ENVIRONMENTAL IMPACT STATEMENT
Addendum No. 1

PROPOSED EXTENSION TO INTEGRATED PIG PRODUCTION FARM UNIT

AT

ANNISTOWN
KILLEAGH
CO CORK

FOR

EOIN O'BRIEN

MARCH 2017
REVISION B
Addendum No. 1 April 2021

ENVIRONMENTAL IMPACT STATEMENT - TABLE OF CONTENTS PAGE

i. PREFACE

THE FOLLOWING FORMS ADDENDUM INFORMATION TO THE SUBMITTED ENVIRONMENTAL IMPACT STATEMENT (DATED March 2017):

THIS ADDENDUM HAS BEEN COMPLETED TO ADDRESS:

- **ADDITIONAL INFORMATION REQUIRED AS DETAILED BY THE E.P.A. IN A FURTHER INFORMATION REQUEST DATED 31st March 2020.**

A ADDENDUM

A.1 Introduction

This document contains additional information requested by the Environmental Protection Agency (E.P.A.) specifically in their letter dated 31st March 2020 relating to licence application reference number P0790-03.

It relates to the Pig Farm at Annistown, KIlleagh, Co. Cork, Co. Cork and EIS dated March 2017, reflects the issues raised in the Further Information request of 31st March 2020 and is submitted to update the E.I.S. in line with the requirements of the 2011 E.I.A. Directive.

This addendum will provide additional information and should be read in conjunction with, or in support of the original E.I.S.

A.2 Outline

The following paragraph outlines how this addendum information is presented.

- The E.I.A. Addendum is structured to address the relevant criteria/headings as detailed in the applicable regulations.
- Where the original E.I.S. is quoted;
    - …….. is taken to mean that the existing text/paragraphs as per the E.I.S. as previously submitted are unaltered and are to be read in conjunction with this Addendum and have not been repeated.
    - Additional text is detailed in bold and **[……]**
    - Deleted text is detailed as follows ~~[……]~~
- Formatting changes have not been highlighted.

A.3 Summary of Updates

Updates that have occurred since the original EIS (Dated March 2017) include the following:

- **Inclusion of Revised Natura Impact Statement.**
- **Inclusion of Ammonia Impact Assessment Report.**
- **Inclusion of Odour Impact Assessment Report.**
- **Commission Implementing Decision (EU) 2017/302 of 15 February 2017 establishing best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for the intensive rearing of poultry or pigs.**

Note to Updates:
While it is acknowledged that S.I. 610 of 2010 has been replaced by S.I. 605 of 2017 EUROPEAN UNION (GOOD AGRICULTURAL PRACTICE FOR PROTECTION OF WATERS) REGULATIONS 2017 as amended, and reference to this legislation is included in the E.I.S. Addendum, this has not specifically been updated throughout the original E.I.S. as this update has no material impact on the E.I.S. as completed as the requirements of this regulation as they pertain to the;

- Pig farm,

are substantially unchanged and have no material impact on the activities existing/proposed to be carried out, and/or the conclusions reached in this E.I.S. Addendum.

NON-TECHNICAL SUMMARY

INTRODUCTION

……..

The EIS was prepared by the following Project Members:-

Dixon Brosnan Environmental Consultants	Carl Dixon MSc / Vincent Murphy Misc.
GES Limited/IE Environmental Engineers	J Keohane MSc. BSc. Cgeol M.I.E.I.
David Morrissey, Environmental Consultant	BSc (Agri), DIP Env. Sc. Archaeology NCEA
Murphy McCarthy Consulting Engineers Limited	Tony Dunlea B.E., C.Eng. M.I.E.I.
Teagasc	Pig Production Development Unit, Moorepark Food Research Centre, Fermoy, Co. Cork

The IEA Licence drawings/documentation, Planning Application, drawings and building details were prepared by Murphy McCarthy Consulting Engineers Limited along with the Traffic Assessment. The main environmental sections were carried out by GES Limited/IE Environmental Consultants, Mr David Morrissey, Environmental Consultant and Carl Dixon, Dixon Brosnan Environmental Consultants. Mr Ciaran Carroll, Head of the Teagasc Pig Development Department provided advice and assistance.

