NON-TECHNICAL SUMMARY

General

This Environmental Impact Assessment Report has been prepared on behalf of, and for the exclusive use of Banagher Chilling Ltd by Panther Environmental Solutions Ltd., with respect to an application for planning permission to Offaly County Council. The following is the wording of the proposed development for which planning permission is being sought:

"We Banagher Chilling Limited intend to apply for permission for development at Boheradurrow and Meenwaun, Banagher, Co. Offaly R42HX24 the development will consist of a single storey extension to existing abattoir of 1061 square meters to include processing rooms, staff changing rooms, offices, increase roof height by 2 meters, extend existing lairage and elevation alterations. In addition the construction of a food processing factory of 4925 square meters with a part first floor of 2299 square meters to include processing rooms, cold store, loading bay, chill rooms, plant rooms, staff changing rooms, staff canteen and administration offices. External works consisting of staff car parking, service yards, new public road entrance, widening of existing public road, effluent treatment compound, water storage tank, gas storage tanks, truck wash bay, integrated constructed wetlands, security hut of 23 square meters, electrical room of 168 square meters, water treatment building of 72 square meters, effluent treatment control house of 30 square meters, all associated siteworks and landscaping works on a site of 19.60 hectares. This application is accompanied by an Environmental Impact Assessment Report (EIAR) and a Natura Impact Statement.

The planning application, EIAR and Natura Impact Statement may be inspected, or purchased at a fee not exceeding the reasonable cost of making a copy, at the offices of the Planning Authority during its public opening hours. A submission or observation in relation to the application may be made in writing to the planning authority on payment of the prescribed fee (€20) within the period of 5 weeks beginning on the date of receipt by the authority of the application."

The proposed development would involve the construction of a WWTP which would be anticipated to exceed the threshold population equivalent as defined under Class 11, Part 2 of Schedule 5 of the Planning and Development Regulations, 2001 as amended: "*Waste water treatment plants with a capacity greater than 10,000 population equivalent as defined in Article 2, point (6), of Directive 91/271/EEC not included in Part 1 of this Schedule."* Therefore, the submission of an EIS / EIAR is required.

The proposed development site is located in a rural, farming area predominately comprised of pastureland, hedgerows and peatland. The nearest settlement to the existing facility is the town of Banagher, located approximately 2.4km north-west of the site. The towns of Birr and Portumna are located approximately 8km and 20km respectively from the facility. Tullamore is the closest large-size town and is located approximately 31.5km to the north-east of the site. A site location map is included in Attachment 2.1.

The site is accessed via the L3010, a local road linking to the R438 road. The R438 road connects to the N62 National Primary Road approximately 7km to the north-east and the N65 National Primary Road some 21.5km to the south-west.

The site, measuring approximately 19.6 hectares, comprises of agricultural fields, an existing abattoir with associated structures, agricultural buildings, areas of previously disturbed ground and field boundaries consisting of hedgerows, treelines and drainage ditches. The Feeghroe Stream travels along the site's western boundary, which connects to the River Shannon via the Rapemills River.

Within the applicant's landholding, there is an established farmyard complex of buildings and an existing permitted abattoir. The existing site layout is included in Attachment 2.2. The existing abattoir facility was managed by Ossory Meats, and has ceased operation circa November 2016. At the time of their operation, Ossory Meats were slaughtering 100 cattle per week, and for a period, the site was also slaughtering horses under licence.

The proposed development would comprise of the refurbishment and extension of the existing abattoir on the site, to allow a maximum cattle slaughter rate of 140 per day. To achieve this, the existing slaughter line would be modified and lengthened within the existing abattoir building. The existing abattoir building would be extended to provide for additional cattle chills, processing rooms, waste-out rooms, offices and staff facilities, in addition to the construction of a meat cutting, packing, blast freezing and cold storage facility with an output of approximately 40 tonnes per day. Other facilities to be constructed would include the associated plant rooms, packaging storage, electrical sub-station, water treatment system and wastewater treatment plant (WWTP). The existing lairage would also be extended, and the livestock yard increased in size.

Slaughtering activities at the proposed facility would typically operate Monday to Friday. However, slaughtering may be undertaken at weekends for reasons such as casualty animals and demand. Upon completion of construction works, it is estimated the proposed development would provide employment for 110 personnel, with working hours varying from 7am to 10pm.

Two steam boilers, fuelled by liquefied petroleum gas (LPG), are proposed as part of the development, each with a capacity of approximately 900kgs per hour.

The refrigeration system would comprise of a primary ammonia (NH_3) system with work areas, chill rooms and packaging rooms refrigerated using a secondary Glycol refrigerant from a central chiller unit.

Should conditions allow, it is proposed that the site's water requirement would be sourced via water abstraction onsite. Water conservation measures have been included as part of the proposed development design. Rainwater harvesting would be implemented, with all roof water collected for use in staff sanitary facilities and site landscaping. The final WWTP design includes for the capture of treated effluent water in a holding tank (grey water tank) to be used in lairage and lorry wash-out.

New stormwater and effluent drainage systems would be constructed. Stormwater from clean-yard areas and car parking areas would pass through a silt trap and Class 1 By-Pass Separator before being directed to a modular underground attenuation system. From here, stormwater would be pumped to a manhole prior to discharge to the Feeghroe Stream.

All process drains, domestic drains and dirty yard surface water drains would be directed to the site's new WWTP, which would comprise of an inlet sump, meva screen, drum screen,

balancing tank, dissolved air flotation (DAF) unit, sludge tank, anoxic tank, two aeration tanks, clarifier, sand filters and an outlet sump. From here, the treated final effluent would be directed to the proposed integrated constructed wetlands (ICWs), comprising of a five-treatment cell system, prior to discharge to the Feeghroe Stream.

