noise are the waste transport vehicles, waste handling, vehicles moving the bales and loading of the waste transport trucks.

The EPA Licence sets daytime (55 dB (A) LAeq (30 minutes) and night time (45dB (A) LAeq (30 minutes) emission limit values (ELV) and requires an annual noise survey to be carried out at three on-site and two off-site monitoring points. The day-time site boundary levels exceed

the daytime ELV; however the exceedance is due to the heavy off-site road traffic and not site operations. The day-time levels at the off-site location are also exceeded but again are associated with local road traffic and not site operations.

11.3 Do Nothing Scenario

If the development does not proceed the current activities will continue, with no change to the noise emission levels.

11.4 Prevention & Mitigation Measures

All waste handling is carried out inside the Main Processing Building. Site staff are instructed to avoid unnecessary revving of machinery, turn off equipment / plant when not in use, and limit the hours of activities that are likely to give high noise level emissions.

11.5 Assessment of Impacts

The current activities are not a source of either noise nuisance, or impairment of amenity outside the site boundary. There will be no change to either the sources of noise, or the noise emission levels from those associated with current activities.

11.6 Residual Impacts

The proposed development will, in conjunction with the current operations, have an on-going, imperceptible, negative impact.

12 Landscape & Visual Impact

12.1 Receiving Environment

Tipperary is a county of huge contrasts and at its heart lies large and fertile plains surrounded by uplands and wetlands. The lowlands connect the farming counties of north Munster to those of south Leinster and are also the routes that accommodate the country's busiest rail and road routes. By contrast, the Shannon wetlands and lake shores of Tipperary's north-west as well as the steep, high uplands of the south offer containment, refuge and wildness.

The County Development Plan identifies sensitive landscapes as Primary and Secondary Amenity. These areas, which include Lough Derg, are particularly notable by virtue of their scenic and visual quality and offer significant opportunities for tourism development and rural recreational activities. The site is not in an area designated as Primary and Secondary amenity.

The site is a moderately scaled waste management facility and has an industrial appearance. It is visible from the L1119 road frontage. The treeline along the majority of the boundary with Dark Road effectively screens the site from view from the roadway, but it is overlooked by a three storey office unit in the Commercial Park to the east of Dark Road.

12.2 Impacts

The proposed development does not involve any construction works or material changes to the existing buildings and external operations.

12.3 Do Nothing Scenario

If the development does not proceed there will be no change to the external appearance of the site.

12.4 Prevention & Mitigation Measures

Existing mitigation measures include tree planting along the northern, eastern and western boundaries and a shrubbery at the entrance to the civic amenity area.

12.5 Assessment of Impacts

The proposed development will not result in any material change to the appearance of the facility.

12.6 Residual Impacts

The development will, in conjunction with current operations, have a neutral impact on the existing landscape character and visual amenity.

13 Human Beings

13.1 Receiving Environment

The facility is the south western outskirts of Nenagh Town. It is accessed by the R445 Kilcolman Road, which is to the south of the site boundary and connects to the N52. Dark Road forms the eastern boundary and to the east of the road is a partially developed Commercial Park. The lands to the north and west are used for agricultural purposes. A local access road forms the southern site boundary and south of this is a service garage and private residences. The nearest private dwelling is 30 m from the south western boundary on the opposite side of the local road.

13.2 Impacts

Waste management facilities that handle biodegradable wastes are a source of odours with the potential to extend outside the site boundaries. While odours do not present a direct risk to health, they can be a significant nuisance and cause of discomfort that can indirectly affect human health. Waste management facilities are also potential sources of other nuisance including, dust, noise, vermin and pests. Traffic associated with the facilities can, depending

on the size, location and capacity of the local road network, be a cause of congestion that affects local residents.

13.3 Do Nothing Scenario

If the proposed development does not proceed the current operations will continue and there will be no change to the potential for impacts on human beings.

13.4 Prevention & Mitigation Measures

The prevention and mitigation measures currently applied include handling the waste inside the Main Processing Building; regular inspection and cleaning of waste handling areas; provision dust curtains at the entrances; cleaning yards using a road sweeper and damping them down in dry weather and a 15km/h speed limit on all vehicle movements inside the site boundary. Furthermore the EPA Licence makes provision for the installation of an odour control system comprising the extraction and treatment of air from the Main Processing Building, if this is considered necessary.

13.5 Assessment of Impact

In the past three years the facility has not received any complaints from neighbours concerning odours and dusts. Compliance inspections conducted by the EPA have never identified any concerns that noise, odours and dusts could give rise to nuisance outside the facility boundaries and the EPA has not required AES to provide an odour control system.

The current activities are not a source of environmental nuisance and the proposed change does not involve taking in any new potentially odorous waste types, or any new processes that would be an additional source of dust emissions. The Traffic and Transport Assessment has established that the local road network has the capacity to accommodate the increased traffic movements and that the development will not give rise to congestion.

13.6 Residual Impacts

The proposed development, will in conjunction with current operations, have an on-going imperceptible, negative impact on human beings associated with noise emissions and traffic movements.

14 Archaeology, Architecture and Cultural Heritage

14.1 Receiving Environment

There is no record of any archaeological feature, protected structure, or cultural heritage feature within the site boundary and it is not in a designated Architectural Conservation Area.

14.2 Impacts

The development does not require any excavation or ground disturbance works and there is no risk of any impacts on any unidentified archaeological features.

14.3 Do Nothing Scenario

If the development does not proceed the facility will continue to operate in its current configuration and the potential for impacts on the archaeology, architecture and cultural heritage will remain unchanged.

14.4 Mitigation Measures

As the proposed development will not have any impact on any archaeological, architectural or cultural feature, mitigation measures are not required.

14.5 Assessment of Impact

The development will not have any impact on any archaeological, architectural or cultural feature.

14.6 Residual Impacts

The development will not have any impact on any archaeological, architectural or cultural heritage features.

15 Material Assets & Resource Consumption

15.1 Receiving Environment

Dark Road forms the eastern boundary and to the east of the road is a partially developed Commercial Park. The lands to the north and west are used for agricultural purposes. A local access road forms the southern site boundary and south of this is a service garage and private residences. The nearest private dwelling is 30 m from the south western boundary. The closest designated amenity area is a plot immediately south of the three storey office block in the Commercial Park east of Dark Road.

15.2 Impacts

The development will not result in any loss impairment of amenity value or agricultural use. There will be an increase in fuel and electricity consumption associated with the transport and processing of the additional wastes. The development will increase AES's recycling rate, which will have a socio-economic benefit. It will also contribute to maintaining employment levels, with a consequent economic benefit to the local economy.

15.3 Do Nothing Scenario

If the proposed development does not proceed there will be no socio-economic benefit from the increased collection rate for recyclable materials, but there will be no increase in natural resource consumption.

15.4 Mitigation

AES implements the nuisance control measures specified in the EPA Licence and also applies resource consumption control measures to minimise usage.

15.5 Impact Assessment

The current operation is not a source of adverse environmental nuisance and impairment of amenities outside the site boundary and has not adversely affected the existing economic activities in the surrounding area. The local road network has the capacity to deal with the additional traffic associated with the development.

15.6 Residual Impact

The development will not have any adverse impact on amenity values and socio-economic activities in the locality. It will have a slight negative impact in relation to the consumption of fossil fuels. It will have an on-going slight positive socio-economic and economic benefit associated with increasing recycling rates and maintaining local employment levels.

16 Interaction of the Foregoing

There are actual and potential direct, indirect and cumulative effects of the changes due to interaction between relevant receptors, which are Human Beings, Air, Noise, Traffic, Climate, Ecology and Water.

16.2 Human Beings / Air / Noise

The current operation has the potential to impact on human beings as a result of noise, dust, vehicle exhaust emissions and odour. The location, design and method of operation have taken account of these emissions and effective mitigation measures, which comply with the requirements of the EPA Licence, have been identified and applied. The proposed change will result in additional vehicle exhaust gas emissions to air.

16.3 Human Beings/Traffic

The proposed change will result in an increase in traffic; however the facility is located in an industrial estate and the access routes do not pass through residential areas. The local road network and junctions have the capacity to accommodate the additional traffic movement and will not give rise to congestion.

16.4 Climate/Traffic

The development will result in a very slight increase in greenhouse gas emissions associated with the additional traffic movements.

16.5 Surface Water / Ecology

Rainwater run-off from the site discharges to the Ardregane Stream which is a tributary of Lough Derg. The quality of the run-off is good and the proposed change will not result in any deterioration in water quality that might affect the SPA.

16.6 Cumulative Effects

The assessment of the impacts of the proposed change took into consideration the impacts of the existing operation. The noise, dust, surface water and groundwater monitoring events were conducted during typical operational hours and the predictive assessments include the impacts of both the existing emissions and those associated with the proposed development.

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PREAMBLE

This Environmental Impact Assessment Report (EIAR) examines the potential impacts and significant effects on the environment of the proposed increase in the amount of waste accepted at the Advanced Environmental Solutions (Ireland) Ltd (AES) Materials Recovery Facility at Springfort Cross, Nenagh, County Tipperary. The facility operates under a planning permission granted by Tipperary County Council (the Council) and a Waste Licence issued by the Environmental Protection Agency (EPA).

The information contained in the EIAR complies with the requirements of Article 5 (1)(a) to (e), Article 3(1)(a) to (e), and Annex IV of Directive 2014/52/EU on the effects of certain public and private projects on the environment (EIA Directive). The assessment of the impacts on climate includes the implications for climate change. The assessment of impacts on biodiversity includes an evaluation of the significance of effects on Natura 2000 Sites. The likely effects of major accidents and/or natural disasters have also been assessed.

The EIAR follows a grouped format structure where each prescribed topic is dealt with in a separate chapter. The chapters present information on the elements of the proposed development of relevance to the subject topic; describe the existing (receiving) environment; identify the direct and indirect significant effects associated with the current operations and the proposed development; propose measures to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment, and assess the impacts and the residual impacts.

Impacts are assessed in terms of the likely natural or physical changes to the environment resulting either directly, or indirectly from the proposed development, taking into consideration a 'do nothing' scenario, cumulative effects and emergencies. The assessment of effects on human health is confined to the impacts of the operations emissions on occupants of commercial/residential premises outside the site boundary and members of the public using the public road and does not assess the risks to safety of AES staff and members of the public accessing the civic amenity area, as this is regulated by the Health & Safety Authority.

The significance of an effect is determined by a combination of objective (scientific) and subjective (social) concerns and the potential for the development to either cause significant effect on an aspect of the environment that has been formally or systematically designated as being of importance, or to significantly alter the existing character of some aspects of the environment. The following objective criteria were used to determine the significance of an effect:

- The magnitude and spatial extent of the impact;
- The nature of the impact;

- The intensity and complexity of the impact;
- The probability of the impact;
- The expected onset, duration, frequency and reversibility of the impact;
- The accumulation of the impact, with the impact of other existing and or/approved projects, and
- The possibility of effectively reducing the impact.

Impacts are, where possible, described in terms of quality, significance and duration.

Quality: Positive, Neutral, Negative.

Significance: Imperceptible; Slight; Moderate; Significant; Profound.

Duration: Temporary <1 year; Short-term 1-7 years; Medium Term 7-15 years; Long Term 15-60 year; Permanent >60 years. Where impacts are associated with daily operations the duration is described as on-going

The evaluation of the significance of an impact was based on current knowledge and method of assessment.

Public Consultation

AES notified the Council of its intention to apply for planning permission. AES also informed its neighbours of the proposed development and that this would require planning permission.

Project Team

O'Callaghan Moran & Associates (OCM) were the prime consultants and unless otherwise referenced, were responsible for completing the baseline surveys and assessment of impacts. OCM has twenty years' experience in the completion of environmental impact assessments for large scale waste management and industrial developments and has particular expertise in geology, hydrogeology, hydrology, and environmental risk assessment.

The Traffic and Transport Assessment was completed by Tobin Consulting Engineers, one of Ireland's leading engineering consultancies. The environmental surveys were carried out by Bord na Móna Environmental, which is one of the leading environmental monitoring companies in Ireland.

O’Callaghan Moran & Associates – Prime Consultants

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Tobins Consulting Engineer–Traffic and Transport Assessment

Address: Fairgreen House,
Fairgreen Road,
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Telephone: 091 565211

Bord na Mona Environmental – Surface Water, Noise and Dust Surveys

Address Main Street,
Newbridge,
County Kildare
Telephone 045 431201

Difficulties in Compiling the Required Information

OCM did not encounter any particular difficulties in compiling the required information.

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1 INTRODUCTION

1.1 The Applicant

Advanced Environmental Solutions (Ireland) Ltd (AES) is one of the largest waste management companies in the Eastern Midlands and Southern Waste Regions. It is part of the Bord na Móna group and operates waste management facilities at Lusk, Navan, Tullamore, Portlaoise, Nenagh and Rosslare.

1.2 Facility Overview

The facility covers 6,855m² and is located at Springfort Cross on the south-western outskirts of Nenagh. It operates under planning permission (Ref No.5124144) granted by Tipperary County Council and a Waste Licence (Reg. No W0240-01) issued by the Environmental Protection Agency (EPA). The EPA Licence authorises the acceptance and processing of 24,750 tonnes per annum of household, commercial, industrial and construction and demolition waste.

The facility is the principal waste transfer facility for AES in the Munster region servicing waste collections from Clare, Limerick City & County, Tipperary and some parts of Offaly. Domestic waste services include a glass bin and compost bin service in selected areas. In addition the facility operates a small civic amenity area and accepts waste from the public to the site.

1.2.1 Site History

Prior to development as a waste management facility in 1994, the lands were used for agricultural purposes. At the start up, the facility comprised the Main Processing Building and the Garage. Not all of the yard areas were paved and the diesel oil fuel storage tank was located at the western side of the Garage.

It is understood that the Vehicle/Bin Wash was installed in the late 1990s, with the washwater and sanitary wastewater collected in an underground storage tank and removed off-site for treatment in a wastewater treatment plant.

AES acquired the facility in 2001. In 2004, the Main Processing Building and Garage were extended, the Administration Building was constructed, the weighbridge installed; the diesel oil storage tank relocated to the Fuelling Station and all of the remaining unpaved areas were covered with concrete.

In 2004, AES obtained a Waste Permit from North Tipperary County Council. In 2007, Bord-na-Mona acquired AES. The Agency granted AES a Waste Licence in July 2009 and in January 2010 the facility achieved accreditation to ISO 14001.

In late 2009/early 2010, the wastewater drainage system was upgraded to connect to a new municipal sewer running outside the southern site boundary. This involved the installation of an oil interceptor in the central yard and the construction of a rising main connecting the existing underground storage tank to the municipal sewer. The surface water drainage system was also upgraded, with the installation of an oil interceptor and manual shut off valve at the outfall point, which is in the north east of the site.

There is no record of any historic incidents at the facility that could have impacted on soil or groundwater quality.

1.3 Proposed Developments

AES proposes to increase the amount of waste it accepts and processes from 24,750 tonnes/year to 30,000 tonnes. The existing buildings and ancillary infrastructure have the capacity to accommodate the additional waste volumes; however as both the planning permission and licence caps the annual waste inputs, planning permission and a licence review are required.

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2 PLANNING & WASTE MANAGEMENT POLICY

2.1 Introduction

This Chapter presents an overview of the relevant planning policy objective and national and regional waste policies and demonstrates how the proposed development is consistent with these. It is based on the North Tipperary County Development Plan 2010 -2016; the Nenagh Town and Environs Development Plan 2013-2019, National Waste Policy Statements and the Waste Management Plan for the Southern Region (2015).

2.2 Planning

2.2.1 *Tipperary County Development Plan*

Tipperary has at present two County Development Plans, these are:

- South Tipperary County Development Plan 2009, adopted in February 2009.
- North Tipperary County Development Plan 2010, adopted in July 2010.

The existing County Development Plans both had their lifetimes extended (11A Planning and Development Act 2000, (as amended)), and will remain in effect until a new Regional Spatial and Economic Strategy is made by the Southern Regional Assembly, thereafter a new Tipperary County Development Plan will be made.

Nenagh is in the former functional area of North Tipperary County Council. The North Tipperary County Development Plan 2010-2016 sets out the development strategy (policies and objectives) for the sustainable future growth of the county and Chapter 9 addresses waste management. This states that the Council seeks to implement the policies and recommendations of the Southern Region Waste Management Plan 2015-2021. It is policy of the council to ensure that waste disposal facilities are in compliance with all appropriate waste legislative requirements.

2.2.2 *Nenagh and Environs Development Plan 2013-2019*

The facility is just outside and adjacent to the Nenagh and Environs Boundary, immediately to the west of an area zoned for commercial use. In relation to waste management it is policy to provide, maintain and improve infrastructure for re-use, recycling and disposal of residential waste.

2.3 Site Planning History

In 1990 planning permission (5120932) was granted for the retention of an existing sorting/compactor building and septic tank. In May 2000 permission (5121876) was granted for the extension of the site boundary to provide for hardstanding for vehicles and the erection of a canopy to the workshop and recycling area. In 2002, permission (5124144) was granted for the extension of the existing waste sorting and compacting building to provide a bring centre, to install weighbridge with portakabin, pay station, alterations to workshop, new office and road signage.