[EIS addendum completed by C.L.W. Environmental Planners Ltd. with supplementary reports from;

- **Irwin Carr Consulting**
- **Whitehill Environmental.]**

1 PROJECT DESCRIPTION [incl. DESCRIPTION OF THE PHYSICAL CHARACRTERISTICS OF THE WHOLE PROJECT AND THE LAND USE REQUIREMENTS DURING THE CINSTRUCTION AND OPERATIONAL PHASES.]

Eoin O'Brien ~~intends to apply for~~ **[has received planning]** Permission to demolish 6 no. buildings consisting of 3 no. fattening houses, weaner house, dry sow/farrowing house, pump house, to construct 8 no. low emission pig houses consisting of 4 no. fattening houses, 2 no. weaner houses, dry sow house and farrowing house. The development also includes an extension to the existing farrowing house, to construct a covered loading bay/yard area, computer room/pump house, store/office building, 5 no. feed bins, 4 no. water tanks, yard area with 2m high perimeter fencing, covered underground pig manure storage tanks, landscaped earth berm to screen the site and construction of additional internal road areas, storm/soiled water collection systems and associated site works for the extension to the existing integrated pig farm **[and is now seeking a licence review to accommodate this development**. **The construction/operation of the proposed farm is to be wholly contained within a site area of 6.35 Ha.]**

Both the new building and replacement buildings for those being demolished will be low emission buildings, which incorporate emission reduction measures. These measures are currently the best available technique for the pig production sector. The proposed storage tank will be underground and will be covered. The storage tanks under the proposed houses will be reinforced concrete tanks. The proposed development will greatly improve the existing situation from an environmental and aesthetic perspective. The other buildings such as a computer room/pump house and store/office building are necessary for the running of the facility. The bins and water tanks will be similar to the existing equipment on site. In order to screen the development, the existing earth berm will be extended and additional earth berms provided on site from the material excavated during construction.

2. [ALTERNATIVES CONSIDERED

Alternative site layouts and designs were considered. The proposed site layout minimises excavation and maximises the screening of the buildings by the proposed and existing earth berms. The optimum depth of tank was decided upon on the basis of air draughts, capacity, emission reduction and costs etc. Generally the most economical and efficient layout for pig production and pig movement was designed for, with a view to reducing environmental impacts, compliance with animal welfare regulations and providing a safe and healthy environment for staff and livestock, while at the same time complying with BAT Requirements.

The existing site has no significant and/or specific environmental constraints which mitigate against the proposed site and/or would support the selection of any alternative site available to the applicant, in preference to the currently proposed site.]

3. [DESCRIPTION OF THE ASPECTS OF THE ENVIRONMENT LIKELY TO BE SIGNIFICANTLY AFFECTED BY THE PROPOSED DEVELOPMENT.]

- **[POPULATION /] HUMAN ENVIRONMENT**

The development site lies in a rural area 1.5km east of Mogeely and 3.5km west of Killeagh. Outside of a small number of dwellings in the locality, the landscape is almost entirely agricultural in character. The site is well screened from local residences due to a combination of topography, hedgerows set back from the public road and the existing earth berm on site. The proposed 1500 sow integrated unit will give direct employment to 9 staff members, including a trained manager. It will also give rise indirectly to another 50 jobs in the pig meat processing, milling and service sectors. Thus creating an additional 5 jobs in the unit itself and an additional 30 jobs in the pig processing and service industries. The development will have a positive impact on human beings from the increased employment it will create and the contribution it will make to food production both directly in the production of pig meat and indirectly through the supply of pig manure as fertiliser for farm lands.

[In addition to same a site specific odour dispersion modelling report has been completed for this farm. Same is included as Appendix No. 3 A and has concluded no significant adverse impact on any local third party residence.]