The proposed treated effluent emissions to the Feeghroe Stream have been based upon the assimilative capacity of the stream. The assimilative capacity assessment, which accompanies the planning application (Document Ref. PES_AC_19_9201) was used to predict the watercourse's ability to accommodate a treated effluent discharge of BOD_5, COD, Orthophosphate, Nitrogen, Total Ammonia and Suspended Solids from the proposed facility. The assimilative capacity assessment has concluded that the proposed discharge of 250m^3 per day would not, in and of itself, result in the Feeghroe Stream failing to achieve good status.

The expected construction timeframe of the proposed development would be approximately 18 months, with hours of operation from 7am to 7pm Monday to Friday, and 8am to 2pm on Saturdays. The construction phase would provide temporary employment for an estimated 250 people for the duration of construction works. A temporary site compound would be established and would house the temporary offices, equipment and materials storage and construction staff welfare facilities. The temporary site compound would also be used for the storage of fuels and oils required for the various construction plant, in addition to housing waste receptacles.

Human Beings

The proposed development is located within a rural agricultural landscape, sparsely populated, with residential development primarily linearly aligned along the existing road network. A number of large farmsteads and agricultural facilities involved in cattle rearing and beef production are located in the surrounding area of the site. The area also supports a number of commercial developments.

The proposed development would have a positive impact upon the local economy by providing temporary employment for an estimated 250 people during the construction phase, and by providing employment for an estimated 110 people during the operational phase, in addition to indirect employment (haulier contractors, pest control contractors etc.). The creation of jobs would further contribute to the economy of the area through direct spending of goods and services in the Banagher area and surrounds. The development would also strengthen the local economy of the agri-food sector by sourcing cattle from farmers and suppliers within the catchment area.

The proposed development would have a potential nuisance upon human beings during the construction phase due to increased dust and noise emissions. However, the potential impact would be temporary given the transient nature of construction works. Noise and dust control measures would be implemented throughout the construction phase to reduce the potential impact. Therefore, noise and dust would not be considered to pose a significant impact.

During the operational phase, there would be potential for odour generation from the proposed development, particularly from the wastewater treatment process. However, the air quality assessment (Attachment 5.1) undertaken for the proposed development predicted that concentrations of odour would be well below the relevant odour criterion at sensitive receptors. Odour controls would be implemented at the proposed development to minimise

potential emissions, such as the capture and abatement of emissions from the balance tank and sludge holding tank at the onsite WWTP.

Noise generated during the construction and operational phases of the proposed development has the potential to impact upon human beings within the vicinity of the site. During the construction phase, it is not anticipated that there would be any significant impact, on local residences within close proximity to the proposed development. Applicable noise limits have been recommended in order to comply with standards for construction noise. Additional noise impact mitigation measures have been recommended in order to promote good practice in relation not noise, and have been included as part of an outline Construction Environmental Management Plan. No significant additional noise impact would be anticipated during the operational phase of the proposed development. The predicted noise levels for operational site equipment and traffic are likely to be below the existing background levels at all survey locations. These would therefore fall into the **No Observed Effect Level (NOEL)** criteria.

The proposed development has the potential to impact upon traffic volumes in the area, which may subsequently impact upon the generation of noise and dust emissions. While there would be increased vehicle movements during the construction phase, this would be for a limited period of time only and would not be considered significant. During the operational phase, the transportation assessment report prepared as part of the planning application notes that the total traffic generated by the development comprises an AADT of 283 PCUs within a 24 hour period. The report notes that while the local roads within the vicinity of the development are lightly trafficked, the increase in traffic movements due to the development can be considered small. The report concludes that there would be no traffic/transportation capacity, traffic safety or operational issues associated with the proposed development.

The proposed development would not be anticipated to have any significant impact upon the land use of the area, given that the proposed development would be an extension to the existing abattoir facility, and given that the development would be located mainly within agricultural lands, primarily pasture, belonging to the applicant.

The Landscape and Visual Impact Assessment for the development has concluded that the proposed extension, though substantial in scale, is appropriately sited; visually well contained; and, where visible, the design helps it to assimilate with the existing landscape and visual context. The proposed development would result in visual impacts that are very localised and in the lower order of magnitude.

There would be no adverse impacts to human beings due to a deterioration in water quality. During the construction phase, water quality would be protected by the implementation of mitigation measures and through the preparation and implementation of a Construction Environmental Management Plan by the construction works contractor. Standard best practice methods for construction, including construction works within drains would be adhered to at all times.

There would be no deterioration in water quality as treated final effluent values proposed by Banagher Chilling Limited have been based upon the Feeghroe Stream's assimilative capacity and current water quality. The proposed development and planned discharge of final treated effluent to the Feeghroe Stream would not be anticipated to have an adverse impact upon drinking water quality. The overall risk from the planned discharge to drinking water

from the Lough Derg (Portumna) water abstraction point would be considered low, based upon the proposed treatment process, the future planned discharge limits, the level of dilution and the anticipated impact of discharges during normal and abnormal operations. Furthermore, should sludges from the site be directed for landspreading, they would be landspread in accordance with the Nitrates Regulations as a matter of good environmental practice.

Air Quality, Odour and Climate

Katestone Environmental Pty Ltd (Katestone) was commissioned by Panther Environmental Ltd (Panther) on behalf of Banagher Chilling Ltd (Banagher Chilling) to complete air quality, traffic and climate assessments for the proposed beef processing plant. An Odour, Air Quality and Greenhouse Gas Assessment report is included as Attachment 5.1 to this EIAR.