2.4 Waste Management & Planning Policy

2.4.1 National Waste Management Policy

The foundation policy statement on waste management “*Changing Our Ways*” was published by the Department of the Environment and Local Government in September 1998. This statement firmly bases national policy on the EU Waste Management Hierarchy. In descending order, the current preference is: -

- Prevention;
- Preparing for Reuse;
- Recycling;
- Other Recovery (including energy recovery); and
- Disposal

The 2002 policy statement ‘*Preventing and Recycling Waste - Delivering Change*’ identified initiatives to achieve progress at the top of the Waste Hierarchy to prevent waste arising and increase recycling rates.

In ‘*Waste Management – Taking Stock and Moving Forward*’ 2004, the significant improvement in recycling rates achieved since 1998 were recognised, but the need for further expansion was emphasised. The statement confirmed that Ireland’s national policy approach remained ‘*grounded in the concept of integrated waste management, based on the internationally recognised waste hierarchy, designed to achieve, by 2013, the ambitious targets set out in Changing Our Ways*’.

In 2006, the National Biodegradable Waste Strategy was published. Its primary focus was to achieve the targets set for the quantity of biodegradable municipal waste that can be landfilled under the Landfill Directive (1999/31/EC). A key element was the collection of source separated household and commercial food waste or “brown bin” material and its treatment, primarily biological treatment.

In 2008, the Government initiated a review of waste policy, to identify possible changes to policy at national level that would assist Ireland to move towards a sustainable resource and waste policy, including minimising the creation of waste and self-sufficiency in the reuse and

recycling of materials. The review also addressed the application of alternative technologies for waste management.

The EU Waste Framework Directive 2008/98/EC was introduced to coordinate waste management in Member States with the objective of limiting the generation of waste and optimising the organisation of waste treatment and disposal. The Directive, which also established the first EU wide recycling targets, was transposed into Irish Law by the European Communities (Waste Directive) Regulations 2011 (S. I. No. 126 of 2011).

In response, the Government initiated a further review of national waste policy, one of whose objectives was to provide the necessary measures to ensure that waste undergoes recovery operations in accordance with Articles 4 and 13 of the Directive. A consultation document issued by the Department stated that classification of a treatment process as a recovery activity depends on the level of success in recovering material or producing heat and/or power.

The most recent Policy Statement '*A Resource Opportunity Waste Management Policy In Ireland 2012*' is also based on the EU Waste Management Hierarchy and encompasses a range of measures across all tiers namely, prevention and minimisation, reuse, recycling, recovery and disposal.

The Statement sets out how the higher tiers can reduce Ireland's reliance on finite resources, virtually eliminate reliance on landfill and minimise the impact of waste management on the environment. It is a policy objective that when waste is generated the maximum value must be extracted from it by ensuring that it is reused, recycled or recovered.

2.5 Waste Management Plan for the Southern Region 2015-2021

The region covers 42% of the land mass of the country with a population of over 1.5 million people. The settlement pattern is evenly split between urban and rural areas, with the four cities of Cork, Limerick, Waterford and Kilkenny having the highest population and the strongest centres of economic activity.

Nationally the total quantity of municipal waste managed has decreased year on year since 2007. In the Southern Region 860,425 tonnes of Municipal Solid Waste was collected in 2012. Of this 59% percent was recovered which was in line with the national rate. Unmanaged waste remains a problem in the region which local authorities intend to tackle over the period of the plan.

Plan targets are to achieve a recycling rate of 50% for all managed municipal waste by 2020 and to reduce to 0% the amount of untreated municipal waste to landfill in favour of higher value pre-treatment processes and indigenous recovery processes.

The region appears to have significant available capacity for most waste streams but there appears to be a shortfall in some areas for example the recovery of municipal solid waste and biowaste.

Policy E1. Future authorisations by the local authorities, the EPA and An Bord Pleannála of pre-treatment capacity in the region must take account of the authorised and available capacity in the market while being satisfied the type of processing activity being proposed meets the requirements of Policy E2.

Policy E2. The future authorisation of pre-treatment activities by local authorities over the plan period will be contingent on the operator demonstrating that the treatment is necessary and the proposed activities will improve the quality and add value to the output materials generated at the site.

Consideration of pre-treatment authorised and available capacity at existing sites in the region prior to authorisation of future pre-treatment activities may have a positive effect on the environment in terms of potentially reducing the scale of development of new greenfield sites.

The waste plan does not identify specific technologies and/or locations for future waste related activities. Rather it has highlighted capacity need, and so guidance on proper siting of future waste-related activities (including expansion of existing facilities) is the most appropriate method at this stage of the planning hierarchy to address the potential for impact on the environment.

The role of the waste industry is discussed in Section 17.2.8 of the Plan and includes *inter alia* to:

- Cooperate with designated lead authorities and local authorities to implement the objectives, policies, actions and targets contained in the plan;
- Provide sustainable waste management infrastructure/technology in keeping with the waste hierarchy and the principle of self-sufficiency;
- Communicate with the public to encourage better waste management behaviours and better quality recycling.

The proposed changes are consistent with current and proposed national and regional waste policy objectives, as it will increase the treatment capacity in the Southern Region to get the maximum value from the waste and will contribute to the achievement and maintenance of national and regional recycling targets.

2.5.1 Compliance with Policy Objectives

The proposed development is consistent with objectives of the County Development and Plan and current national and regional waste policy objectives, as it will increase the treatment capacity for municipal solid waste to get the maximum value from the waste and will

contribute to the achievement and maintenance of national and regional recycling and recovery targets.

2.6 Energy Policy

EU Directive 2001/77/EC sets Ireland a national target of sourcing 16% of all energy consumption from renewables by 2020. Potential energy sources, such as non-recyclable combustible waste, can be processed to produce alternatives to fossil fuels and assist in achieving the target.

2.7 Climate Change

The National Climate Change Strategy charts the way to achieve and maintain reductions in greenhouse gas emissions under the Kyoto Protocol. In 2009, the EU Commission agreed a package of proposals to deliver on the EU's commitments to fight climate change and promote renewable energy up to 2020 and beyond. The package seeks to achieve a 20% reduction in total EU greenhouse gas emissions by 2020 (relative to 1990 levels) and at the same time, to increase to 20% the amount of renewables in energy consumption.

To meet the 2020 target, it is essential that greenhouse gases emissions are reduced at a national level and the waste sector must contribute to this reduction. The diversion of biodegradable waste from landfill reduces methane emissions, while the fuel manufactured from non-recyclable wastes replaces fossil fuels.

2.8 Need for the Development

The existing facility is a key element of the AES waste management infrastructure in the Southern Region and the waste acceptance limits set in the current planning permission and EPA Licence prevents AES from expanding its waste recovery and recycling capacity in its customer catchment area.

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3 ALTERNATIVES EXAMINED

3.1 Introduction

This Chapter describes the reasonable alternatives to the proposed development that were considered, including site location, treatment plant technologies and configurations and a 'Do Nothing' scenario.

3.2 Alternatives

The facility is specifically designed and has established use for waste management and it has the capacity to accommodate the increase in annual waste inputs. The features that render it suitable for the proposed development are:

- Existing authorisation to accept and process solid non-hazardous waste and to operate a civic amenity centre;
- Readily accessible location for AES's existing and target customer base;
- The site can readily accommodate the proposed increase in wastes without the need for any additional buildings, alterations to the existing infrastructure or the provision of additional waste treatment equipment.
- Existing ground conditions (soil type/geology/hydrology) and distances from sensitive environmental receptors minimise the risk of unexpected emissions which give rise to pollution.

The only alternative to the proposed development is to construct a new waste management facility at a different location. This would require the acquisition of land, the construction of new waste processing buildings and supporting infrastructure (offices, maintenance workshops, weighbridge), and the provision of new site services (surface water, foul water, power, water supply and security).

The development of a new facility offers no environmental advantages compared to the proposed development within the existing facility, which has an established commercial/industrial use.

3.3 The Do Nothing Alternative

Without the implementation of the project the facility will continue to operate in its current configuration and AES will not be able to expand its waste collection service.

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4 SITE DESCRIPTION

4.1 Introduction

This Chapter presents an overview of the existing facility location, layout, method of operation and emissions. More information on the ambient environmental conditions is presented in the Chapters 5 to 16, which also address the cumulative impacts associated with the existing operations.

4.2 Site Location

The facility is located at Springfort Cross on the south western outskirts of Nenagh, (Figure 4.1).

4.3 Site Layout

The layout is shown on Drawing No. CW-AES-14. The facility encompasses 6,855m². There are two entrances on the southern site boundary. The western one is for waste collection and transport vehicles and civic amenity area, while the eastern one is for customer access to the service support offices. There is a wall and security gates along the southern site boundary, and the wall extends along the eastern boundary, with a wire fence surrounding the western and northern boundaries.

There operational areas include – Main Processing Building (675m²), Garage (375m²), Administration Buildings (66m²), Civic Amenity Area, Quarantine Area , Fuelling Station, Vehicle/Bin Wash, and Weighbridge. There are two portakabin offices, one adjacent to the truck entrance and the second at the south-western corner of the Main Processing Building. The entire site, including the floors of the buildings and the open yard areas, is paved.

4.4 Surrounding Land Use


The surrounding land use is shown on Figure 4.1. Dark Road forms the eastern boundary and to the east of this is a partially developed Commercial Park. The lands to the north and west, which are owned by the AES's landlord, are used for agricultural purposes. A local access road forms the southern site boundary and south of this is a service garage and private residences. The nearest private dwelling is 30 m from the south western boundary, on the opposite side of the public road.



Details: Site Location

Figure 4.1

CLIENT	AES Nenagh
TITLE	Surrounding Land Use


O'Callaghan Moran & Associates,
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Environmental Management for Business

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4.5 Facility Management & Staffing

4.5.1 Management Team

The facility is managed by a suitably qualified and experienced facility manager and all facility personnel are provided with appropriate training and have the requisite qualifications and experience to complete their assigned tasks.

4.5.2 Management Programmes

AES has prepared a documented Environmental Management Programme (EMP) which serves as a guidance document for site staff and describes the operational control and management practices that eliminates/minimises the environmental impacts of the facility activities. The EMP is a core element of the facility's ISO 14001 certified Environmental Management System.

AES has prepared and adopted an Accident Prevention Policy (APP) and Emergency Response Procedures (ERP). The APP addresses all potential hazards, with particular reference to the prevention of accidents that may cause damage to the environment. The ERP identifies all potential hazards that may cause damage to the environment and also specifies roles, responsibilities and actions required to deal quickly and efficiently with all foreseeable major incidents and to minimise environmental impacts.

4.6 Services

The facility obtains water from the mains supply provided by Irish Water. Electricity is supplied by a utility company.

4.7 Drainage

4.7.1 Surface Water

The surface water drainage system layout is shown on Drawing No.CW-AES-15. The ground gradually slopes from the south to the north-east. Rainwater run-off from the paved yards, weighbridge and building roofs is collected and directed through a silt trap and oil interceptor system (capacity 38.75m³) in the north-east corner of the site before being discharged to an open drain that starts at the north-east site boundary. This drain, which is seasonal, is a tributary of the Ardregane Stream that ultimately discharges into Lough Derg, approximately 6km to the north-west of the facility.

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4.7.2 Process Wastewater

Process wastewater consists of wash water from the Vehicle/Bin Wash areas and small amounts of liquid present in the incoming wastes. Waste transport vehicles, bins and skips are cleaned in the dedicated wash area, located at the south western side of the Garage. The area consists of an open hardstanding area that slopes towards a large central gully, fitted with a grid. The wash water is gravity fed into a 5,000 litre oil interceptor/silt trap located to the east of the Main Processing Building that outfalls to an underground pump sump from where it is pumped via a rising main to the Irish Water foul sewer located outside the site entrance.

Some of the incoming wastes (for example mixed municipal solid wastes) can contain small quantities of liquid. The floor of the Main Processing Building is graded to a fall towards a central gully, which collects any liquids arising inside the building. The gully is connected to the oil interceptor located outside the building, which in turn connects to the underground pump sump. Sanitary wastewater from the office connects to the outfall from the central foul water silt trap/oil interceptor and enters the pump sump.

The sump is fitted with two submersible float activated pumps, one duty and one standby, and the activation switches are in a control panel mounted on the external wall of the Main Processing Building.

4.8 Hours of Operation

The current facility is licenced for the following:

- Waste acceptance – 07:30 to 19.30 Monday to Saturday inclusive.
- Operation of the facility – 07:00 to 20:00 Monday to Saturday inclusive.

The facility does not normally open on Sundays or Public Holidays, but can do so subject to EPA approval.

4.9 Waste Types & Quantities

The facility is licensed to accept a maximum of the following waste types and quantities, as specified in Schedule A. of the Licence: -

- Household (10,259 tonnes);
- Commercial (12,730);
- Construction & Demolition (1,491 tonnes).

No hazardous or liquid wastes are accepted.

4.10 Waste Activities

The key processes carried out are: -

- Segregation of recyclable materials (paper, cardboards, plastic, wood, metals, glass);
- Bulking of Municipal Solid Waste (MSW);
- Transfer of recovered and residual materials to appropriately licensed recycling, recovery and disposal outlets.

All commercial waste deliveries are weighed at the weighbridge and the relevant documentation (e.g. Waste Collection Permits) is checked. Any waste delivery vehicle that does not have the appropriate documentation is not accepted. After the weighbridge the vehicles are directed into the Main Processing Building where the wastes are off loaded and inspected.

Any unsuitable materials, for example batteries, are immediately removed to the waste quarantine area, located at the northern side of the Garage where it is stored pending consignment to the producer or an appropriate treatment/disposal facility. AES maintain records of the waste type, quantity, and ultimate disposal/treatment facility.

On the floor of the Main Processing Building the potential recyclables are mechanically segregated using a large track machine with a hydraulic arm into individual waste groups such as dry recyclables, metals, inert (C&D waste) and biodegradable waste. These materials are stored inside the building pending consignment for further treatment/disposal. The mixed municipal solid wastes are bulked up for onward transfer.

4.11 Oil / Chemical Storage

With the exception of the silt traps/oil interceptors and the wastewater pump sump, there are no underground storage tanks and all oils and chemicals are stored above ground. The types and volumes of materials typically stored on site at any one time are shown in Table 4.1.

Table 4.1 Oil and Chemical Inventory

Material	Litres
Diesel	41,000
Green Diesel	1,150
Disinfectant & Detergents	35
Engine Oil	850
Hydraulic Oil	700
Grease	120
Odour Block	75
Ad Blue	850
ATF	70

The diesel for the road vehicles is stored in a 56,000 litre tank in the refuelling station located in the northern section of the site at the rear of the Main Processing Building. The maximum volume of diesel in the tank at any one time is 41,000 litres. The tank is provided with a concrete bund, 110% of the tank's maximum volume. When not in use the dispensing pumps are locked. The bund is subject to regular integrity testing to confirm it remains fit for purpose.

The diesel for the on-site plant is stored in a bunded tank in the Garage. The engine and hydraulic oil are stored in bulk double skinned steel tanks in the Garage, with smaller containers on a bunded pallet also inside Garage. The Ad-blue is stored in an IBC in the Quarantine Area, which is provided with integral spill containment. The odour block is stored on a bund in the Garage. Detergents and disinfectants used in the Vehicle/Bin Wash are stored on a bund in the Garage. Waste oil is stored in a double skinned steel tank in the Garage.

4.12 Resource Consumption and Energy Efficiency.

Site operations involve the consumption of electricity and fossil fuels. The consumption rates over the past two years are provided in Table 4.2.

Table 4.2 Resource Consumption (2016-2017)

Resources	2016	2017
Vehicle Diesel	312,160 litres	301,497 litres
Electricity	31.08 MWh	41.004 MWh

4.13 Waste Generation

The wastes generated by site activities include sanitary wastewater; process wastewater and; small amounts of waste oils/ filters and batteries from emergency on-site plant and vehicle

maintenance, and office and canteen waste. Sanitary wastewater and process water management are described in Sections 4.7.1. and 4.7.2. Waste oils and batteries are removed off-site for disposal/recovery at licensed treatment/recovery facilities. Office and canteen waste are sent to off-site treatment/disposal facilities.

4.14 Nuisance Control

Vermin and insects can potentially be a nuisance at waste management facilities. At the facility, all operations are carried out within a dedicated building. As a precautionary measure, AES retain a vermin control specialist to implement vermin control measures on site. The facility is regularly inspected and the required measures are taken if evidence of vermin is found on site. Regular litter patrols of the site perimeter are also undertaken.

4.15 Incidents and Complaints

There have been no incidents at the site that have given rise to surface water, soil or groundwater pollution. AES has a documented complaints procedure to ensure that any complaints received from neighbours and the general public are fully investigated and addressed. No complaints were received in 2017.

4.16 Emissions

Potential and actual emissions associated with the waste activities include, rainwater run-off, sanitary and process wastewater, dust, noise and odours. As referred to above, rainwater run-off from the paved yards, weighbridge and building roof discharges to an open drain that starts at the north-east site boundary. Process wastewater and sanitary wastewater is pumped to the Irish Water foul sewer.