……

- **[FLORA / FAUNA /] ECOLOGY**

Within the EIS in Section 4.1 an Ecological Screening Report has been carried out as required under the Habitats Directive. The nearest Natura 2000 sites are as follows:- Blackwater River (Cork/Waterford) S.A.C.No 002170 located 13 kilometres to the east, Ballymacoda (Clonpriest/Pilmore) S.A.C. 000077 located 8 kilometres to the south east, Ballycotton Bay S.P.A. 004022 11 kilometres south of the facility and Cork Harbour S.P.A. 004030 located 11 kilometres to the south west. All four Natura 2000 sites consist of harbours and estuary areas.

[While the original] ~~The~~ Screening Report ~~concludes~~ **[concluded]** that Appropriate Assessment (AA), Natura Impact Statement (NIS) and Natura Impact Reports (NIR) ~~are~~ **[were]** not required **[this conclusion has been revised based on updated guidance pertaining to the inclusion of mitigation measures in the screening process. As a result the revised assessment has concluded that as a result of the inclusion of fan ventilation within the assessment, that a Natura Impact Statement has been required and is included as Appendix No. 1 A to this report. Same has been supported by site Specific Ammonia Dispersion Modelling (Appendix 3 B). Notwithstanding the completion of the Natura Impact Statement, this report has arrived \at the same conclusions that ……..]** . There are no environmental designations pertaining to the proposed development site. The site does not form part of any Natural Heritage Area (NHA), Special Protection Area (SPA), Special Area of Conservation (SAC), Statutory Nature Reserve or National Park. None of the habitats noted directly correspond to those protected under Annex 1 of the EU Habitats Directive (92/43/EC). No rare or threatened flora or fauna species were observed on the site, and we note that no internal and external hedges will be removed. Within the Dixon Brosnan Environmental Consultants Report on Fauna and Related Habitats they conclude that any impact on Flora or Fauna will be insignificant, Refer to Appendix 1.

- **[WATER/] HYDROLOGY**

……

All clean water from the buildings **[including roof water and all clean yard water as detailed in the pig manure drainage layout plan contained in appendix 19 A]** will be diverted to a storm water collection system and soakaways. The stormwater system both existing and proposed are on the Storm Water Site Layout Plan ~~Drawing No. 214037-02~~ in Attachment ~~E of the IEA Licence Application~~ **[19A]**. The stormwater monitoring point**[s]** SW1 **[and SW 2 are]** ~~is~~ also shown on the drawing. This will be visually inspected on a weekly basis and observations will be recorded on a storm water monitoring register, in addition to this a storm water sample will be taken from the monitoring chamber on a quarterly basis and the sample will be submitted for Chemical Oxygen Demand (COD) **[or BOD]** laboratory analysis. The result of the analysis will also be retained on file in compliance with the conditions set out in the Industrial Emissions Activity (IEA) / Integrated Pollution Prevention & Control (IPPC) Licence for the facility. Soiled water from routine washing of pig pens **[including all soiled yards as detailed in the pig manure drainage layout plan contained in appendix 19 A]** will be contained in the slatted tanks under the pens.

- **[SOIL / LAND /] CUSTOMER LANDS AND APPLICATION OF PIG MANURE**

The annual production of pig manure from the proposed 1,500 sow integrated unit will be 27,690m³ per annum, see Section 6.2.1. There is demand for 59,394m³ per annum of pig manure for fertiliser by local farmers see Appendix 6. The volume of storage capacity on the site will be ~~30,313~~ **[28,211.2 net of freeboard]**m³ (See Farm Structures Table Appendix ~~20~~**[19A]**). Statutory Instrument ~~610 of 2010~~ **[607 of 2017]** (commonly known as the Nitrates Directive) sets out a minimum capacity of 26 weeks storage for pig production units. The capacity proposed is enough to hold pig manure for 57 weeks which is far in excess of the minimum requirement of 26 weeks.