The site is located in a rural area of the midlands in Ireland. Data from similar locations indicate that levels of nitrogen dioxide, carbon monoxide, particulate matter (as PM10 and PM2.5) and benzene are well below ambient air quality standards specified by the EPA and the European Union (EU).

An air quality and climate assessment was conducted that considered the construction phase and operational phase of the proposed beef processing plant.

Construction activities are expected to occur over a relatively short period of time. Potential emissions of construction related air pollutants will be minimised through the implementation of a construction management plan and therefore emissions during construction are not likely to adversely affect air quality.

A comprehensive greenhouse gas assessment of the operational phase of the proposed beef processing plant was conducted. The assessment of GHG generated from operations determined that the impact of the Plant on climate change will be very low in terms of national emissions. The potential vulnerability of the proposed development to climate change has been considered and limited water availability has been identified as potentially having consequences for operations at the site.

Operations of the proposed development will affect traffic in the region. An assessment of the potential change in road traffic emissions has been undertaken using the DMRB methodology. The road traffic assessment found that the proposed development's potential impact on roadside local air quality is negligible. The potential impact of the development on regional air quality was found to be low compared to major regional roads in the vicinity of the proposed development.

The potential impact of the development on air quality was assessed in accordance with recognised techniques for dispersion modelling specified in the EPA's Air Dispersion Modelling Guidance Note (AG4). AERMOD was used to predict ground-level concentrations of odour and other air contaminants across the model domain due to the development. The air quality assessment found predicted concentrations of odour would be well below the relevant odour criterion at sensitive receptors. The air quality assessment found that predicted concentrations of nitrogen dioxide, sulphur dioxide, carbon monoxide, particulate matter (as PM10 and PM2.5) and benzene would be well below the relevant criteria at sensitive receptors.

Odour controls will be implemented at the proposed development to minimise emissions. These will include capture and abatement of emissions from the balance tank and sludge holding tank at the onsite wastewater treatment plant.

The air quality assessment also considered the potential effect of the development on Natura 2000 sites. This assessment found that predicted concentrations of ammonia would be well below the relevant criteria at the Natura 2000 sites located near the proposed development.

Noise

A Noise and Vibration Impact Assessment Report has been prepared by Enfonic Ltd in support of this EIAR for the proposed Banagher Chilling Ltd facility, and is included as Attachment 6.1.

From a noise perspective, the impact from the construction and operation of the site, including the associated increase in traffic, was assessed.

In the first instance, an attended noise survey at several locations which represented nearby residents and the adjacent nursing home was conducted. The measured levels represent the existing ambient noise conditions before the site is developed.

Next, the types of plant, equipment, processes and traffic levels for both construction and operational phases were considered to estimate the noise levels from the site. For the purposes of the noise modelling, it was assumed that all sources were operational simultaneously in order to present a 'worst case scenario'.

Following guidance from national and international standards, the measured and predicted levels were then compared to produce an objective noise impact assessment across the community.

This assessment process demonstrated that the site is not expected to give rise to an adverse impact at any noise sensitive location (including residential dwellings) during either the construction or operational phases.

There are no habitable dwellings close to the proposed development and the expected vibration levels from the construction site are expected to be undetectable at the closest sensitive receptors.

In relation to construction noise, applicable noise limits have been recommended in order to comply with standards for construction noise. Additional noise impact mitigation measures have been recommended in order to promote good practice in relation not noise, and have been included as part of an outline Construction Environmental Management Plan.

Landscape and Visual Impact

The Landscape and Visual Impact Assessment (LVIA) describes the landscape context of the proposed development and assesses the likely landscape and visual impacts of the proposed development on the receiving environment. Although closely linked, landscape and visual

impacts are assessed separately. Production of this Landscape and Visual Impact Assessment involved;

- A desktop study to establish an appropriate study area, relevant landscape and visual designations in the Offaly County Development Plan as well as other sensitive visual receptors. This stage culminates in the selection of a set of potential viewpoints from which to study the effects of the proposal;
- Fieldwork to establish the landscape character of the receiving environment and to confirm and refine the set of viewpoints to be used for the visual assessment stage;
- Assessment of the significance of the landscape impact of the development as a function of landscape sensitivity weighed against the magnitude of the landscape impact; and
- Assessment of the significance of the visual impact of the development as a function of visual receptor sensitivity weighed against the magnitude of the visual impact. This aspect of the assessment is supported by photomontages prepared in respect of the selected viewpoints (Attachment 7.1).
- Incorporation of mitigation measures to reduce potential impacts and estimation of residual impacts once mitigation has become established.

In the interests of a comprehensive appraisal, a 2km radius study area is used for this project. However, there is a particular focus on receptors contained within 1km of the site.

With the exception of a small hill in the north-western periphery of the 2km study area, the terrain in surrounding the site is relatively flat. While no rivers pass through the study area, a small stream known locally as the Feeghroe Stream flows adjacent to the western boundary of the proposal site. Similarly, a small stream flowing in a westerly direction occurs c.600m south of the proposal site and drains into the Rapemills River situated just outside the southernmost boundary of the study area 2.3km from the site at its nearest point. The land use in the immediate vicinity of the site is predominantly contained in pastoral farmlands that are enclosed by dense tree line hedgerows. Large scale exploited peatlands are also present within the wider surrounds of the study area, most notably to the north of the proposal site. With regards to industry within the study area, Meenwaun Wind farm (Ireland's largest operating turbines) occur to the east of the proposal site and a number of farmsteads are scattered throughout the wider study area. The small existing abattoir facility is also situated in the southern corner of the proposal site.