The noise sources include waste offloading, waste handling and vehicle loading. The waste acceptance and processing are potential sources of odours, and vehicle movements are potential sources of dust.

Environmental monitoring is carried out in accordance with Condition 6 and Schedule C of the EPA Licence, which requires the following:

- Noise Quarterly
- Dust Deposition Three times per year
- Storm Water Weekly (Visual Inspection) & Quarterly (Monitoring)
- Tankered effluent Quarterly

The results of the monitoring and the assessment of the impacts are discussed in the following Chapters.

4.17 Safety and Hazard Control

Access to the main site is restricted to employees, waste trucks and occasional visitors. Members of the public access the civic amenity area. All staff working at the site are familiar with the contents of the site specific Health and Safety Plan. AES has prepared an Accident Prevention Guide and a copy is in Appendix 1.

Health and safety practices are reviewed on an annual basis to ensure that they are in line with best practice in this sector. Regular safety audits are carried out on-site to ensure the safety of all personnel working there. Vehicular traffic movements within the site are restricted and monitored.

4.17.1 Fire

Fire safety management at the facility comprise:

Fire prevention
Fire containment
Fire detection
Fire suppression

Fire Prevention is achieved by:

- Safe storage of combustible and flammable materials.
- Control of ignition including use of 'hot work' permits and no smoking policy.
- Good housekeeping and regular plant maintenance.
- Restricted access to operational areas.
- Regular safety audits.

The fire detection system comprises:

- 24 hour security on site,
- Fire alarm or security officer will alert the emergency response team (ERT) ,
- Manually activated alarms in the buildings
- Site manager is site incident controller, with responsibility for assessing the scale of an incident, informing fire service, directing localised rescue and fire abatement services. In the absence of the site manager, the deputy manager shall assume the role of site incident controller. If an incident occurs outside operating hours, security will contact the relevant authorities and the person on call, who's details are located on the Facility Notice Board at the entrance to the site,

The on-site fire suppression equipment includes:

- Fire extinguishers at strategic locations around the site
- Hose reels
- Hydrant at the southern site entrance

4.18 Accidents and Emergencies

An emergency is an accident/incident that has the potential to result in environmental pollution and harm to human health & safety. The EPA licence requires AES to ensure that a documented procedures are in place that addresses the hazards on-site, particularly in relation to the prevention of accidents that have a possible impact on the environment.

The licence also requires FHR to ensure that an Emergency Response Procedure (ERP) is in place that addresses any emergency situation that may originate on-site. AES has prepared an ERP and a copy is in Appendix 2.

In the event of a breakdown of equipment or any other occurrence which results in the closure of the facility, any waste arriving at or already present will be transferred directly to alternative waste management facilities until such time as the FHR facility is fully operational.

4.18.1 Environmental Liability Risk Assessment (ELRA)

The EPA licence requires AES carry out an ELRA that assesses the environmental effects, including impacts on humans, of incidents and accidents. AES completed the ELRA in 2016 and it established the incident that would have the most significant impact is a fire in the waste processing building that caused a rupture to the oil storage tank.

The ELRA identifies the remedial actions required to address the environmental impacts of this incident and the associated costs. A copy of the ELRA is in Appendix 3. The costings were subsequently revised and a copy of the revised costs is also in Appendix 3.

4.18.2 Firewater Retention Capacity

AES has completed an assessment of the firewater retention requirements and a copy of the report is in Appendix 4. The assessment identified the need for the retention of 415m³ of firewater generated by a fire in the waste transfer building. This has been provided by a combination of shut-off valves on the foul and surface water drainage line and kerbing along the entire northern site boundary and along sections of the east and west site boundaries. The total retention capacity is 493m³.

4.19 Proposed Development

AES proposes to increase the amount of waste it accepts and processes from 24,750 tonnes/year to 30,000 tonnes. The existing buildings and ancillary infrastructure have the capacity to accommodate the additional waste volumes; however as both the planning permission and licence caps the annual waste inputs, planning permission and a licence review are required.

5 CLIMATE

5.1 Introduction

This Chapter describes the climate at the facility and the impacts the proposed development will have on it, including a 'do nothing' scenario. It identifies the mitigation measures that are and will be implemented to reduce the significance of the impacts and assesses the residual impacts.

5.2 Methodology

The assessment was based on meteorological data obtained from Met Eireann Birr Meteorological Station, which is 34 km to the north east of the facility and the EPA's 2016 report on climate change.

5.3 Receiving Environment

The climate in the area is mild and wet, with the prevailing wind direction from the south and south west. The annual average rainfall, temperature, humidity and wind speed and direction for Birr Weather Station is presented in Table 5.1.

Table 5.1 Meteorological Data: (1961-1990)

Rainfall – Annual average Average maximum month (December) Average minimum month (April)	804.2 mm 78.6 mm 52.5 mm
Temperature Mean Daily Mean Monthly Maximum (July) Mean Monthly Minimum (January & February)	9.3°C 19.2°C 1.8°C
Relative Humidity Mean at 0900UTC Mean at 1500UTC	85% 73%
Wind Prevailing direction	South and South West

The average annual rainfall is 804.2 mm and the winds are predominantly from the south west sector.

5.4 Impacts

It is now internationally accepted that there is a link between greenhouse gases (GHG) and climate change. Direct emissions are associated with on-site processing and the off-site electricity generating plant, while indirect emissions are linked to heavy goods vehicle movements transferring the wastes to and from the site.

The additional processing will result in an increase in electricity consumption, with a consequent increase in direct GHG emissions, which in this case will predominantly comprise of carbon dioxide (CO₂). There will also be an increase in indirect emissions associated with the additional traffic movements.

The predicted energy usage when the facility is operating at full capacity is in Table 5.2, which is based on a pro rata increase on the resource consumption figures in 2017. The table also includes estimates of the associated carbon dioxide emissions calculated using conversion factors published by the Sustainable Energy Authority of Ireland and the US Environmental Protection Agency.

Table 5.2 Predicted Energy Use Per Annum

Resource	Quantity	Estimated CO ₂ Tonnes/annum
Electricity	49,615MWh	24.311
Diesel	364,811 litres	948/51

Under the EU Effort Sharing Decision (Decision No. 406/2009/EC) for 2013-2020, Ireland's 2020 target is to achieve a 20% reduction of non –Emissions Trading Scheme (ETS) sector emissions (i.e. agriculture, transport, residential, commercial, non-energy intensive industry and waste) on 2005 levels, with annual binding limits set for each year over the period.

In 2016 the EPA, which is the responsible authority for reporting on climate change, projected that between 2013-2020 Ireland will cumulatively exceed its compliance obligations by 12 million tonnes of CO₂ equivalent under the *With Measures* scenario and 3 million tonnes under the *With Additional Measures* scenario.

Emissions from agriculture and transport are key determinants in meeting the targets and emissions from both sectors are projected to increase up to 2020. However, emissions from the waste sector are projected to decrease by 46% by 2020, primarily due to the reduction in the volumes disposed to landfill and the increase in energy recovery.

5.5 Do Nothing Scenario

If the development does not proceed there will be no change in the GHG emissions from the existing operations, but AES will not be able to avail of the opportunity to increase its waste recovery and recycling rates.

5.6 Prevention & Mitigation Measures

Waste processing requires significant energy inputs and energy costs are a significant element of the business overheads. In 2010 AES conducted an energy audit of the site and the recommendations were implemented. AES is currently rolling out ISO 5001 Energy Management thorough out the Business Unit.

Diesel fuelled plant engines are only turned on when wastes are being processed and AES has a policy of not allowing engine idling. This also applies to heavy goods vehicles accessing the facility.

5.7 Assessment of Impacts

All GHG emissions, regardless of the source, contribute to a cumulative negative environmental effect, unless offset by mitigation or compensatory measures. The proposed development will result in increased energy consumption with a consequent increase in GHG emissions. AES has incorporated mitigation measures into the design (energy efficient equipment) and operation (energy audits) of the existing operations and these measures will continue to apply.

5.8 Residual Impacts

The proposed change will have an on-going, imperceptible, negative, impact on climate.

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6 TRAFFIC

6.1 Introduction

This Chapter describes existing road traffic conditions and the impacts the proposed development will have on the receiving environment (local and regional road network), including a 'do nothing' scenario. It identifies the mitigation measures that will be implemented to reduce the significance of the impacts and assesses the residual impacts.

6.2 Methodology

The assessment of impacts is based on the Traffic and Transport Assessment (TTA) prepared by Tobin Consulting Engineers (Tobins). The full TTA that describes the methodologies applied, are in Appendix 5 and the findings are summarised herein. A detailed assessment of the traffic impacts should be based on the full TTA report.

Tobins conducted a scoping exercise with Tipperary County Council that inter alia identified the following junctions for assessment; the existing site access (Junction 1), the existing priority junction between the L-1119 / L-1148 (Junction 2); and the existing priority junction between the L-1148 / R445 (Junction 3). The assessment years include the traffic survey year 2016, the operating year 2017 and the design years 2022 and 2032 for both the morning (AM) and afternoon (PM) peak hours.

Manual classified traffic surveys were carried out to determine the existing traffic flows at Junctions 1 and 2 in June 2016 and at Junction 3 in September. An additional count was undertaken at the civic amenity facility over a 2 week period in November 2016. The surveys covered turning movements at the junctions and distinguished between cars, light good vehicles, buses and heavy good vehicles.

6.3 Receiving Environment

6.3.1 Surrounding Land Use

Dark Road forms the eastern boundary and to the east of this is a partially developed Commercial Park. The lands to the north and west are used for agricultural purposes. A local access road forms the southern site boundary and south of this is a service garage and private residences. The nearest private dwelling is 30 m from the south western boundary on the opposite side of the public road.

6.3.2 Regional and Local Road Network

The site is bounded by local roads and green fields, with the L-1119 to the south, the L-1148 to the east and green fields to the west and north. Access to the facility is from the regional road the R445 which connects to the N52 at a roundabout to the west of the site.

6.3.3 Site Access (Junction 1)

Junction 1 is located to the north of the Grallagh local road, L-1119, with a designated speed limit of 60km/h. Traffic arrives to the site from the east via the priority junction with the L-1119 / L-1148 Dark Road (Junction 2) and from the R445 priority junction with the L-1148 (Junction 3) to the south.

There are two access points off the northern side of the L-1119, with the western access servicing the waste transfer facility (commercial entrance) and the eastern servicing the civic amenity area and on-site staff car parking. Adjacent to the site is the O'Brien's garage access. These existing accesses were assessed as a single 4 arm cross road junction with the L-1119.

The carriageway is approximately 7.0m wide, with the AES boundary wall set back from the road edge for visibility along the northern edge of the L-1119. There are grass verges along this road edge, with a kerb commencing east of the site towards Junction 2. South of the L-1119, there is a hard shoulder to the west of the entrance to the garage and a continuous footway linking to the R445 to the east. To the west the L-1119 narrows on approach to a right bend in and to the east the carriageway widens on approach to Junction 2.

There are road markings along the centreline of the carriageway passing the site, with double yellow lines on the road edged west of the garage. There is no street lighting at the junction but there are lights at Junction 2, which is approximately 30m east of the AES eastern access.

6.3.4 Junction 2

Junction 2 is an existing priority junction east of the AES site on the L-1119 with the local road, L-1048 Dark Road. The junction is in a 60km/h designated speed limit. The minor road, L-1119, has a footway to the south and kerbed grass verge to the north. On approach to the junction, the minor arm is splayed from a 3.4m wide lane to 11.9m at the stop line. Road markings and signage are present.

The major arm, the L-1148 Dark Road, has a typical cross section of 6.0m to the north of the junction and 9.3m to the south, where it approaches Junction 3 at the R445. North of the minor arm the speed limit is 50km/h, with grass verge at the western road edge and 1.8m footpath to the east. South of the minor road there are footpaths on both sides of the carriageway. There are central road markings on the L-1148 and street lighting is present.

The visibility requirements for a designated 60km/h road is 2.4m x 65m. This visibility is available to the north but to the south is disrupted by the junction with the R445 (Junction 3).

6.3.5 Junction 3

Junction 3 is an existing priority junction located approximately 30m south of Junction 2, at the junction of the L-1148 with the R445. The designated speed limit on the L-1148 and the R445 is 60km/h.

On the minor arm approach, L-1148, the lane splays from 3.4m to 14.2m at the R445 accommodating vehicles turning both right and left at the junction onto the R445. There are footpaths on both sides of the L-1148 at the junction. Road marking signage and street lighting are also present.

The regional road, the R445, is the major arm with traffic flows east to Nenagh Town Centre and west to the roundabout junction at the N52. The R445 is a two-way single carriageway with right turn ghost-island, hatch marking, traffic calming and uncontrolled pedestrian crossing point. Typical lane widths are 3.7m with a 3.1m right turn lane. The visibility requirements for a designated 60km/h road is 2.4m x 65m and this is available.

6.3.6 Trip Generation and Distribution

Seasonal Adjustment

The traffic count information from the surveys conducted in June and September was compared to the annual average daily traffic (AADT) for the previous year derived from Transport Infrastructure Ireland (TII) databases. The traffic count on the day of the surveys in June and September was typically higher than the average of the year, which did not require seasonal adjustment.

Baseflow Traffic

A review of the traffic count data for the AM and PM peak hours at a midpoint between the three junctions identified that the traffic varies for both light vehicles (LV) and heavy vehicles (HV). The AM peak hour LV movements are higher in June (Junction 2) than in September. The HV movements are slightly higher in September (Junction 3), with 9 HV movement versus 8HV movements in June (Junction 3). The PM peak hour traffic counts show higher movements in June at Junction 2 than in September at Junction 3.

On the dates of the surveys, the AES facility was operational and the associated traffic movements were captured by the surveys. Between June 2015 and May 2016 the facility accepted 24,398 tonnes of waste excluding waste delivered to the civic amenity area. The variation in traffic counts corresponds with the AES weighbridge records. This indicates that the use of the actual highest movement flow low is more robust than seasonal adjustment.

Opening, Operational and Design Years

The capacity assessment is based on the existing traffic conditions and the forecasts for the operating year in 2017, the design year 2022 (+5 years) and design year 2032 (+ 15 years). The

forecast traffic is based on the modified traffic count baseflow traffic only, as the operations at the facility will be scaled up independently of the baseflow traffic to reflect the proposed increase in volume to be processed at the site.

6.4 Trip Generation

A detailed assessment of the trip generation associated with the existing and proposed development is in Section 5.4.1.2 and Section 5.4.1.3 of the TTA. The trip generation for the proposed development is based on the facility weighbridge records, traffic counts for both the main site and the civic amenity area and a pro rata increase in waste acceptance from 24,750 tonnes/year to 30,000 tonnes.

6.5 Impacts

6.5.1 Junction Analysis

Junction 1, Junction 2 and Junction 3 were modelled using JUNCTION 9 PICADY for traffic generation for the existing and proposed development. The key parameters examined were the Ratio of Flow to Capacity Value (RFC value – desirable value for PICADY should be no greater than 0.85 and values over 1.00 indicate the approach arm is over capacity); the maximum queue length on any approach to the junctions, and the average delay for each vehicle passing through the junction during the modelled period.

In both the AM and PM peak hours for Junction 1 the RFC for the existing operation (0.02) and proposed development (0.04) will be significantly below the maximum desired RFC of 0.85, for all assessment years. The longest delay for a vehicle at this junction is the same for all assessment years and is 9.26 seconds and occurs in the AM peak on Arm B. The proposed development will not result in a queue on any of the junction arms.

At Junction 2, in the AM peak hours, the RFC for the existing operation (0.05) and proposed development (0.08) will be significantly below the maximum desired RFC of 0.85, for all assessment years. The longest delay for a vehicle at this junction is the same for all assessment years and is 9.47 and 9.17 seconds and occurs in the AM and PM peak respectively on Arm B. The queue length of 0.1 vehicles (i.e. less than 1 vehicle) remains the same for both the existing and proposed operations.

At Junction 3 the maximum RFC occurs in the AM on Stream B-C and in the PM on Stream C-B, with RFC values of 0.32 and 0.39 respectively in the design year of 2032. In the AM of 2032, the high volume of inbound traffic to Nenagh in conjunction with the large number of left turners onto the R445 (i.e. in the same direction) will result in the longest delay on Arm B of 15.08 seconds in comparison to the right turn movement from this arm with a delay of 11.02 seconds. The maximum queue lengths in 2016 and 2022 will be 0.4 vehicles and this will increase to 0.5 vehicles in 2032 on traffic stream B-C.

6.5.2 Link Capacity

The Grallagh Road, L-1119, is a local road and can be classified as road type UAP3, 'variable standard road carrying mixed traffic with frontage access, side roads, bus stops and at-grade pedestrian crossings, more than 2 with side roads per km'. The recommended one-way hourly capacity of the road is 1110 vehicles for a 6.75m carriageway. The predicted maximum hourly one-way flow on the road in the design year of 2032 is 41 vehicles eastbound from Junction 1 to Junction 2 during the PM peak. Therefore the road will operate with 96% spare capacity.