The pig manure will be applied as fertiliser on farm lands. There is demand for 59,394m³ per annum of pig manure as fertiliser from farmers in the locality of the unit. There is a list of customer farmers provided in Appendix 6 showing their farm codes and the amount of pig manure each farmer requires. The names of the individual farmers are maintained and available to view on the Environmental Protection Agency site register for the facility. The requirements of each farmer has been calculated in compliance with the nutrient limits set out in Statutory Instrument ~~610 of 2010~~ **[607 of 2017]** (i.e. the Nitrates Directive). A record of movement of organic fertilisers form (Record 3 form see Appendix 10) is completed for each farmer documenting the total amount of pig manure received by them. The Record 3 forms are submitted annually to the Nitrates Section of the Department of Agriculture Fisheries and Food and copies of them are retained on file.

- **[CLIMATE] AIR QUALITY & NOISE**

The site is located in a rural area and the local environment is dominated by agricultural activities. An Odour Assessment was prepared in support of the planning appeal and is included in Appendix 3. This report outlines the key issues in relation to air quality and the mitigation measures taken to minimise the effects of odour. **[In addition to same a site specific odour dispersion modelling report has been completed for this farm. Same is included as Appendix No. 3 A and has concluded no significant adverse impact on any local third party residence.]**

These mitigation measures include, ventilation system in the buildings, formulation of specialist feed rations and implementation of Best Available Techniques in the construction of the new buildings. Within the Odour Assessment it concludes that the odorous emissions from the enlarged modernised buildings are not likely to cause nuisance or impair amenity beyond the site boundary.

The main sources of noise on the development are the pigs feeding time and from delivery vehicles. The noise generated on the farm is similar to noise generated on any farm enterprise. Noise levels are so insignificant that they do not require monitoring under the IEA / IPPC License conditions. The buildings proposed will be

low emission buildings and incorporate emission reduction measures, this includes insulation internally throughout the ceilings which reduces the noise levels in the external vicinity of the building.

Thus the measures that have been put in place will ensure that impact/effects of the development on human beings will be minimised. The proposed development will improve the existing situation as they are designed as low emission buildings and the existing buildings to be demolished are 40 years old.

[A site specific ammonia and nitrogen dispersion modelling report has been completed for this farm. Same is included as Appendix No. 3 B and has concluded no significant adverse impact on any sensitive receptor.]

- **LANDSCAPE AND VISUAL IMPACT**

The development is located in an agricultural area, the proposed and existing buildings will and do blend into the surrounding landscape. The development would be similar to a large farm enterprise. The buildings eaves, apex and ridge heights are kept to the minimum height and pitch outlined in the Department of Agriculture farm building specifications.

The development will be landscaped by extending the existing earth berm and provision of trees and shrubs listed in Appendix 11. Thus, there will be no nuisance or loss of amenity. The development will involve excavating for tanks and building foundations. The material excavated will be used to construct earth berms. No hedgerows will be removed as part of the development.

- **[MATERIAL ASSETS /] CULTURAL HERITAGE**

There will be no damage to any site of archaeological **[,architectural]** or historic interest as a result of this development. Disturbance of the landscape will be minimal during the construction period. The site will be suitably landscaped, with the planting of trees etc., in a manner sensitive to the environment in order to fully screen the site and to enhance biodiversity. A shelter belt will be planted on the earth berms using tree and shrub species listed in Appendix 11.

- **TRAFFIC**

The development site is on the northern side of the L3809. This is a local primary route. As mentioned previously the site is 1.5km from Mogeely and 3.5km from Killeagh. The surrounding road network currently caters for the existing facility and other agriculture and local traffic in the area.

The proposed development will generate a maximum of 30 no. vehicles/day. This equates to 4 no. vehicles/hour. The existing road network has a capacity of 470 no. vehicles/hour which is well in excess of the 4 no. vehicles/hour which will be generated. In conclusion, the surrounding road network has sufficient capacity to accommodate additional minor levels of traffic generated. The existing roadway is lightly trafficked and would be typical of any rural area.

[The inter-relationship between the above mentioned factors will not result in any significant adverse impact.