The most notable centre of population in relation to the site is that of Banagher which is situated outside of the study area along the banks of the River Shannon approximately 3km northwest of the site. The immediate context of the proposal site is somewhat sparsely populated containing only a small number of isolated farmsteads and small linear clusters of dwellings. Similarly, the outer portions of the study area are also relatively sparsely populated.

Oriented in a general north south direction, the R438 regional road is situated immediately adjacent to the neighbouring pastoral field just over 200 meters to the west of the proposed site boundary. Extending from the settlement of Banagher in a south-easterly direction, the R439 regional road passes through the southern extents of the proposed development approximately 1.2km from the proposal site. Aside from these two regional routes, a small

network of local roads also traverses through the central and wider study area, the nearest of which is the L3010 local road, which follows the path of the southern site boundary.

In terms of landscape impacts it is not considered that this is a particularly sensitive setting. The wider context is that of a working rural landscape without particular landscape or visual designations in the County Development Plan. This is reflected within the Offaly County Development Plan, as a large proportion of the central study area as been designated as "*Low sensitivity areas*", which are those with the "*capacity to absorb a range of new development".*

There will be physical impacts on the land cover of the site as well as temporary construction related impacts from the movement of heavy machinery and stockpiling of materials, however, the main impacts considered are those relating to post-construction effects on the prevailing landscape character. In this respect, the proposal represents a substantial intensification of a rural/industrial land use that already exists within the site in the form of the much smaller meat processing facility. While there is a thematic relationship between the proposed facility and the previous use of the land, this will primarily be a transition from an area of pastoral farmlands to that of a sizable industrial facility and will represent a marked increase in the intensity of development of the immediate vicinity of the site.

Visual impacts are assessed at 11 no. viewpoint locations representing a range of viewing angles, distances and contexts. All of these are within 2km of the proposed extension to the existing abattoir, the majority of which are no further that 1km from the proposed development site as it is not readily visible from further afield in this flat landscape, which is enclosed by dense hedgerow vegetation and mature tree lines. Pre-mitigation visual impacts range from Imperceptible at the majority of viewpoint locations beyond 500m of the site, up to Moderate-slight for VP2 and VP4 immediately adjacent to the site. The close view of the nearest portion of the development will result in a marked change in the otherwise typical rural scene from both VP2 and VP4. This arises from the physical enclosure of the views as well as the increased scale and intensity of built development. However, the nature of the development is clearly rural industry and the buildings are readily screened / softened by proposed mitigation planting, resulting in 'Slight' residual impacts in both cases.

Overall, it is considered that the proposed extension to the existing abattoir, though substantial in scale, is appropriately sited; visually well contained; and, where visible, the design helps it to assimilate with the existing landscape and visual context. It will result in visual impacts that are very localised and in the lower order of magnitude. Overall, it is considered that such effects are not significant in EIA terms, especially once landscape mitigation proposals have become established.

Traffic and Transportation

A Transportation Assessment Report was prepared by NRB Consulting Engineers Ltd. for the proposed development, included as Attachment 8.1 and summarised in Section 8.

The report assesses the impact of the traffic associated with the proposed development, together with the established traffic on the local road network, for the AM and the PM Peak Hours. The report addresses the adequacy of the existing road network to safely and appropriately accommodate the worst case peak hour vehicular demands associated with the development, in particular the safety and capacity of the proposed vehicular access junction

onto the local road, along with an assessment of the impact on Boherdurrow crossroads. The report also includes an assessment and quantification of the 24 Hour AADT Traffic on local roads.

The assessment notes that during the operational phase of the proposed development, the total traffic generated by the development comprises an Annual Average Daily Traffic (AADT) of 283 Passenger Car Units (PCUs, or car equivalents) within a 24 hour period. The report notes that while the local roads within the vicinity of the development are lightly trafficked, the increase in traffic movements due to the development can be considered small. The report notes that the local road network can easily accommodate the traffic generated, and notes that the access junction and adjacent established road junctions would operate without any issues arising during the selected year of opening and the design year 15 years after opening. The report concludes that there would be no traffic/transportation capacity, traffic safety or operational issues associated with the proposed development.

Biodiversity

A Natura Impact Statement (NIS) has been prepared in support of this application (Document Ref. PES_NIS_19_9201). The Special Area of Conservation (SAC) and Special Protection Area (SPA) sites considered to be within the potential zone of influence of the proposed development are All Saints Bog and Esker SAC (Site Code: 000566), River Shannon Callows SAC (Site Code: 000216), Redwood Bog SAC (Site Code: 002353), All Saints Bog SPA (Site Code: 004103), Middle Shannon Callows SPA (Site Code: 004096), River Little Brosna Callows SPA (Site Code: 004086), Dovegrove Callows SPA (Site Code: 004137) and River Suck Callows SPA (Site Code: 004097), due to hydrological connectivity / potential hydrological connectivity, distances from the proposed development site and / or the potential for ex-situ impacts of the development upon wintering wildfowl.

As discussed in detail within the NIS, and as summarised in Sections 9 and 10 of this EIAR, the proposed development would not be considered to result in any adverse impact to the protected habitats and species of All Saints Bog and Esker SAC, River Shannon Callows SAC, Redwood Bog SAC, All Saints Bog SPA, Middle Shannon Callows SPA, River Little Brosna Callows SPA, Dovegrove Callows SPA or River Suck Callows SPA due to habitat fragmentation or loss, disturbance, reduction in species density or due to the potential introduction of invasive species.

However, it has been determined that during the construction phase, the proposed development has the potential to impact upon the qualifying interests of All Saints Bog and Esker SAC and River Shannon Callows SAC, and the special conservation interests of All Saints Bog SPA and Middle Shannon Callows SPA, due to a potential deterioration in water quality. During the operational phase, the proposed development has the potential to impact upon the qualifying interests of the River Shannon Callows SAC and the special conservation interests of the Middle Shannon Callows SPA, due to a potential deterioration in water quality. Therefore, control measures must be put in place, and are outlined within the NIS and within Section 10.