The Dark Road, L-1148L-2025 can be classified as road type UAP3, 'variable standard road carrying mixed traffic with frontage access, side roads, bus stops and at-grade pedestrian crossings, more than 2 with side roads per km'. The recommended one-way hourly capacity for this road type is 900 vehicles for a 6.0m carriageway. The predicted maximum hourly one-way flow on the road in the design year of 2032 is 273 vehicles northbound from Junction 3 to Junction 2 during the PM peak. Therefore the local road will operate with 70% spare capacity.

The R445 regional can be classified as road type UAP3, 'variable standard road carrying mixed traffic with frontage access, side roads, bus stops and at-grade pedestrian crossings, more than 2 with side roads per km'. The recommended one-way hourly capacity for this road type is 1470 vehicles for a 7.3m carriageway. The predicted maximum hourly one-way flow on the road in the design year of 2032 is 629 vehicles westbound to Junction 3 during the PM peak. Therefore the local road will operate with 57% spare capacity.

6.5.3 Road Safety

It is not proposed to alter the existing site entrances. As these accesses are located within a designated speed limit of 60km/h the Design Manual for Urban Roads and Streets (DMURS, 2013) is applicable. The required visibility splays are 2.4 x 59 metres (and 65m on bus routes) for this designated speed limit, with a reduction in the 'x-distance' from 2.4m to 2.0m in difficult circumstances.

At the commercial access (i.e. western entrance) the required visibility of 2.4m x 59m is achievable to the east and can be achieved to the west by clearing the overgrown hedgerow bounding the adjacent green field.

At the entrance to the civic amenity area, the visibility of is achievable to the west. Junction 2 is located approximately 35m to the east and the inter-visibility is currently obscured by the plants in the landscaped area to the east of the entrance. Maintaining plant height at below 1.05m will achieve the required visibility.

In practice the speed on approach to the site entrances from the east will be less than the designated speed limit due to the proximity of Junction 2. To improve safety at the junction it is recommended that additional signage be provided to warn road users of the slow moving large vehicles ahead.

6.6 Do Nothing Scenario

If the development does not proceed there will be no change in the volumes of traffic associated with the facility.

6.7 Prevention & Mitigation Measures

The required visibility splays to the west of the main entrance will be maintained by cutting back vegetation in the hedgerow. At the entrance to the civic amenity area, the required visibility to the east will be achieved by maintaining the plant heights in the landscaped area at less than 1.05m. At Junction 2 to improve safety at the junction additional signage will be erected to warn road users of the slow moving large vehicles.

6.8 Assessment of Impacts

At Junction 1 the predicted traffic for all design years will be below the maximum desired RFC of 0.85 and within capacity for both the AM and PM peaks. There will be no queue length and maximum delay will be 9.26 seconds in the AM peak on Arm B.

At Junction 2 the predicted traffic for all design years in both the AM and PM peak hours, will be below the maximum desired RFC of 0.85. The longest delay for a vehicle at this junction is the same for all assessment years and is 9.47 and 9.17 seconds and occurs in the AM and PM peak respectively on Arm B. The queue length of 0.1 vehicles (i.e. less than 1 vehicle) remains the same for both the existing and proposed operations.

At Junction 3 the predicted traffic for all design years in both the AM and PM peak hours will be below the maximum desired RFC of 0.85. The longest delay for a vehicle at this junction will arise in 2023 and will be 15.08 seconds the AM on Arm B. The maximum queue lengths in 2016 and 2022 will be 0.4 vehicles and this will increase to 0.5 vehicles in 2032 on traffic stream B-C.

6.9 Residual Impacts

The development will result in an increase in traffic movements, but the local road network and junctions have the capacity to accommodate the increase. The development will have an on-going, slight, negative, impact on the road network.

7 SOILS AND GEOLOGY

7.1 Introduction

This Chapter describes the soils and bedrock conditions at the facility and the impacts the proposed changes will have on the receiving environment within the site boundary, including a 'do nothing' scenario. It identifies the mitigation measures that are and will be implemented to reduce the significance of the impacts and assesses the residual impacts.

7.2 Methodology

The assessment took into consideration the Institute of Geologists of Ireland (IGI) 'Guidelines for the Preparation of Soils Geology and Hydrogeology Chapters of Environmental Impact Statements' (2013) and the EPA guidelines described in the Introduction. The desk study was based on a review of databases maintained by the Geological Survey of Ireland (GSI) and Teagasc.

7.3 Receiving Environment

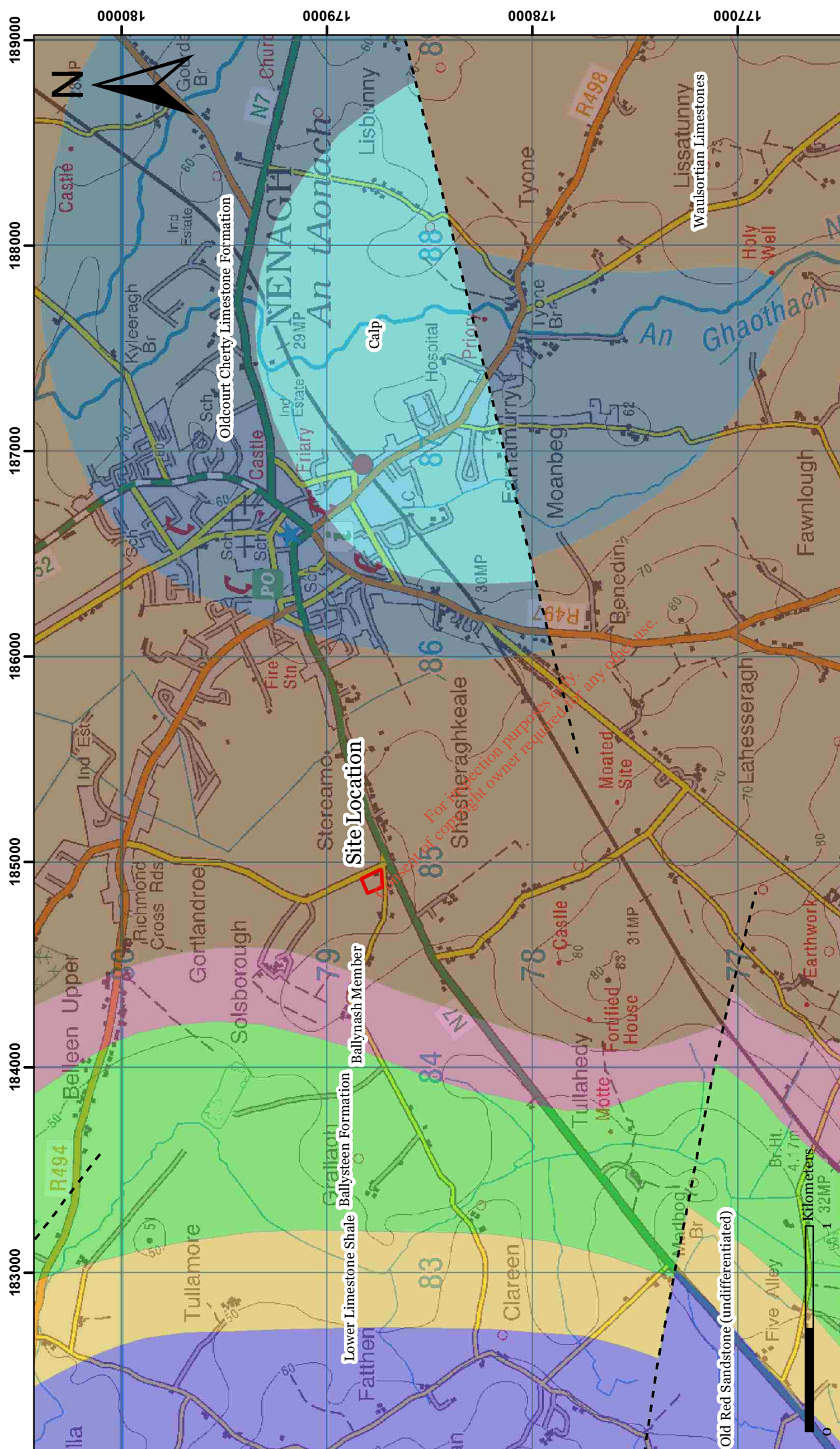
The facility encompasses 6,855m² and is almost entirely covered by buildings and concrete paving.

7.3.1 Subsoils

The Teagasc subsoils map (Figure 7.1) indicates the site is underlain by Limestone Till (**TLs**). There is no site specific information on the depth of the soils. The GSI Aquifer Vulnerability rating at the site is Extreme, indicating that there is between 0 and 3m of subsoils present.

7.3.2 Bedrock


The GSI bedrock map (Figure 7.2) indicates the bedrock beneath the site comprises massive unbedded lime-mudstone of the Waulsortian Formation.



- Details:**
- - Structural
 - Site Location
 - Lower Limestone Shale - Sandstone, mudstone & thin limestone
 - Old Red Sandstone - Red conglomerate, sandstone & mudstone
 - Oldcourt Cherty Limestone Formation - Grey limestone & dark chert
 - Waulsortian Limestones - Massive unbedded lime-mudstone
 - Ballynash Member - Bedded cherty limestone, thin shale
 - Ballysteen Formation - Dark muddy limestone, shale
 - Calp - Dark grey to black limestone & shale

CLIENT
AES Nenagh

TITLE
Bedrock Geology



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Figure 7.2

7.4 Impacts

The proposed development does not require any excavation or construction works that would disturb/remove any subsoils. There are no current direct or indirect emissions to ground and the proposed development will not result in any new direct or indirect emissions.

Currently, there is the potential for leaks/spills to occur to ground during the delivery and handling of the incoming wastes, leaks from the above ground oil storage tanks, and leaks from the foul sewer and waste water pump sump.

The potential pathways to the soil for contaminants released at the ground surface are infiltration areas where the paving has been damaged and leaks from the surface water drains.

7.5 Do Nothing Scenario

If the proposed development does not occur there will be no change to the risk presented by current operations to the soils and geology.

7.6 Prevention & Mitigation Measures

The current prevention and mitigation measures include the provision of impermeable paving across the operational areas; the provision and maintenance and integrity testing of bunds for the above ground oil storage tanks; the collection and diversion of rainwater run-off from the operational yards to the foul sewer, the inspection and repair as required of the paved areas, the routine inspection and survey of the surface water and foul water drainage systems, the adoption of an emergency response procedure and staff training on appropriate spill response actions.

Materials with the potential to adversely affect the soils for example oil, are stored and handled in a manner that minimises the risk of accidental spills or leaks. With the exception of the silt traps/oil interceptors and the wastewater pump sump, there are no underground storage tanks. The diesel for the road vehicles is stored in an above ground tank that is provided with a concrete bund, 110% of the tank's maximum volume. When not in use the dispensing pumps are locked.

The diesel for the on-site plant is stored in a bunded tank in the Garage. The engine and hydraulic oil are stored in bulk double skinned steel tanks in the Garage, with smaller containers on a bunded pallet also inside the Garage. The Ad-blue is stored in an IBC in the Quarantine Area, which is provided with integral spill containment. The odour block is stored on a bund in the Garage. Detergents and disinfectants used in the Vehicle/Bin Wash are stored on a bund in the Garage. Waste oil is stored in a double skinned steel tank in the Garage.

7.7 Assessment of Impacts

The entire site is and will remain either paved with concrete, or occupied by buildings that prevent infiltration to the subsoil. The proposed development will not involve any ground disturbance or the provision of additional paving. At present there are no direct or indirect emissions to ground and the proposed development will not give rise to any new discharges. The proposed development will have no impact on the soils and geology.

7.8 Residual Impacts

The development will have no residual impact on the soils and geology.

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8 WATER

This Chapter describes the surface water and the groundwater conditions at the site and the impacts that the proposed development may have on the receiving environment within and outside the site boundary, including a 'do nothing' scenario. It identifies the mitigation measures that are and will be implemented to reduce the significance of the impacts, and assesses the residual impacts.

8.1 Methodology

The assessment took into consideration the IGI 'Guidelines for the Preparation of Soils Geology and Hydrogeology Chapters of Environmental Impact Statements' (2013) and the EPA guidelines described in the Introduction.

The assessment of surface waters is based on a review of the Shannon International River Basin District Management Plan (ShIRBD); databases maintained by the EPA, the National Parks and Wildlife Service (NPWS) and the Office of Public Works (OPW). The assessment of groundwater is based on a review of ShIRBD Plan, and databases maintained by the GSI, Teagasc and the EPA.

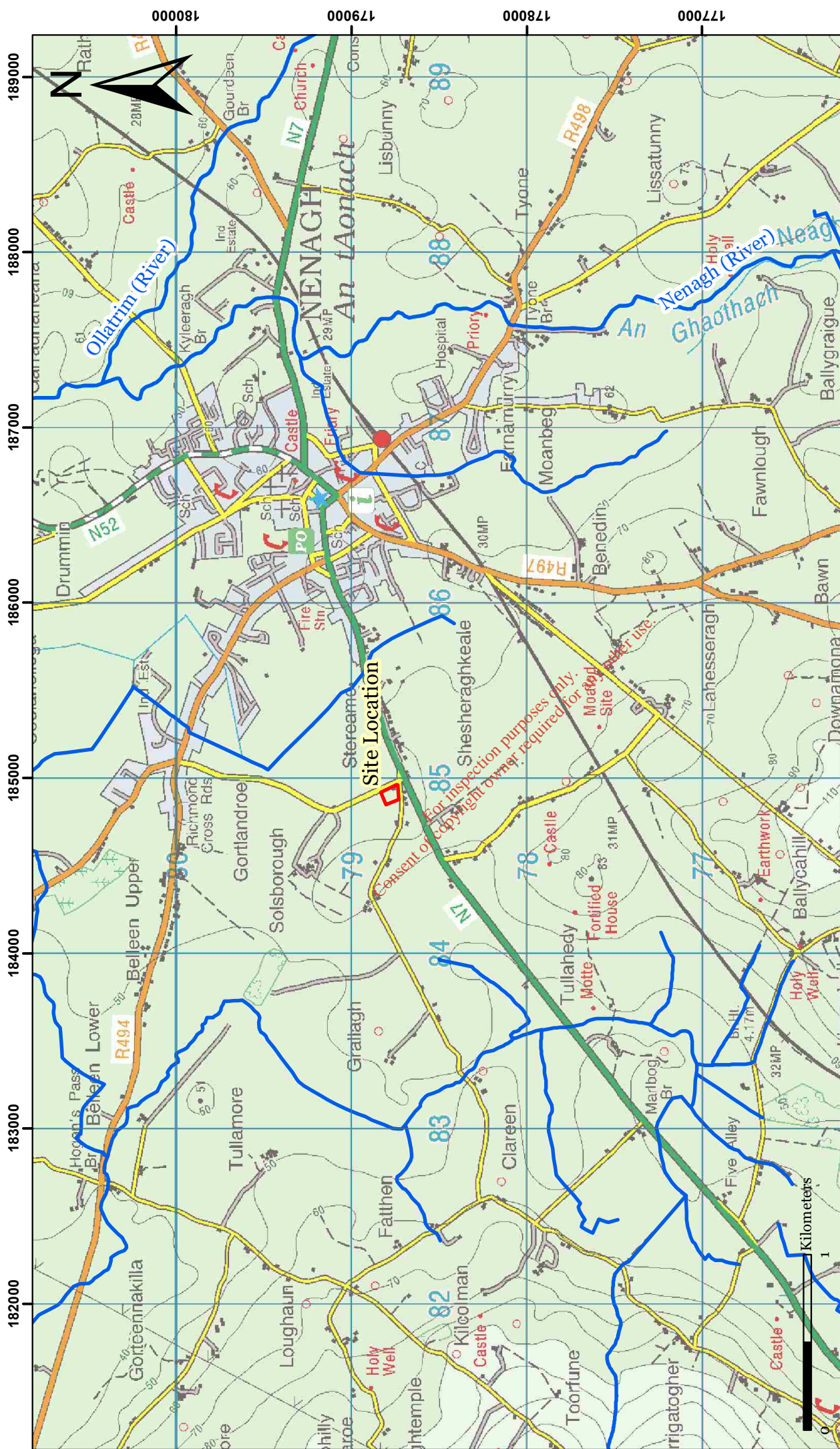
8.2 Receiving Environment-Surface Water

8.2.1 Regional Surface Water Catchment

The regional drainage pattern is shown on Figure 8.1. The site is in the IE_SH_25_3686 (WMU) designated in the ShIRBD plan and is situated within the Ardregane, Trib of Shannon Lower Water Body.

The ShIRBD Plan contains reports on the 'Status' of each Water Body. Status means the condition of the water in a watercourse and is defined by its ecological and chemical status, whichever is worse. Waters are ranked in one of five status classes, High, Good, Moderate, Poor and Bad.

The EU Water Framework Directive (WFD) requires measures to ensure waters achieve at least 'Good Status' by 2021, and that their current status does not deteriorate. Where necessary, for example in heavily impacted or modified watercourses, extended deadlines (2027) have been set for achieving the following objectives:-



Details:
 Site Location
 Rivers

CLIENT
AES Nenagh

TITLE
Hydrology

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Figure 8.1

- Prevent Deterioration
- Restore Good Status
- Reduce Chemical Pollution

Achieve Protected Areas Objectives

The objectives for particular watercourses are based on 'Pressure and Impact Assessments' of point and diffuse emissions, land use (e.g. peat harvesting, quarrying, industrial and residential use) and morphological conditions (e.g. river depth and width, structure and substrate of river bed) to identify those Water Bodies that are 'At Risk' of failing to meet the WFD objectives.