The proposed development would result in a change of habitat use a the development site, resulting in a loss of improved agricultural grassland (GA1), recolonising bare ground (ED3), hedgerows (WL1) and drainage ditches (FW4) to buildings and artificial surfaces (BL3), and potential scattered trees and parkland (WD5), ornamental / non-native shrub (WS3) and

flower beds and borders (BC4) habitats associated with the proposed site landscaping. A loss of improved agricultural grassland (GA1), wet grassland (GS4), recolonising bare ground (ED3), hedgerows (WL1), bog woodland (WN7) and drainage ditches (FW4) would occur to other artificial lakes and ponds (FL8) habitat and limited sections (comprising of access roads to the ICW system) of buildings and artificial surfaces (BL3) habitat.

The loss of GA1, ED3 and FW4 habitats would not be considered significant, given that these habitats can be considered modified and of low ecological value. While there would be a loss of areas of habitat of local importance (higher value), including WL1, GS4 and WN7, this would not be considered as significant, given that the majority of these habitats would be to facilitate the ICW system, best characterised by "other artificial lakes and ponds" (FL8) habitat, which would be considered as of local importance (higher value) and would add ecological value to the development site.

The ICW system would be densely planted with a selection of native emergent flora species, with the final cell, Cell 5, planted with a mixture of deciduous and evergreen tree species on mounds amongst the emergent wetland plants. It is estimated that approximately 77,500 emergent plant species and 2,500 native tree species would be planted within the ICW system, which would be a considerable positive impact of the development. The ICW system would likely provide wetland habitats for aquatic invertebrates, marginal and aquatic vegetation, amphibians and a range of breeding and wintering wildfowl.

With regards hedgerow / treeline / wood removal, the proposed development would result in a loss of approximately 985m of hedgerow and 200m^2 of bog woodland. A total of nine mature trees, comprised mostly of Ash, are present within the sections of hedgerow scheduled for removal. However, the loss of these areas would not be considered significant, given that approximately 400m of hedgerow along the southern site boundary and 115m along the eastern boundary of the ICW system would be replanted with native species, approximately 2,500 native trees common to the area would be planted within Cell 5 of the ICW system, the landscaping plan includes for the bolstering of hedgerows and treelines with native tree species where required and given that a section of new woodland planting is proposed adjacent to the internal site access to the rear yard.

Where possible, hedgerow / bog woodland removal would not take place during the bird nesting season (1st of March – 31st of August), greatly reducing the potential for mortality. However, it may be necessary to undertake some hedgerow / woodland removal works during the bird nesting season. In such instances, a suitably qualified ecologist would be engaged to carry out inspections for the presence of breeding birds prior to any clearance works taking place. Where nests are present, the ecologist would make a decision as to whether a "Licence to interfere with or destroy the breeding places of any wild animals", is required from the NPWS. Alternatively, the ecologist may establish a suitable buffer zone around an active nest, with removal works rescheduled until chicks have fledged. Where no evidence of nests are found during inspection, hedgerow removal works must be undertaken within three days of inspection.

Of the nine mature trees scheduled for removal as part of hedgerow removal works, four were assessed as having a moderate bat roost potential, due to dense ivy cover. Therefore, measures are proposed in Section 9.8.1 to ensure that the four trees are re-assessed prior to felling or soft-felled under supervision of a suitably qualified ecologist.

Where protected species, such as pine marten, any bat species or the common frog are found during the construction phase of the project, an officer of the NPWS would be notified prior to the resumption of activities.

No rare plant species or protected flora under the Flora (Protection) Order 2015, were recorded within the proposed development area. Therefore, the proposed development would not be considered to impact upon any rare or protected flora species.

No invasive flora species of concern were recorded during the onsite ecological assessments. Given the nature of the proposed development, it is considered that there would be no risk of introducing invasive species during the operational phase. The potential risk of introducing invasive species during the construction phase would be considered low, given that there would be no significant import of materials with the potential to contain invasive flora species and given that soils excavated during construction works would be re-used in site levelling and landscaping where possible. Where materials, such as topsoil or suitable soils for the lining of the ICW cells, may be required to be imported to the site, this would be considered a low risk material, as vector materials containing invasive species are a "controlled waste" and would not be brought onto the site.

Artificial lighting during the construction and operational phases has the potential to negatively impact upon bat species, as illumination can impact upon their roosting sites, commuting routes and foraging areas. During the construction phase, works are not anticipated to be conducted outside of normal working hours, which would considerably reduce the potential impacts upon bat species. Should lighting be required during construction, measures are included within Section 9.8 to reduce the potential impact of light pollution. Operational phase impacts on bats would be associated with permanent lighting associated with the existing slaughtering facility and new proposed development, including the carpark, yard areas and internal road network. No lighting is proposed for the ICW system. In the absence of mitigation measures, operational lighting has the potential to result in an adverse impact upon bat species. Therefore, measures with regards artificial lighting, as outlined in Section 9.8.2, would be required to be implemented.

It is not envisaged that fauna would be significantly impacted upon by the proposed development due to noise generated by the proposed facility or by noise generated from the associated site traffic during the construction or operational phases. The potential generation of noise has been considered in the design of the facility (for example compressors and boilers would be located internally within the facility) and a noise management plan would be put in place for the development to ensure minimal noise pollution outside the site boundary. Construction noise would not be considered to pose a significant risk to fauna owing to the transient nature of works and given that all vehicles where possible would be equipped with mufflers to suppress noise, as is standard practice.