'At Risk' does not necessarily mean that the Water Bodies have already been adversely impacted, but that there is a likelihood that one will fail to meet its objectives unless appropriate management action is taken.

The Ardgregane, Trib of Shannon Lower Water Body is ranked as being of 'Moderate' Status based on the Macroinvertebrate Status and the Overall Ecological Status. The General physico-chemical status of the water body is listed as Good. A copy of the Water Body Status Report is in Appendix 6.

8.2.2 Local Drainage Systems

Rainwater run-off from the paved yards, weighbridge and building roofs is collected and directed through a silt trap and oil interceptor system before being discharged to an open drain that starts at the north-east site boundary. This drain, which is seasonal, joins the Ardgregane Stream that ultimately discharges into Lough Derg, approximately 5 km to the north west of the facility.

8.2.3 Surface Water Quality

AES monitors the surface water emissions from the site in accordance with the requirements of the EPA licence. The results of monitoring carried out in 2017 are Table 8.1. As the flow is rainfall dependant occasionally there is no flow at the time the sampling team visits the site. The Table includes for comparative purposes the warning and action trigger levels agreed with the EPA.

Table 8.1 Storm Water Emissions – 2017 Monitoring Results

Parameter	Units	January	February	March	April	May	June	July	August	September	October	November	December	Trigger Warning Limits	Trigger Action Limits
pH	pH units	-	7.3	7.2	-	7.3	7.1	-	7.2	-	7.4	7.6	7.31	6.7-9.0	6.5-9.5
Conductivity	uS/cm	-	283.2	254.8	-	229	218.75	-	432	-	248.2	133.5	448	900	1000
COD	mg/l	-	45	86	-	13	31	-	34	-	28	39	24	100	130
Ammonia	mg/l	-	0.83	0.72	-	0.38	-	-	-	-	-	<0.02	-	1.5	2.5
Suspended Solids	mg/l	-	24	41	-	7	14	-	<5	-	5	34	7	45	57
Mineral Oils	mg/l	-	<0.01	<0.01	-	<0.01	-	-	-	-	ND	0.09	NS	0.01	0.01

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8.3 Receiving Environment-Groundwater

8.3.1 *Aquifer Classification*

As shown on Figure 8.2, the bedrock aquifer beneath the site is classified by the GSI as a locally important aquifer, which is only moderately productive in local zones (LI).

8.3.2 *Aquifer Vulnerability*

Aquifer vulnerability is defined by the GSI as the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated by human activities. Vulnerability categories range from Extreme to High to Moderate to Low and is dependent on the nature and thickness of subsoils above the water table. The GSI Vulnerability Map (Figure 8.3) indicates the aquifer vulnerability rating beneath the site is Extreme.

8.3.3 *Groundwater Recharge*

The main hydrogeological controls on groundwater recharge are subsoil permeability, subsoil thickness, saturated soils, and the ability of the underlying aquifer to accept percolating waters. The effective rainfall is 569 mm/y and the GSI database indicates an average groundwater recharge of 60% (341 mm/yr) in the vicinity of the site.

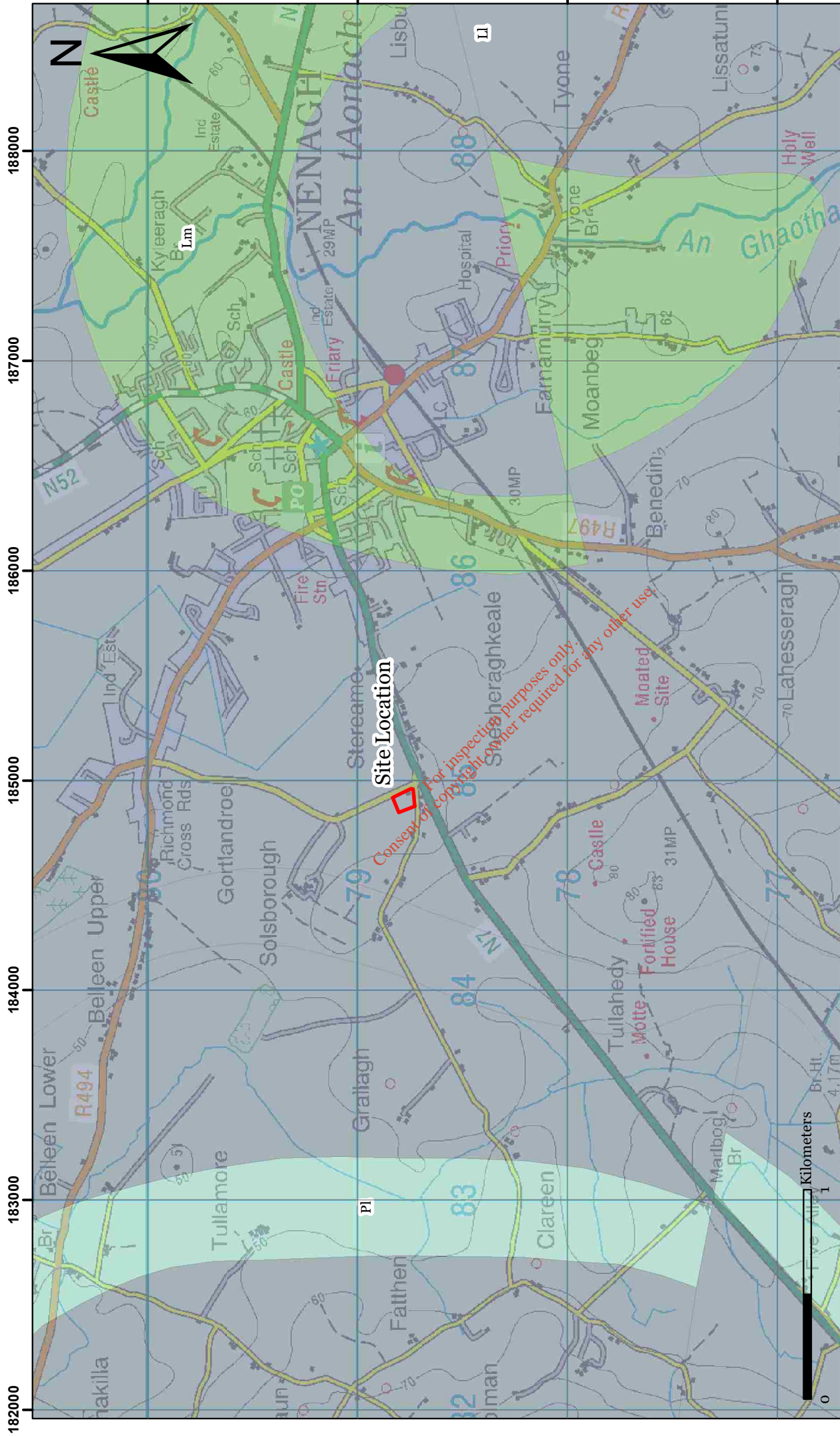
8.3.4 *Groundwater Flow Direction*

The direction of groundwater flow is expected to be to the north-west towards the closest significant surface water feature, which is the Ardgregane Stream.

8.3.5 *Groundwater Abstraction Wells*

A search of the GSI groundwater abstraction well database (Figure 8.4) established that there are ca. 25 borehole recorded within a 1 km radius of the site. However, there is no information available for these, with the exception of one (1 No.) well ca. 1 km to the west of the site, this well was recorded to a host "Moderate" to "Good" yield of 50.2 m³/day.

The closest wells used for potable public supply is c. 12.25 km to the south-east-east of the site at Toomevara and is in a separate hydraulic catchment to the site.



Details:

- Site Location
- LI - Locally Important Aquifer. Mod. Productive only in Local Zones
- Lm - Locally Important Aquifer. Mod. Productive
- Pl - Locally Poor Aquifer. Unproductive except for Local Zones

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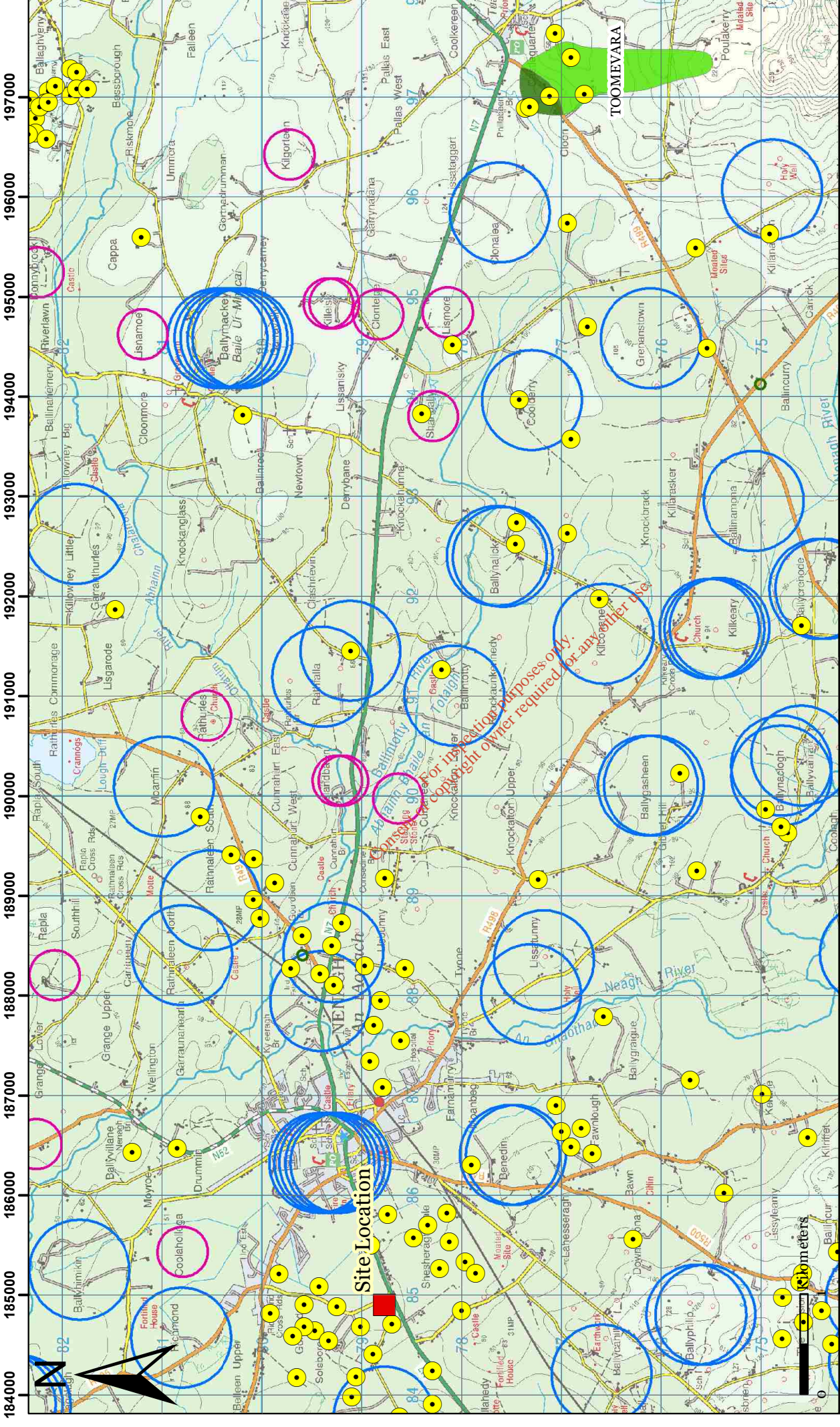
TITLE
Aquifer Classification

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Figure 8.2



Details:
 Unfortunately many of the borehole logs in the GSI database do not contain accurate location information. The size of the circles shown above is inversely proportional to the accuracy of the well location (i.e. small circles represent high accuracy, where relatively larger circles represent lower accuracy).


- Well Accuracy: 10-50m
- Well Accuracy: 250-500m
- Well Accuracy: 50-100m
- Well Accuracy: 500-1km
- Site Location
- Inner Source Protection Area
- Outer Source Protection Area

Figure 8.4

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TITLE
GSI Well Location Data

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8.3.6 Groundwater Quality

The SHIRBD Management Plan identifies the groundwater body (GWB) beneath the site is part of the Nenagh Groundwater Water Body (IE_SH_G_178). The GWB Report, which is in Appendix 6 indicates the status of the water body is 'Good' with the overall objective to 'Protect' the status. There are no on-site wells and the facility and its neighbours obtain water from the Irish Water Mains supply.

8.4 Receiving Environment – Flood Risk

The OPW has produced flood risk maps that identify areas that may be susceptible to pluvial, fluvial and coastal flooding events. The OPW map (Figure 8.5) indicates that areas in the vicinity of the site are not at risk from flooding. The area has not been included in the National Preliminary Flood Risk Assessment (PFRA) and Catchment Flood Risk Assessment and Management (CFRAM) databases.

8.5 Impacts

The proposed development does not require any excavation or construction works or alteration to the existing foul and surface water drainage and will not result in any change to the quality or quantity of the discharge to the Ardgregane Stream, which ultimately discharges into Lough Derg. There are no current direct or indirect emissions to ground and the proposed development will not result in any new direct or indirect emissions.

Currently, there is the potential for leaks/spills to occur to ground during the delivery and handling of the incoming wastes, leaks from the above ground oil storage tank and the foul sewer and underground pump sump. The potential pathways to surface waters is the surface water drainage system. The pathways to groundwater are infiltration in damaged paving and leaks from the storm and foul water drains.

8.6 Do Nothing Scenario.

If the proposed development does not proceed there will be no change to the existing drainage systems. Rainfall run-off from the building roofs and the access yard will continue to discharge to the drainage ditch / Ardgregane Stream.

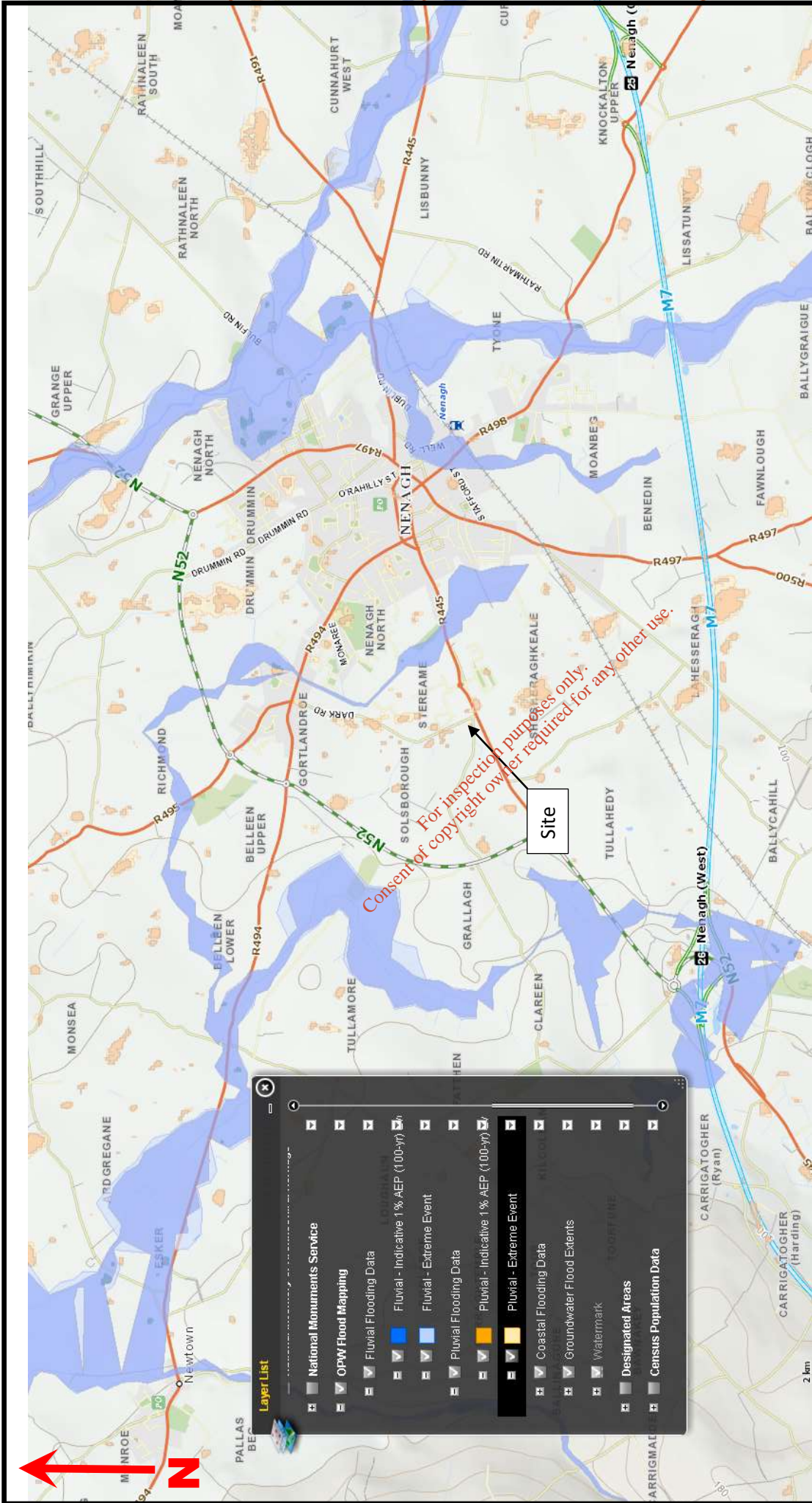


Figure:
Figure 8.5

1 km

Title:
OPW Flood Risk Map
Nenagh, Co. Tipperary

Client:
AES Nenagh

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8.7 Prevention & Mitigation Measures

8.7.1 Surface Water

Rainwater run-off from the paved yards, weighbridge and building roofs is collected and directed through a silt trap and oil interceptor system (capacity 38.75m³) before being discharged to an open drain that starts at the north-eastern site boundary.

All waste processing is carried out inside the Main Processing Building. Process wastewater generated at the facility consists of wash water from the Vehicle/Bin Wash areas and small amounts of liquid present in the incoming wastes that seep onto the building floor. The wash water and liquid seeps drain to an oil interceptor/silt trap located to the east of the Main Processing Building, from where it flows to an underground pump sump located in the north-east of the site.

Sanitary wastewater from the office connects with the outfall from the central foul water silt trap/oil interceptor in the main yard and flows to the underground pump sump located in the north east of the site. It is then pumped via a rising main to an Irish Water foul sewer, located at the southern facility entrance.

Materials with the potential to adversely affect surface and groundwater quality, for example oil, are stored and handled in a manner that minimises the risk of accidental spills or leaks. With the exception of the silt traps/oil interceptors and the wastewater pump sump, there are no underground storage tanks. The diesel for the road vehicles is stored in an above ground tank that is provided with a concrete bund, 110% of the tank's maximum volume. When not in use the dispensing pumps are locked. The bund is subject to regular integrity testing to ensure it remains fit for purpose.

The diesel for the on-site plant is stored in a bunded tank in the Garage. The engine and hydraulic oil are stored in bulk double skinned steel tanks in the Garage, with smaller containers on a bunded pallet also inside the Garage. The Ad-blue is stored in an IBC in the Quarantine Area, which is provided with integral spill containment. The odour block is stored on a bund in the Garage. Detergents and disinfectants used in the Vehicle/Bin Wash are stored on a bund in the Garage. Waste oil is stored in a double skinned steel storage tank in the Garage.

AES maintains an adequate supply of spill kits to contain and absorb any spill at the facility. Facility personnel are provided with appropriate training to deal with any such incidents. A shut off-valve is provided on the surface water sewer upstream of the on-site silt trap and interceptors. In the event of an incident (spill, fire), the valve can be shut to contain run off inside the site. The available retention capacity inside the site boundaries is 493m³.

8.7.2 Groundwater

The current prevention and mitigation measures include the provision of impermeable paving across the operational areas; the provision and maintenance and integrity testing of bunds for the above ground oil storage tanks; the collection and diversion of rainwater run-off from the operational yards to the foul sewer, the inspection and repair as required of the paved areas, the routine inspection and survey of the surface water and foul water drainage systems, the adoption of an emergency response procedure and staff training on appropriate spill response actions.

8.8 Assessment of Impacts

The routine monitoring carried out by AES has established that the quality of the run-off to the drainage ditch does not present a risk to the water quality in the Ardgregane Stream.

The proposed development will not result in any changes to the current emissions to surface water; will not give rise to any new discharge to ground and ground water and will have no discernible impact on surface water and groundwater.

8.9 Residual Impacts

The proposed development, in conjunction with the current operation, will have no impact on the water quality of the Ardgregane Stream and will have no impact on the quantitative and qualitative status of the bedrock aquifer.

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9 BIODIVERSITY

9.1 Introduction

This Chapter describes the biodiversity of the site and the impacts the proposed changes will have on the receiving environment within and outside the site boundary, including a 'do nothing' scenario. It identifies the mitigation measures that are and will be implemented to reduce the significance of the impacts and assesses the residual impacts.

9.2 Methodology

The Convention on Biological Diversity (CBD) defines 'biological diversity' or biodiversity as 'the variability among living organisms from all sources, including, 'inter alia', terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems'. In this context the assessment took into consideration ecosystems (habitats and organisms) inside and outside the facility boundary.

The entire site, including the floors of the buildings and the open yard areas, is paved with concrete and the habitat value is low. The current condition of the site and the nature of the proposed development, which does not involve the disturbance of any on-site habitats, meant that an ecological survey was not required.

The assessment was based on a walk over survey and a review of the databases maintained by the National Parks and Wildlife Service (NPWS) and a review of the National Biodiversity Plan – Actions for Biodiversity 2011–2016.

Habitats were classified using the descriptions and codes in the Heritage Council's 'A Guide to Habitats in Ireland' (Fossitt, 2000) and 'Best Practice Guidance for Habitat Survey and Mapping' (2011).

OCM carried out a screening of the significance of the effects, if any, of the proposed changes on Natura 2000 sites within 15 km of the site to inform a decision on the need for an Appropriate Assessment. The screening concluded that the development would not have any likely significant effects on any Natura 2000 Site and therefore a Natura Impact Statement was not required. The report on the Screening is in Appendix 7.

9.3 Receiving Environment

The facility encompasses 6,855m². There is a wall along the southern site boundary, with a security fence surrounding the western, northern and eastern boundaries. There are two portakabin offices, one adjacent to the truck entrance and the second at the south-western corner of the Main Processing Building. There are six (6) operational areas – Main Processing Building (675m²), Garage (375m²), Administration Buildings (66m²), Quarantine Area (18m²), Fuelling Station, Vehicle/Bin Wash, and Weighbridge.

Dark Road forms the eastern boundary and to the east of this is a commercial park. The lands to the north and west are used for agricultural purposes. A local access road forms the southern site boundary and south of this is a service garage and private residences.

Rainwater run-off from the paved yards, weighbridge and building roofs discharges to an open drain that starts at the north-east site boundary. This drain, which is seasonal, is a tributary of the Ardgregane Stream that ultimately discharges into Lough Derg, which is 5km to the north-west of the site.

9.3.1 Habitats Within the Site Boundary

The habitats are shown on Figure 9.1. The buildings and operational yards and cover 6,855 m². These are classified as **BL3 Buildings and artificial surfaces**. There is a mature treeline which is a mix of coniferous and deciduous species along the eastern, northern and western boundaries and although stretches are less than 5m in height are classified as **WL2 Treelines**.

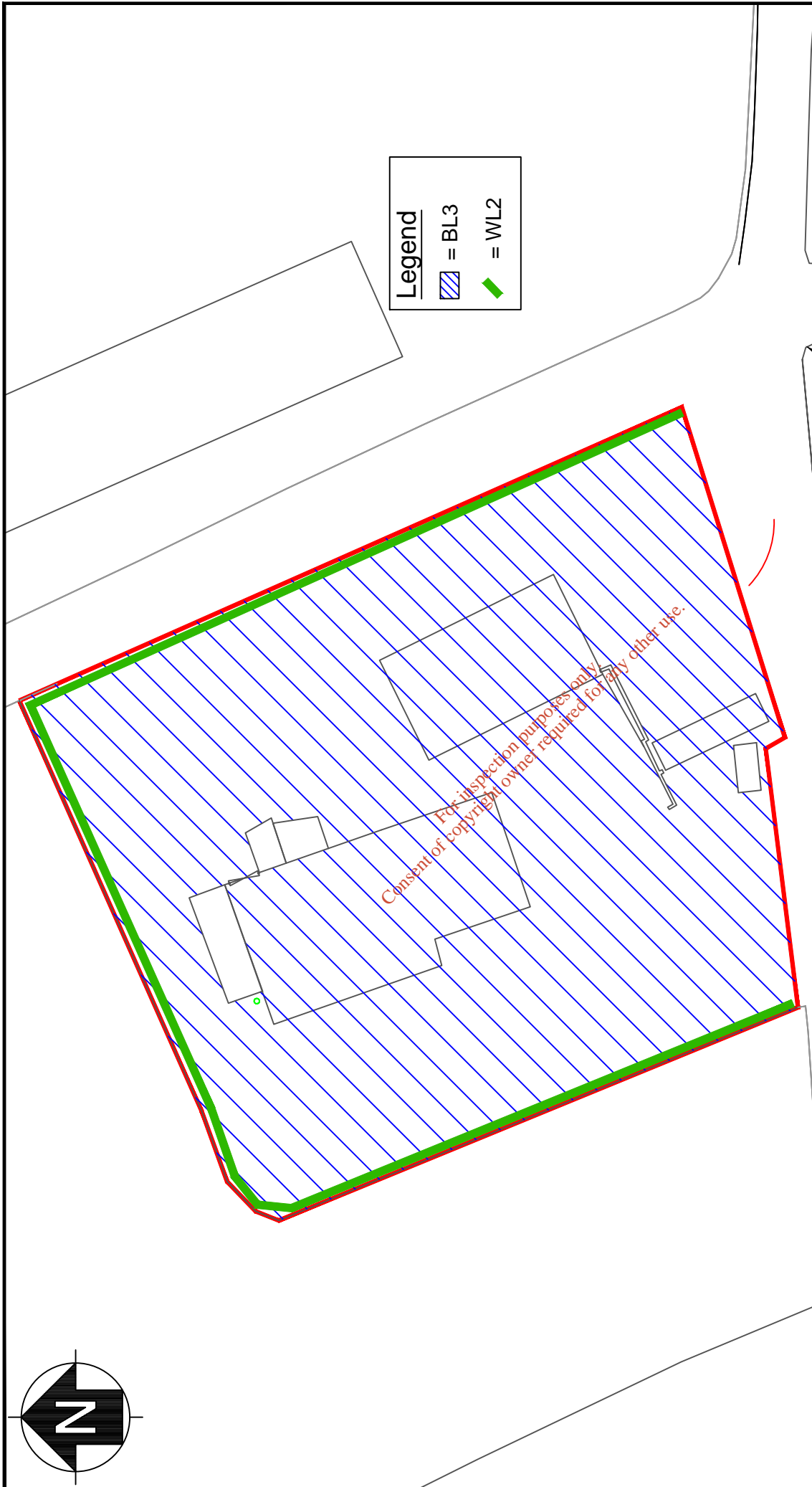
9.3.2 Habitats outside the Site Boundary

The land to the north and west is used for animal grazing and is classified as **GA 1 Improved agricultural grassland**. The land to the east and south are occupied by local roads, private residences and a commercial park and are classified as **BL3 Buildings and artificial surfaces**. The landscaped area adjacent to the eastern site entrance is classed as **BC4 Flower beds and borders**.


Although the flow in the drainage ditch at the north-east corner of the site is rainfall dependent and at the time of the site inspection was dry, with no evidence of wetland vegetation close to the site boundary it is assumed that it will support such flora further downstream and on this basis is classified as **FW4 Drainage ditch**.

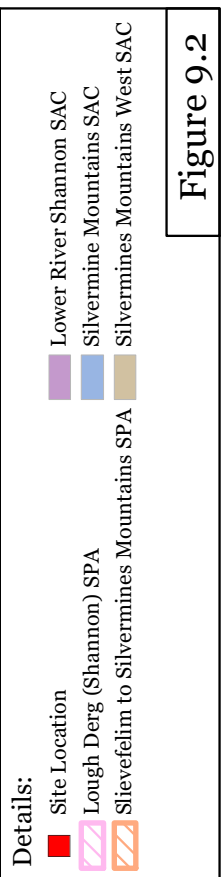
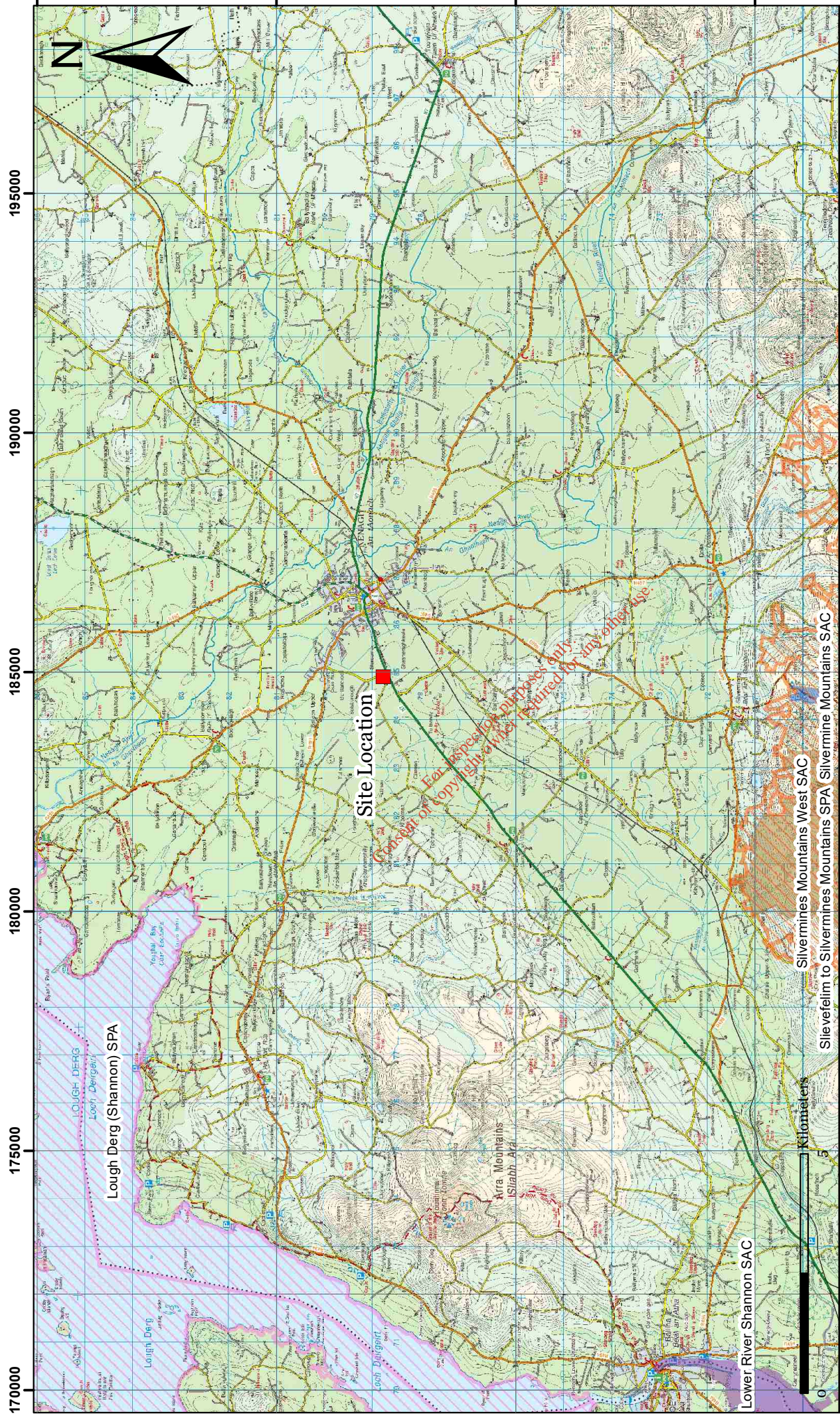
9.4 Natura 2000 Sites

The site is not in a Special Area of Conservation (SAC) or Special Protected Areas (SPA). A list of designated Natura 2000 sites within 15 km of the facility is given in Table 9.1, which also includes the Qualifying Interests. Lough Derg SPA (004058), which is 5 km to the north-west is the closest Natura 2000 Site to the facility (Figure 9.2).




Legend
 [Blue hatched box] = BL3
 [Green line] = WL2

 environmental management for business O' Callaghan Moran & Associates. Unit 15 Melbourne Business Park Model Farm Road, Cork, Ireland. Tel. (021) 4345366 email: info@ocallaghanmoran.com	CLIENT	AES Nenagh	FIGURE No.	9.1
	TITLE	Habitats	SCALE	NTS
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CLIENT
AES Nenagh

TITLE
Natura 2000 Sites



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Figure 9.2

Table 9.1 Designated Sites

Designated Site	Distance (km)	Qualifying Interests
Lough Derg (Shannon) SPA	5 km NW	Cormorant, Tufted Duck, Goldeneye, Common Tern, Wetland and Waterbirds
Silvermines Mountains West SAC	8.3 km S	Northern Atlantic wet heaths with <i>Erica tetralix</i> , European dry heaths, Calaminarian grasslands of the <i>Violetalia calaminariae</i>
Silvermine Mountains SAC	8.4 km S	Northern Atlantic wet heaths with <i>Erica tetralix</i> , Species-rich <i>Nardus</i> grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)
Bolingbrook Hill SAC	9.5 km S	Northern Atlantic wet heaths with <i>Erica tetralix</i> , European dry heaths, Species-rich <i>Nardus</i> grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)
Lough Derg, North-East Shore SAC	10 km NW	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> , <i>Juniperus communis</i> formations on heaths or calcareous grasslands, Calcareous fens, Alkaline fens, Limestone pavements, <i>Taxus baccata</i> woods
Lower River Shannon SAC	10 km S	Alluvial forests, Sandbanks, Estuaries, Mudflats and sandflats, Coastal lagoons, Large shallow inlets and bays, Reefs, Perennial vegetation of stony banks, Vegetated sea cliffs of the Atlantic and Baltic coasts, <i>Salicornia</i> , Atlantic salt meadows, Mediterranean salt meadows, Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation, <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinia caerulea</i>)
Keeper Hill SAC	10.5 km S	Northern Atlantic wet heaths with <i>Erica tetralix</i> , Blanket bogs
Slievefelim to Silvermines Mountains SPA	8 km S	Hen Harrier
Slieve Aughty Mountains SPA	14.5 km NW	Hen Harrier, Merlin

9.5 Impacts

The proposed development does not require any construction works, will not result in any loss of habitats either within, or outside the site boundary and does not require any changes to the current operational hours. Rainwater run-off from the site discharges to a drain that joins the Ardgregane Stream which is a tributary of Lough Derg. The proposed change will not result in any new or additional discharge to the Ardgregane Stream.