Dust emissions may arise during construction activities, in particular during earth-moving works, which may have the potential to impact upon photosynthesis, respiration and transpiration processes of flora due to the blocking of leaf stomata. However, given the transient nature of construction works and standard working practices including dust control, the potential impact to flora would not be considered significant.

The potential impact of the proposed development upon biodiversity due to a deterioration in water quality is discussed in Section 10.

Water Quality and Aquatic Biodiversity

The entire area of the proposed Banagher Chilling Ltd facility drains to the Rapemills River, predominantly via the adjacent Feeghroe Stream. Areas of onsite field drainage may also be directed to the Milltown Stream.

Baseline water quality assessment were carried out on the Feeghroe Stream, and found that the stream would be classified as being of "bad status" under the Water Framework Directive. Physico-chemical status was found to be of "moderate status", due to elevated levels of Total Ammonia in the water. The macroinvertebrate status of the Feeghroe was found to be of "bad status" and was the limiting factor for this stream. The Small Streams Risk Score (SSRS) determined that the site would be considered "at risk of not achieving good status".

As the majority of the receiving waters for the Feeghroe Stream derive from Mullaghakaraun Bog, it is considered likely that concentrations of Nitrogen and Total Ammonia may be naturally elevated above water quality limits. During field surveys of the stream, substrates were found to be primarily mud and silt, with sections of dense leaf debris and little to no aquatic vegetation. The poor substrates and general slow flowing waters would make the stream an unfavourable habitat.

EPA river quality assessment of the Rapemills River and River Shannon in the vicinity of the site and catchment area indicated moderate ecological conditions in the 2017 round of surveys.

White Clawed crayfish and Brook lamprey were identified as key ecological receptor species which would have the potential to be found within the Rapemills catchment, however, it is unlikely that they would be found within the Feeghroe Stream. Other species of economic interest would include Brown trout and coarse fish species.

The principal risk of impacts to aquatic habitats and biodiversity would be via potential changes to water quality as a result of the proposed development.

The proposed development would include a combined discharge of storm-water and treated trade effluent to the Feeghroe Stream.

The proposed development would not result in any significant changes to the current stormwater run-off from the site. Stormwater from clean-yard areas and car parking areas would pass through a silt trap and Class 1 By-Pass Separator before being directed to a modular underground attenuation system. The proposed surface water drainage system would be designed to SUDS specifications, limiting storm runoff from the site to existing greenfield levels.

As part of the proposed development, a wastewater treatment plant would be constructed, comprising of primary, biological and tertiary treatment stages. The proposed effluent plant would discharge to an integrated constructed wetland (ICW) system and on to the Feeghroe Stream. The proposed effluent plant has been designed in order to minimise the potential for negative impacts of discharges upon the Rapemills River catchment.

The assimilative capacity assessment was used to predict the Feeghroe Stream's ability to accommodate a treated effluent discharge from the Banagher Chilling Facility. The assessment concluded that proposed discharge would not, in and of itself, cause to Feeghroe Stream to fail to achieve good status. It is further detailed in Section 10 of the EIAR that the proposed discharge to the Feeghroe Stream would be unlikely to have a significant impact upon the quality of the Rapemills River, primarily due to the dilution effect of the larger river.

Any trade discharge from the Banagher Chilling Limited facility would be required to be in compliance with a Local Authority Section 4 (Trade Effluent) Discharge Licence in agreement Offaly County Council. Such licencing would require a monitoring of final effluent to ensure compliance with discharge standards.

Due to the water quality protection mitigation measures which would be incorporated into the design and operation of the proposed development (including ensuring adequate bunding of chemicals, provision of precautionary spill kits, and WWTP design), it is not considered that the operation of the Banagher Chilling Ltd facility would pose a significant risk to the quality of the Rapemills River catchment.

During the construction phase of the proposed development, the main potential impact upon water quality would be through the release of suspended solids during soil disturbance works, the release of uncured concrete and the release of hydrocarbons from construction plant. Surface water quality would be protected during the construction phase through the implementation of standard construction mitigation measures, which include the use of appropriate silt control features, the regular maintenance and inspection of construction plant and the appropriate storage of potentially polluting substances. An outline Construction Environmental Management Plan (CEMP) has been prepared for the proposed development which includes measures for the protection of water quality.

Land - Soils, Geology, Hydrology and Hydrogeology

The soils across the site are dominated by peat along the north of the site with the remainder of the site covered in a 'fine loamy' drift with limestone clasts. The subsoils consist of till derived from limestone's with peat present in the North/North West. Topographic high points contain sand and gravels. Depth to bedrock ranges from 4 to 8.5 mbgl.

The Lucan Formation (dark-grey to black, fine-grained limestone) underlies the south east of the site, while the Waulsortian Limestone Formation underlies the remainder of the area. The Lucan Formation overlies the Waulsortian Formation. A geophysical survey completed on site identified the true location of the formation boundaries, indicating it is located in the North West of the site. The closest mapped, most probable location of a fault is 1.10 km south the proposed extension to the existing abattoir, which strikes North West – South East.

An extensive zone of karst is present in the Northwest of the site. A linear karst feature has been identified running in a South West – North East direction, immediately south of the abandoned farm yard. Elsewhere, localised karst anomalies were identified in the south of the site, running parallel to the L3010 road.

Groundwater vulnerability across the site is mapped as moderate with localised zone of low vulnerability mapped in the north west of the site. The limestone bedrock in the area is

classified as a Locally Important Aquifer (LI) - Bedrock which is Moderately Productive only in Local Zones.