9.5.1 *Do Nothing Scenario*

If the proposed development does not proceed, the current activities will continue with no change to the risk presented to habitats, flora and fauna.

9.6 Prevention & Mitigation Measures

The mitigation measures that apply to the surface water run-off at the site are also directly relevant to the mitigation of ecological impacts. These, which are described in detail in Section 8.7.1, include:

- processing all wastes inside the transfer building;
- handling and storage of materials with the potential to adversely affect surface water quality in a manner that minimises the risk of accidental spills or leaks;
- the provision of impermeable paving across the operational areas;
- the collection and diversion of rainwater run-off from the operational yards to the foul sewer;
- the routine inspection and survey of the surface water and foul water drainage systems;
- the adoption of an emergency response procedure, and
- staff training on appropriate spill response actions.

9.7 Assessment of Impacts

The increase in the annual waste acceptance rate will have no direct or indirect physical impacts on the habitats either within or outside the site.

The routine surface water quality monitoring carried out by AES has established that the quality of the run-off to the drainage ditch does not present a risk to the water quality in the Ardgregane Stream. The proposed development will not result in any changes to the current emissions to surface water and will have no discernible impact on surface water.

9.8 Residual Impacts

The increase in the waste acceptance rates will have no impact on the ecosystems within the site boundary and will not give rise to disturbance in the habitats outside the boundary.

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10 AIR

10.1 Introduction

This Chapter describes the ambient air quality and the impacts the proposed development will have on the receiving environment within and outside the site boundary, including a 'do nothing' scenario. It identifies the mitigation measures that are and will be implemented to reduce the significance of the impacts and assess the residual impacts.

10.2 Methodology

The assessment is based on data derived from air quality databases maintained by the EPA and the dust deposition monitoring carried out by AES. The monitoring is done out using Bergerhoff gauges specified in the German Engineering Institute VDI 2119 document entitled "Measurement of Dustfall Using the Bergerhoff Instrument (Standard Method)".

10.3 Receiving Environment

The surrounding land use is shown on 10.1. The facility is located on the outskirts of Nenagh Town. Dark Road forms the eastern boundary and to the east of this is a partially developed Commercial Park. The lands to the north and west are used for agricultural purposes. A local access road forms the southern site boundary and south of this is a service garage and private residences. The nearest private dwelling is 30 m from the south western boundary on the opposite side of the public road.

10.3.1 Ambient Air Quality

Under the Clean Air for Europe Directive, EU member states must designate "Zones" for the purpose of managing air quality. For Ireland, four zones were defined in the Air Quality Standards Regulations (2011). The zones were amended on 1 January 2013 to take account of population counts from the 2011 CSO Census and to align with the coal restricted areas in the 2012 Regulations (S.I. No. 326 of 2012). Nenagh Town is in Rural Zone D.


The EPA implements an air quality monitoring programme at a number of monitoring stations across the country. The closest monitoring station that is representative of air quality at the site was at Ferbane, County Offaly, where the EPA undertook monitored for carbon monoxide, sulphur and nitrous oxides, particulates, arsenic, cadmium, lead and nickel between October 2006 and March 2007. The results indicate that, with the exception of particulates (PM₁₀), the air quality was good.



Details: Site Location

Figure 10.1

CLIENT	AES Nenagh
TITLE	Surrounding Land Use


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The EPA Licence requires AES to carry out dust deposition monitoring at four locations within the site boundary on a quarterly basis (Refer to Figure 4.3). The results of the monitoring carried out in 2017 are presented in Tables 10.1, which also includes the dust deposition limit (350 mg/m²/day) specified in the Licence.

Table 10.1 Dust Monitoring Results 2017

Dust Emission (mg/m ² /day) Sample Location	Q1 2017	Q2 2017	Q3 2017	Q4 2017	Emission Limit (mg/m ² /day)
D-1A	461	369	148	111	350
D2	320	215	375	55	350
D3	264	234	301	105	350
D4	209	270	191	68	350

The deposition limits are occasionally exceeded, however, it is considered that the dust exceedances are not representative of site activities and were as a result of contamination with insect matter or bird faeces.

10.4 Impacts

Emissions from waste storage operations with potential to adversely impact on air quality include odours, dust and vehicle exhaust gases. The residual household and commercial waste, which is a potential source of odour, will continue to be off loaded and processed inside the Main Processing Building. The extra traffic will result in additional vehicle exhaust gas emissions and are a potential contributor to dust emissions associated with movements over the paved areas during dry weather.

10.5 Do Nothing Scenario

If the development does not proceed there will be no change to the existing site operations and the associated emissions to air.

10.6 Mitigation Measures

10.6.1 Odours

The following techniques are currently implemented at the site to minimise odour emissions:

- All unloading, processing and loading of wastes occur within the Main Processing Building;
- Regular inspection and cleaning of waste handling areas;
- All putrescible waste for disposal is removed from site within forty-eight hours of its arrival.

In addition the EPA Licence makes provision for the installation of an odour control system comprising the extraction and treatment of air from the Main Processing Building, if this is considered necessary.

10.6.2 Dusts

The following techniques are currently applied to minimise dust emissions:

- Provision of dust curtains on the three main entrances to the Process Building;
- All open yards are paved and are routinely cleaned using a road sweeper and damped down with water in extended periods of dry weather;
- A 20km/h speed limit on all vehicle movements within the site boundary.

10.6.3 Vehicle Exhausts

The heavy goods vehicles accessing the facility are fitted with Selective Catalytic Reduction (SCR) systems. A diesel exhaust fuel (AdBlue) is used in the SCR to reduce the nitrous oxide levels in the exhaust gases. It is AES's policy to ensure that engine idling is not permitted.

10.7 Assessment of Impacts

10.7.1 Odours

The effectiveness of the odour control techniques applied at the facility is demonstrated by the lack of odour complaints, which is the yardstick against which odour nuisance at a waste

management facility is measured. In the past five years the facility has not received any complaints from neighbours concerning odours.

Furthermore, compliance inspections conducted by the EPA have never identified any concerns that odours could give rise to any nuisance or impairment outside the facility boundaries. The EPA has not required the installation of an odour control system.

The current activities are not a source of odour nuisance and the proposed development does not involve taking in any new potentially odorous waste types.

10.7.2 *Dust*

Dust is not currently a significant issue at the facility. The proposed development will not give rise to any new sources of dust emissions.

10.7.3 *Vehicle Exhausts*

The proposed increase in the amount of waste processed at the site will result in an increase in the waste transport vehicles. This increase will result in additional exhaust gases, which will have a slight negative impact on air quality for the duration of the activity.

10.8 Residual Impacts

The proposed development, in conjunction with the current operations, will have a slight, negative impact on air quality due to the increase in vehicle movements.

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11 NOISE

11.1 Introduction

This Chapter describes the existing noise sources and the impacts the proposed development may have on the receiving environment within and outside the facility boundary, including a 'do nothing' scenario. It identifies the mitigation measures that are and will be implemented to reduce the significance of the impacts and assesses the residual impacts.

11.2 Methodology

The assessment is based on the findings of an ambient noise survey carried out at the facility. The report on the noise monitoring carried out in 2017 by Bord ná Mona Environmental, which include details of the methodology applied, the weather conditions at the time of the survey and the monitoring results, is in Appendix 8.

11.3 Receiving Environment

The surrounding land use is shown on 11.1. The facility is located on the outskirts of Nenagh Town. Dark Road forms the eastern boundary and to the east of this is a partially developed Commercial Park. The lands to the north and west, are used for agricultural purposes. A local access road forms the southern site boundary and south of this is a service garage and private residences. The nearest private dwelling is 30 m from the south-western boundary, on the opposite side of the public access road.

11.4 Impacts

The sources of noise emissions are the staff vehicles, waste transport vehicles and the mobile plant (forklifts, grabs). Noise emissions only occur during the waste acceptance and operational periods, at other times the site is not a source of noise.

The EPA Licence sets daytime (55 dB (A) L_{Aeq} (30 minutes) and night time (45dB (A) L_{Aeq} (30 minutes) emission limit values (ELV) and requires an annual noise survey to be carried out at five (5) locations, as shown on Figure 4.3.




<p>Details:</p> <p> Site Location</p>	<p>CLIENT</p> <p>AES Nenagh</p>		<p>TITLE</p> <p>Surrounding Land Use</p>
<p>CLIENT</p> <p>O'Callaghan Moran & Associates, Unit 15 Melbourne Business Park, Model Farm Road, Cork. Tel. (021) 4345366 email: info@ocallagh Moran.com</p>	<p>Environmental Management for Business</p>  <p><small>This drawing is the property of O'Callaghan Moran & Associates and shall not be used, produced or disclosed to anyone without the prior written permission at O'Callaghan Moran & Associates and shall be returned upon request.</small></p>		

Figure 11.1

N-1 is on the south-west boundary corner, close to the entrance, the weigh bridge and the bin wash area. N-2 is on the north-west boundary corner, approximately 30m from the waste storage area. N-3 is on the north-east boundary corner. N-4 is on the south-east boundary corner, in the main car park. NSL-1 is across the road and ca. 20m from the truck entrance and between the garage (Comerfords) and a house. NSL-2 is by a house on the Kilcolman road, ca. 150m west of the facility. The results of the most recent monitoring event are presented in Table 11.1.

The site boundary LAeq levels ranged between 53 dB (A) to 69 dB(A) and ten exceedances of the ELV were noted. The results at the NSL ranged between 53 dB (A) to 61 dB(A). Tonal noise was not detected at any of the site boundary monitoring locations.

The day-time site boundary LAeq levels ranged between 59 dB (A) to 67 dB (A), all of which exceeded the daytime ELV (55 dB (A)); however the exceedance was due to the heavy off-site road traffic and not site operations. The day-time LAeq levels at the NSLs were 63-67dB (A) and were also attributed to road traffic. Tonal noise was not detected at any of the site boundary monitoring locations.

Complaints about noise from waste recovery facilities are not uncommon. AES has a documented complaints procedure to ensure that all complaints received from neighbours and the general public are fully investigated and addressed. In 2016, no complaints were received.

The current operations are not a source of noise nuisance at off-site noise sensitive locations. The proposed development will not require the provision of any new plant and equipment and will not result in any new or additional noise emission sources.

11.5 Do Nothing Scenario

If the proposed development does not proceed there will no change to the existing noise emissions.

11.6 Prevention & Mitigation Measures

All waste processing is carried out inside the Main Processing Building. Site staff are instructed to avoid unnecessary revving of machinery, turn off equipment / plant when not in use and limit the hours of activities that are likely to give high noise level emissions.

Table 11.2 Noise Monitoring Results July 2017

Station	Date	Start Time	LA _{eq}	LA ₉₀	LA ₁₀	LA _{max}	Noise audible
N1 South West Corner	10/07/17	11:05	56	58	44	73	Site –Occasional banging of skips. Engines idling at weighbridge. Voices audible from inside waste shed. Reversing alarms and machinery continuous. Power washing trucks occasionally audible. Yard sweeper operational <10m from noise meter. Background - Traffic on surrounding roads audible continuously. Crows cawing loudly overhead. Cars and trucks exiting adjacent facility. Shovel bangs from council workers outside facility.
		14:31	61	63	48	81	
	11/07/17	09:20	56	57	45	79	
N2 North West Corner	10/07/17	10:34	57	59	51	78	Site - Trucks idling in yard continuously. Reversing beacons intermittent. Occasional banging of skips. Background - Crows cawing loudly overhead. Traffic from surrounding roads continuously audible.
		13:57	60	62	49	80	
	11/07/17	10:40	52	53	43	76	
N3 North East Corner	10/07/17	10:02	59	63	47	77	Site - Engines idling at weighbridge and passing through yard. Reversing beacons audible from trucks and machines. Background - Crows cawing loudly overhead in rookery. Cutting tools and drilling continuously audible from adjacent yard. Traffic on Dark Rd passing frequently.
		13:24	58	62	45	76	
	11/07/17	11:20	57	60	48	73	
N4 South West Corner	10/07/17	09:30	55	58	48	76	Site - Occasional banging of chains as trucks enter yard. Revving of engines occasionally audible from yard. Reversing alarm audible at times. Occasional skip bang. Background - Heavy machinery and cutting tools audible from construction activity in adjacent yards. Medium traffic on Kilcolman/Dark Rd. Dogs barking and crows cawing occasionally. Horn beep.
		12:50	52	54	45	70	
	11/07/17	16:11	54	57	48	74	
NSL1 South of Site	10/07/17	11:42	63	67	50	77	Site - Site generally inaudible apart from reversing alarms occasionally audible. Background - Heavy traffic on Limerick Rd-intermittently dominant. Cutting and drilling tools from construction works on adjacent dwelling. -Intermittently dominant.
		15:37	62	65	51	78	
	11/07/17	11:50	60	62	50	79	
NSL2 West of Site	10/07/17	12:15	54	53	43	79	Site - Engines idling onsite audible at times. Occasional banging of skips. Background - Continuous and heavy traffic on Limerick Rd. -Intermittently dominant Cutting tools, reversing alarms and hissing of air brakes from construction machinery. -Intermittently dominant.
		15:04	52	52	44	75	
	11/07/17	09:59	49	51	44	69	

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11.7 Assessment of Impacts

The noise emissions associated with the proposed development will be consistent with those from the current activities and will not give rise to nuisance or impairment of amenities at off-noise sensitive locations.

11.8 Residual Impacts

The development, in conjunction with the current operations, will have an on-going, imperceptible, negative impact.

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12 LANDSCAPE & VISUAL IMPACT

12.1 Introduction

This Chapter describes the landscape and provides an assessment of the visual impacts of the proposed development on the landscape and visual amenity, which includes a 'do nothing' scenario. It identifies the mitigation measures that are and will be implemented to reduce the significance of the impacts and assess the residual impacts.

12.2 Methodology

The assessment was carried out in accordance with the guidelines in the document '*Landscape and Landscape Assessment, Consultation Draft of Guidelines for Planning Authorities*' published by the Department of the Environment and Local Government (June 2002). It took into consideration the policies and objectives relating to landscape in the North Tipperary Development Plan (2010 – 2016) and the Landscape Character Assessment of Tipperary (2016).

The objective was to determine the magnitude and significance of the changes to the landscape character and visual setting. Significance depends on the sensitivity of the affected landscape or visual receptor and the magnitude of change that is judged to have resulted from the proposed development. In considering the magnitude and significance of any change the following were taken into account:

- The sensitivity of the view taking into account both the public accessibility of the land where views are possible and the likely sensitivity of that view given the distance, travelling speed, intervening vegetation and land usage;
- The quality and value of the existing landscape;
- The degree to which the proposal will be visible within the surrounding area; and
- Any other changes in the existing landscape e.g. new road junctions.

The study area was defined by the visibility of the site and an analysis of public viewpoints. The choice of viewpoint was influenced by the presence of private residences, key vantage points and the visibility of the existing structures.

12.3 Receiving Environment

Tipperary is a county of huge contrasts. At its heart lies large and fertile plains surrounded by uplands and wetlands. This is a working landscape, ancient and modern, that is dominated by settlements, farms and a dense network of roads.

The lowlands connect the farming counties of north Munster to those of south Leinster. These are also the routes that accommodate the country's busiest rail and road routes. By contrast, the Shannon wetlands and lake shores of Tipperary's north-west as well as the steep, high uplands of the south offer containment, refuge and wildness.

The County Development Plan identifies sensitive landscapes as Primary and Secondary Amenity. These areas, which include, amongst others, Lough Derg, are particularly notable by virtue of their scenic and visual quality and offer significant opportunities for tourism development and rural recreational activities. The site is not in an area designated as Primary and Secondary amenity.

The Landscape Character Assessment defines the sensitivity of a landscape as being a measure of its ability to accommodate change or intervention without suffering unacceptable effects to its character and values. In County Tipperary, the sensitivity of the landscape varies and falls into five classifications;

- Class Zero: Could be improved by change
- Class One: Low sensitivity to change
- Class Two: Moderate sensitivity to change
- Class Three: High sensitivity to change
- Class Four: Special Landscape –Very low capacity for change
- Class Five: Unique –Change would alter the character to the landscape

The site is an Urban and Fringe Area and is in Class 0.