It is the intention of Banagher Chilling Ltd to develop a groundwater supply onsite to serve the existing and proposed extension to the abattoir. Two potential targets have been identified for trial well drilling following geophysical surveying. It is estimated that water consumption at the site would be 150-200 m3/d. The Banagher Water Supply Scheme Source Protection Zone is located <500 m to the North West of the proposed extension to the existing abattoir.

The Feeghroe stream, also referred to as the Mountcarteret in the literature, forms the western boundary of the site. The flood risk assessment has determined that the majority of the proposed development site falls within Flood Zone 'C' - Low to Negligible Probability of Flooding. Throughout the site there are several drainage channels/ditches.

During the construction phase the main impacts anticipated are contamination of soils, the Feeghroe Stream and groundwater; activation of karst; and the excavation/storage of soils. These impacts will be mitigated as follows: contamination – silt fences to protect the Feeghroe Stream and the use of designated refuelling areas with bunded fuel tanks to protect soils and groundwater. Karst activation has been mitigated through avoidance at the design/planning stage. Appropriate procedures will be implemented to excavate and store soils.

Throughout the operation phase the following impacts are anticipated: contamination of groundwater, drainage diversions and culvert blockages. Operational impacts on groundwater will be mitigated by bunds, good housing keeping and safe handling procedures. Drainage ditch diversions will be designed to cope with 0.1% Annual Exceedance Probability flow rates, with a 20% increase in flows for climate change. Culvert blockages will be mitigated through quarterly inspections. Operation impacts on the Banagher Water Supply Scheme are unlikely, as the site does not encroach on the Source Protection Zone.

Archaeological, Architectural and Cultural Heritage

Shanarc Archaeology Ltd. has prepared an archaeological, architectural and cultural heritage impact assessment relating to the proposal to extend an existing abattoir, with associated development, in Meenwaun and Boheradurrow townlands, Banagher, Co. Offaly. The assessment has been prepared for inclusion in an Environmental Impact Assessment Report (EIAR) in support of a planning application to Offaly County Council.

The purpose of the chapter is to provide an archaeological, architectural and cultural heritage assessment of the receiving environment, to identify the likely and significant effects on the receiving environment and to propose ameliorative measures to mitigate these effects. The assessment is based on a desk-top study of the receiving environment supported by an on-site inspection.

No known archaeological monuments or protected structures are directly impacted by the proposed abattoir extension, and associated development.

The construction phase will have a likely direct and negative impact on two areas of archaeological potential, townland boundaries AP1 and AP2. AP1 relates to the boundary

between Boheradurrow and Clongawny Beg, and AP2 to the boundary between Boheradurrow and Meenwaun. Townland boundaries may preserve Gaelic *tuath* boundaries.

The construction phase will have a potential indirect impact on a recorded monument (A1), a cropmark of a possible circular enclosure situated 0.53km northeast of the proposed abattoir extension. There is a potential for hitherto unknown sub-surface remains to exist in the vicinity thereof, which would be negatively impacted by excavation and construction works.

Due to the potential presence of unknown sub-surface archaeological remains, to the scale of the overall proposed development, and to the proliferation of monuments in the wider vicinity of the site, it is recommended that pre-construction archaeological investigations in the form of targeted test trenching be undertaken at the site. Archaeological test trenching will assess the likelihood of archaeological remains being present.

For similar reasons, it is recommended that construction phase groundworks be subject to archaeological monitoring. Archaeological monitoring at the construction phase will be informed by the results of pre-construction archaeological investigations.

No operational phase effects or residual impacts have been identified in respect of archaeology, architecture and cultural heritage.

It should be noted that recommendations are subject to approval by the Department of Culture, Heritage and the Gaeltacht.

Material Assets – Agriculture

There would be no significant impacts upon agricultural properties / material assets due to the proposed development.

While the proposed development would result in a loss of agricultural grassland and a limited area of previously tilled land, the loss of this agricultural land would not have an adverse impact upon agricultural assets of the area, given that the lands are wholly within the ownership of the applicant, and given that the proposed development would strengthen the local economy of the agri-food sector by providing employment and by sourcing cattle from farmers and suppliers within the catchment area.

During the construction phase, there is potential for noise and dust to impact upon agricultural material assets. However the potential impact would not be considered significant, given the transient nature of construction works and given that noise and dust control measures would be implemented throughout the construction phase, as discussed in Sections 5 and 6 and as outlined in the Construction Environmental Management Plan.

There would be construction-related traffic during the construction phase of the proposed development. Discussions would take place with local landowners to ensure that construction traffic causes minimum interference with movements of stock and does not hinder farm operations.

The potential for operational noise associated with the proposed development to cause disturbance to livestock within grassland surrounding the proposed site would be considered

low. Animals would quickly become acclimatised to the new noise environment adjacent to the development, as with similar projects such as new roads and motorways.

A transportation assessment has been undertaken as part of the planning application (Attachment 8.1), which notes that the total traffic generated by the development comprises an Annual Average Daily Traffic (AADT) of 283 Passenger Car Units (PCUs, or car equivalents) within a 24 hour period. The report notes that while the local roads within the vicinity of the development are lightly trafficked, the increase in traffic movements due to the development can be considered small.

Material Assets – Utilities

There would be no significant impacts upon utilities due to the proposed development, during either the construction or operational phase.

During construction works, the development would be connected to the local electricity grid network and the mains water supply. Given the scale and transient nature of construction works, the demand on the local electricity and mains water systems would not be considered significant and would not be anticipated to impact upon local power or water supply. Foul water from staff welfare facilities would be collected on-site in designated waste holding containers / port-a-loo units and emptied on a regular basis by a licenced waste contractor.