12.3.1 Existing Site

The existing site layout is shown on Figure 12.1. The facility is located on the outskirts of Nenagh Town. It is a moderately scaled waste management facility, with two main buildings aligned south to north occupying the central area portacabin type offices and car parks near the southern boundary (Photographs 1 and 2).




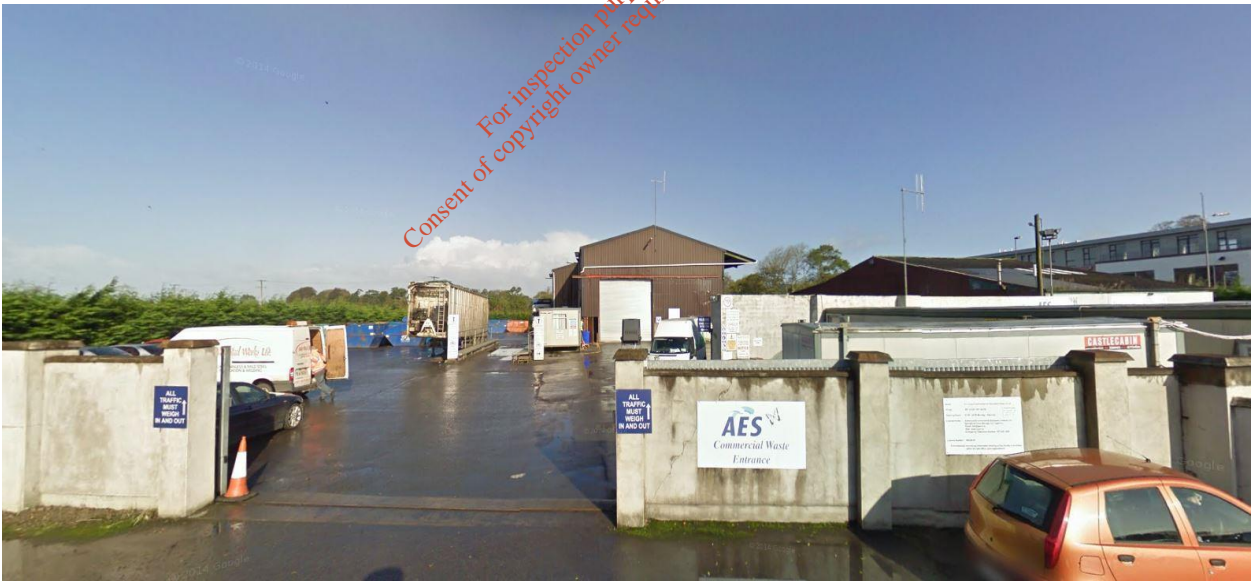
<p>Details:</p> <p> Site Location</p>	<p>CLIENT</p> <p>AES Nenagh</p>		<p>TITLE</p> <p>Surrounding Land Use</p>
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Figure 12.1

The Main Processing Building a portal frame constructed of reinforced mass concrete walls to 2.m, above which are plastic coated cladded walls and roof. There is a weighbridge to the west of the building. (Photograph 3).



Photograph 1 Southern Boundary: Entrance to Civic Amenity Area



Photograph 2 Southern Boundary: Main Entrance

The site is entirely covered by buildings and concrete paving. There in the south of the site and weighbridge to the west of the Main Processing Building. The remainder of the open yards are used for vehicle manoeuvring and parking, storage of skips and wheelie bins and the civic amenity area (Photographs 4 and 5).



Photograph 3 Main Processing Building & Weighbridge



Photograph 4 Civic Amenity Area



Photograph 5 Internal Access Road and Western Elevation of Main Processing Building



Photograph 6 Wheel Bin Storage

12.3.2 Landscape Sensitivity

In general, the sensitivity of a landscape is a measure of its ability to accommodate intervention without suffering an unacceptable or detrimental loss or alteration of landscape character type. On a site specific level, the facility buildings and operations are consistent with other commercial buildings in the area.



Photograph 7 Commercial Unit to the South of the Facility

12.3.3 Visibility

The facility has an industrial appearance, given the layout, building design and the colour and nature of the materials used in the building fabric.

The site is visible from the L1119 road frontage, (Photographs 1 and 2). The treeline along the majority of the boundary with Dark Road effectively screens the site from view from the roadway, but it is overlooked by a three storey office unit in the Commercial Park to the east of Dark Road (Photograph 8).



Photograph 8 Commercial Unit East of Dark Road

12.4 Impacts

The proposed development does not involve either construction works, or material changes to the existing buildings and operations.

12.5 Do Nothing Scenario

If the development does not proceed, the facility will continue to operate in its current condition.

12.6 Prevention & Mitigation Measures

Existing mitigation measures include tree planting along the northern, eastern and western boundaries and a shrubbery at the entrance to the civic amenity area.

12.7 Assessment of Impacts

The proposed development will not result in any material change to the existing buildings.

12.8 Residual Impacts

The development will, in conjunction with the current operation, have a neutral impact on the existing landscape character and visual amenity.

13 HUMAN BEINGS

13.1 Introduction

This Chapter describes the socio-economic activity and land uses in the vicinity of the facility and assesses the impacts of the proposed development on the local population. The assessment considered a 'do nothing' scenario and the impact and residual impacts the development will have on human beings.

13.2 Methodology

The assessment was based on the planning zoning status, the land use in the vicinity of the facility, population density and employment sectors. The information was derived from data bases maintained by the Central Statistics Office, North Tipperary Development Plan (2010 – 2016) and the Nenagh Town and Environs Development Plan (2013 – 2019).

13.3 Receiving Environment

13.3.1 Land Use

The facility is the south western outskirts of Nenagh Town. It is accessed by the R445 Kilcolman Road, which is to the south of the site boundary and connects to the N52. Dark Road forms the eastern boundary and to the east of the road is a partially developed Commercial Park. The lands to the north and west are used for agricultural purposes. A local access road forms the southern site boundary and south of this is a service garage and private residences. The nearest private dwelling is 30 m from the south western boundary on the opposite side of the local road.

13.3.2 Population and Labour Force

In the 2011 census, which is the most recent one for which detailed information is available, Nenagh Town had a population of 8,439. The numbers of people aged 0 – 14 years was 1,746, aged 15 – 24 years was 924, aged 25 – 44 years was 3,016, aged 45 – 64 years was 1,658 and aged 65 years and older was 1,095.

There were 33,325 persons aged 15 years and over in the labour force in North Tipperary and of these, 81 % cent (27,022) were at work. The unemployment rate for North Tipperary was 19.0 per cent which was equal to the national average in 2011. Since 2011 there has been a

significant economic recovery resulting in population growth and a marked reduction in the unemployment rate.

13.4 Impacts

13.4.1 Human Health

While odours do not present a direct risk to health, they can be a significant nuisance and cause of discomfort, which can indirectly affect human health. The facility currently accepts wastes that have the potential to be a source of odour nuisance.

13.4.2 Environmental Nuisance

Facilities that accept and process wastes are potential sources of nuisance (litter dust, noise vermin, insects and birds) that can significantly adversely impair the environment outside the site boundaries if they are not properly designed and operated.

13.4.3 Traffic

Traffic movement to and from waste management facilities can, depending on the size, location and capacity of the local road network, be a cause of congestion that affects local residents and businesses.

13.5 Do Nothing Scenario

If the proposed development does not proceed the current operations will continue and there will be no change to the potential for impacts on human beings.

13.6 Prevention & Mitigation Measures

13.6.1 Human Health

All waste processing is carried out inside the Main Processing Building to minimise the impacts of potential nuisances such as noise, dust and odours. The entrances to the building are provided with doors. The EPA licence includes provision for the installation of an odour control system, if this is considered necessary.

13.6.2 Environmental Nuisances

The only source of dust emissions are vehicle movements during dry periods. The waste transport vehicles do not travel across any unpaved areas and the wheels do not have any debris that can be a source of dust in dry weather.

Daily site inspections are carried out to check for vermin and pests. AES has contracted a specialist vermin control company that provides and maintains external bait boxes and also carries out insect control measures as required. Daily odour and litter inspections are carried out by site-staff.

13.6.2 Traffic

The increase in the amount of waste accepted at the site will result in additional traffic. A detailed Traffic and Transport Assessment (Ref to Chapter 6) has determined that the local road network has the capacity to accommodate the increased traffic movements; however in order to improve road safety the visibility splays to the west of the main entrance will be maintained by cutting back the hedgerow and at the entrance to the civic amenity will be ensured by pruning the planter.

13.7 Assessment of Impact

The mitigation measures that are currently implemented are designed to control odours, dusts, noise and pests and are proven to be effective, with no complaints received from the general public between 2013 and 2017.

13.8 Residual Impacts

The development, in conjunction with the current operations, will have an imperceptible negative impact on human beings associated with noise emissions and traffic movements for the duration of the lifetime of the facility.

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14 ARCHAEOLOGY, ARCHITECTURE & CULTURAL HERITAGE

14.1 Introduction

This Chapter describes the archaeological, architectural and cultural heritage significance of the facility and its environs and assesses the impact of the proposed development including a 'do nothing' scenario and the residual impacts.

14.2 Methodology

The study was based on information derived from the Records of Monuments and Places published by the Department of Arts, Heritage & Gaeltacht and information contained in the North Tipperary Development Plan 2010 – 2016 and the Nenagh Town and Environs Development Plan 2013 – 2019.

14.3 Receiving Environment

The facility is in the outskirts of Nenagh Town and, with the exception of the mature treeline around the site boundary, is entirely covered by buildings and paved yards. There are no known features of archaeological, architectural or cultural heritage located within the site boundary.

14.3.1 *Archaeological and Historical Background*

The Sites and Monuments Records Map and the Registered Monuments Manual do not contain any record of any archaeological feature within the site. There are 42 listed monuments within 1.5 km of the site. The site is not in or adjacent to any Zone of Archaeological Potential listed in the County Development Plan.

14.3.2 *Architectural Heritage – Protected Structures*

There is no record of any protected structure (e.g. medieval structure, church) within the site boundary and the site itself is not in any of the Architectural Conservation Areas designated in the Sligo and Environs Development Plan.

14.3.3 *Cultural Heritage*

There is no record of any ritual and religious associations, riverine and estuarine sites, find spots of archaeological or heritage objects, designed landscapes, natural landscapes with

cultural heritage associations, relic landscapes and folklore associations within the site boundary.

14.4 Impacts

There is no record of any archaeological feature, protected structure or cultural heritage feature on the site. The proposed development does not require any excavation or ground disturbance works and there is no risk of any impacts on any unidentified archaeological features.

14.5 Do Nothing Scenario

If the development does not proceed the facility will continue to operate in its current configuration and the potential for impacts on the archaeology, architecture and cultural heritage will remain unchanged.

14.6 Mitigation Measures

As the proposed development will not have any impact on any archaeological, architectural or cultural feature, mitigation measures are not required.

14.7 Assessment of Impact

The proposed development will not have any impact on any archaeological, architectural or cultural feature.

14.8 Residual Impacts

The development will not have any residual impact on any archaeological, architectural or cultural heritage features.

15 MATERIAL ASSETS / NATURAL RESOURCES

15.1 Introduction

This Chapter describes the material assets on and in the environs of the site. It identifies the potential impacts, describes the proposed mitigation measures and assesses the impacts, including residual impacts. It also addresses a 'do nothing' scenario.

15.2 Methodology

The assessment is based on information derived from the current North Tipperary Development Plan 2010-2016, the Nenagh Town and Environs Development Plan (2013-2019) and the Central Statistics Office.

15.3 Receiving Environment

15.3.1 *Surrounding Land Use and Amenity Value*

Dark Road forms the eastern boundary and to the east of the road is a partially developed Commercial Park. The lands to the north and west are used for agricultural purposes. A local access road forms the southern site boundary and south of this is a service garage and private residences. The nearest private dwelling is 30 m from the south western boundary. The closest designated amenity area is a plot immediately south of the three storey office block in the Commercial Park east of Dark Road.

15.3.2 *Infrastructure*

The local and regional road network and the impact of the proposed development is described in Chapter 6. There is an electricity and mains water supply and a public foul sewer connection.

15.3.3 *Socio-Economic Activity*

There are a number of industrial estates in the Nenagh area including Gortlandroe and Lisbunny Industrial Estates. Nenagh has been identified in the North Tipperary Development Plan as an area with high quality services and employment opportunities, and an important driver for economic growth.

The AES Ltd. facility currently employs approximately 12 staff thereby contributing to employment in the locality and the overall economy of Nenagh. Maintaining waste activities at the site will also ensure the continuation of support for local goods and services provided by the facility.

The facility is the principal waste transfer facility for AES in the Munster region, servicing waste collections from Clare, Limerick City & County, and Tipperary in addition to some parts of Offaly. Domestic waste services include a glass bin and compost bin service in selected areas. In addition AES operates a small civic amenity area that accepts waste from members of the public.

Facility operation benefits local economy, as it minimises waste management costs and benefits the community socially and environmentally by promoting sustainable development, reducing the need for landfills and preventing pollution.

15.3.4 Natural Resource Consumption

Table 15.1 lists the resources used on-site between 2014 and 2016. An energy audit was completed in 2010 and the findings formed the basis for the development of a site specific Energy Management Policy.

Table 15.1 Estimates of Resources Used 2014, 2015 and 2016

Resources	Quantities	Quantities 2016	Quantities 2015
Vehicle Diesel	301.497 Litres	312,160 Litres	316,359 Litres
Electricity	41.00 MWhr	31.08 MWhr	29.97 MWhr

15.4 Impacts

The development will not result in any loss impairment of amenity value or agricultural use. There will be an increase in fuel and electricity consumption associated with the transport and processing of the additional wastes.

15.5 Do Nothing Scenario

If the proposed development does not proceed there will be change to the socio-economic conditions and no increase in resource consumption.

15.6 Prevention & Mitigation Measures

AES implements the nuisance control measures specified in the EPA Licence and also applies resource consumption control measures to minimise usage. These are described in Chapter 4 Site Description, Chapter 10 Air and Chapter 11 Noise.

15.7 Assessment of Impacts

The current operations are not a source of adverse environmental nuisance or impairment of amenities outside the site boundary and the local road network has the capacity to deal with the associated traffic. The activity has not adversely affected the existing economic activities in the surrounding area, nor has it reduced the potential for the future expansion of such activities.

15.8 Residual Impact

The development will have not have any adverse impact on amenity values and socio-economic activities in the locality. It will have a slight negative impact in relation to the consumption of fossil fuels.

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16 INTERACTION OF THE FOREGOING

16.1 Introduction

Earlier Chapters describe the impacts associated with the proposed development and the mitigation measures. This Chapter discusses the significance of the actual and potential direct, indirect and cumulative effects of the changes due to interaction between relevant receptors, which are Human Beings, Air, Noise, Traffic, Ecology and Water. It is based on the physical and environmental impacts of the existing facility and the proposed development on the receiving environment.

16.2 Human Beings / Air / Noise

The proposed development has the potential to impact on human beings from noise, dust, vehicle exhaust emissions and odour. The proposed method of operation has taken account of these emissions and effective mitigation measures, which comply with the requirements of the EPA Licence, have been identified and applied. These measures are described in detail in Chapters 10, 11 and 13.

16.3 Human Beings / Traffic

The proposed change will result in an increase in traffic. However the local road network and junctions have the capacity to accommodate the additional traffic movements and they will not give rise to congestion.

16.4 Climate / Traffic

The development will result in an increase in greenhouse gas emissions associated with the additional traffic movements.

16.5 Surface Water / Ecology

Rainwater run-off from the paved yards, weighbridge and building roofs is collected and directed through a silt trap and oil interceptor system before being discharged to an open drain at the north-eastern site boundary.

The drain is a tributary of the Ardregane Stream, which ultimately discharges into Lough Derg, approximately 5 km to the south of the facility. Lough Derg is an SPA and there is the

potential for contaminants in the run-off to impact on the water quality in the Ardgregane Stream and ultimately the lake.

The design and operation of the existing drainage system incorporates measures to minimise the risk of contaminated run-off in both normal working conditions and in the event of an incident including a fire.

Surface water quality monitoring has established that the run-off from the site does not present a risk to the water quality in the Ardgregane Stream. The proposed development will not result in any changes to either the quality or volume of the rainwater run-off from the site and will not have any impact on either the Ardgregane Stream or the Lough Derg SPA.

16.6 Cumulative Effects

The assessment of the impacts of the proposed development took into consideration the impacts of the existing facility. The noise, dust and surface water surveys were conducted during typical operational hours and the predictive assessments include the impacts of both the existing emissions and those associated with the proposed development.

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Table 16.1 Interaction of Impacts

	Climate	Traffic	Soils & Geology	Water	Biodiversity	Air	Noise	Landscape	Human Beings	Heritage	Material Assets
Climate		√									
Traffic						√			√		
Soils & Geology											
Water					√						
Biodiversity											
Air									√		
Noise									√		
Landscape											
Human Beings											
Heritage											
Material Assets											

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APPENDIX 1

*For inspection purposes only.
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APPENDIX 2

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APPENDIX 3

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APPENDIX 4

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APPENDIX 5

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APPENDIX 6

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APPENDIX 7

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APPENDIX 8

*For inspection purposes only.
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