The construction contractor would liaise with the relevant utilities provider prior to works commencing, with ongoing consultation throughout the proposed development. Where new services would be required, the construction contractor would apply to the relevant utility provider and adhere to the requirements outlined in the connection permit / licence.

During the operational phase, it is anticipated that 922 MWhrs would be required by the site annually. The estimated power requirement would not be considered significant in the overall context of the proposed development, and would not be anticipated to significantly impact upon the local power supply.

It is estimated that the annual consumption of LPG at the site would be 80m^3, which would not be considered significant in the overall context of the proposed development.

The estimated water demand for the proposed development would be between 150 – 200 m^3/day. No significant impact would be anticipated upon the Banagher regional water supply. Should conditions allow, it is hoped that the site's water requirement would be sourced via water abstraction onsite. Water conservation measures have been included as part of the proposed development design. Rainwater harvesting would be implemented, with all roof water collected for use in staff sanitary facilities and site landscaping. The development also proposes to utilise 'grey-water' from the on-site WWTP, to be used in lairage and lorry wash-out.

The estimated final treated effluent discharge for the proposed development would be a maximum of 250 m^3/day. Wastewater would be treated on-site at the new WWTP before discharge to the Feeghroe Stream.

Material Assets - Natural and Other Resources

There are no significant negative effects expected in relation to the use of natural and other resources.

The proposed development would occupy a 102,200 m^2 (approximate) footprint, including the proposed facility, ICW system and hardstand areas, which would result in a land take of mainly agricultural grassland, disturbed ground, sections of hedgerows and drainage ditches and a small section of bog woodland. All of the land take would take place within the applicant's landholding. Excavated soils from the proposed development footprint would be stockpiled for use in reinstatement and landscaping activities where possible, while excavated soils from the integrated constructed wetlands footprint would be used to construct the enclosing embankments around each pond and for use in cell lining where suitable. Any excess soils remaining following reinstatement and landscaping works would be collected by a licenced waste contractor and either reused for reinstatement / landscaping activities at other sites if suitable or disposed of as appropriate.

During the construction stage, the presence of HGVs and small commercial vehicles for deliveries of construction materials and transport of construction workers would be noted. During the operational phase of the proposed development, the total traffic generated by the development comprises an AADT of 283 PCUs within a 24 hour period. The Transportation Assessment report notes that while the local roads within the vicinity of the development are lightly trafficked, the increase in traffic movements due to the development can be considered small. The report concludes that there would be no traffic/transportation capacity, traffic safety or operational issues associated with the proposed development.

It is considered that the proposed development would have no significant impact on mineral resources in the vicinity of the area.

Construction material, when needed, would be brought in from nearby sources such as local quarries where practical.

Material Assets – Waste Management

During the construction phase of the development, construction and demolition waste (commonly referred to as "C&D waste") would be generated at the site, with the main likely waste streams including concrete, bricks, wood, metals, glass, plastic, soils and stones, biodegradable waste, insulation materials and bituminous mixtures. Limited volumes of waste would also be generated at the site compound, including office wastes such as paper and cardboard, in addition to canteen waste.

According to the EPA's "*Construction and Demolition Waste Statistics*" document, C&D waste typically comprises of 75% soil and stones, 12% mineral waste and 5% of metal waste. The estimated volumes of C&D waste anticipated to be generated during the construction phase of the proposed development are detailed in Section 16.6.1 of this EIAR.

During the operational phase of the development, the main likely by-products and wastes that would be generated by site would include blood, effluent and lairage sludge, category 1 material, category 3 material, belly paunch, mixed municipal waste, packaging (including cardboard, plastic, and wood), metals, office waste and food waste. The estimated volumes of

wastes to be generated during the operational phase are detailed in Section 16.6.2 of this EIAR.

During both the construction and operational phases, wastes would be managed in order of priority, in accordance with Section 21A of the Waste Management Act 1996, as amended. Wastes would be segregated as much as possible in order to avoid cross contamination. Where practical, the generation of wastes at source would be reduced through measures such as the efficient ordering and purchasing of materials to reduce surplus materials. Where it is not possible to avoid the generation of wastes, wastes would be sent for recycling or recovery as a priority. The generation of waste for disposal would be minimised as much as is practical, with any remaining waste directed to incineration.

During the construction phase, the construction contractor would reuse materials onsite where possible. In particular, inert wastes, such as concrete and soils and stones, would be used for infilling activities where suitable. Excavated soils would also be used in site reinstatement and landscaping activities where possible, for example in the construction of the earth berm proposed to the front of the facility.

Any hazardous waste generated would be managed in accordance with the Waste Management (Hazardous Waste) Regulations 1998 and 2000. Examples of potentially hazardous wastes include fuels and oils, batteries, paints, adhesives and sealants. Hazardous waste would be stored separately from non-hazardous waste, would be appropriately labelled and would be stored upon bunds where appropriate.

The collection of wastes from the site would be undertaken by suitably authorised waste hauliers, and would only be recycled / recovered or disposed of at suitably licenced waste facilities. The waste contractors would be appropriately licenced, holding the relevant waste collection permit and/or waste licences for the types of waste anticipated to be generated during the construction and operational phases. With regards the collection of organic fertilisers (such as lairage sludge and belly paunch) from the facility, Banagher Chilling Limited would ensure that only hauliers registered on the Department of Agriculture, Food and the Marine (DAFM) Animal By-Products (ABP) Transport Register would be employed.

For each waste movement and for each type of waste, the construction works contractor / Banagher Chilling Limited would obtain a signed waste docket from the waste contractor, detailing the weight, type of material, destination of material and whether the material is going for recycling, recovery or disposal. Copies of the waste contractors' relevant waste collection permits and waste licences would be maintained on file.