4. A DESCRIPTION OF THE LIKELY SIGNIFICANT EFFECTS OF THE PROPOSED PROJECT ON THE ENVIRONMENT;

The potential of the proposed development, either independently and/or when assessed cumulatively with the existing development, and/or other developments in the area, for adverse impact on environmental parameters resulting from the operation of the development, use of resources, potential emissions, creation of nuisance or management of wastes is negligible, if any, because;

- **of the nature, scale and location of the proposed development well removed from any sensitive receptor,**
- **wastes would be collected and stored appropriately and removed from the site by authorised waste contractors for either disposal or use elsewhere,**
- **all organic fertiliser is to be removed off site by experienced personnel for use in accordance with S.I. 605 of 2017, as amended and,**
- **all soiled water will be collected in dedicated soiled water collection tanks pending its application to the landholding adjoining the site.**
- **Of the mitigation measures to be implemented into the development ands operation of this farm.**

While waste generated in the site would be accumulated and stored temporarily in the site, there would be no disposal or recovery of any waste undertaken on the site.]

5. THE FORECASTING METHODS USED TO ASSESS THE EFFECTS ON THE ENVIRONMENT.

Forecasting relies heavily on the accumulated experiences of current operations on the existing site, operations in similar developments, and on the knowledge that wastes removed from the site for disposal or recovery elsewhere will have negligible impact on the environment around the proposed development.

The applicant/applicant's family have been involved in pig farming for a long number of years and have had no incidents with regard to the effect of their existing enterprise on the local environment. Taking into account that this proposed development will comply with, BAT requirements, the Nitrates directive, the mitigation measures as detailed, and, the existing / proposed E.P.A. licence, the applicant is fully confident that the proposed development will have no significant adverse effect on the local environment.

6. CHARACTERISTICS OF PROPOSED DEVELOPMENT DESIGNED TO PREVENT, REDUCE AND WHERE POSSIBLE OFFSET ANY SIGNIFICANT ADVERSE EFFECTS ON THE ENVIRONMENT.

The following mitigating measures have been proposed to reduce any adverse impact identified:

(i) **Provision of sufficient and safe access to the site and measures to avoid excessive soiling of the public road during construction on the site.**

(ii) **Preservation of existing trees and hedgerows surrounding the site together with sympathetic design and layout so as to screen the installation from obtrusive view and to allow it to be absorbed into the rural landscape. The additional physical embankment and landscaping thereon further screen the farm and help absorb any odours/noise.**

(iii) **Provision of a storm water drainage system to properly collect and discharge to ground all clean rainwater from roofs and clean surfaces.**

(iv) **Provision of soiled water drains to properly collect any effluent or soiled water and divert it to the nearest storage tank.**

(v) **The collection and the removal from the site of all organic fertiliser.**

(vi) **All construction waste to be managed in accordance with the existing E.P.A. licence conditions.**

(vii) **Appropriate collection and removal from the site of waste materials generated on the site. Record and maintain records of all consignments of waste despatched from the site in accordance with the requirements of the EPA Licence .**

(viii) **The collection and the removal from the site of all dead animals and all animal tissues. A small proportion of the pigs maintained on the farm die prematurely. These carcasses are and will be stored in a covered sealed container on site, awaiting collection by an authorised contractor.**

(ix) **Comprehensive cleaning and hygiene routine to minimise potential odour from the site.**

(x) **Specially formulated diets to maximise performance and reduce nutrient excretion.**

(xi) **Proper maintenance and inspection procedures to ensure that all feeding, water supply, and ventilation systems are working to maximum efficiency, ensuring minimal wastage and minimising energy (electricity and gas) consumption.**

(xii) **The applicant is a highly skilled, efficient and competent operator of this farm**

Implementation of the above will ensure that significant effects on the environment will be avoided and the risk of incidents of environmental significance will be near zero.

Part 2

ENVIRONMENTAL IMPACT STATEMENT

2. DESCRIPTION

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2.10 PIG MANURE STORAGE

2.10.1. All pig manure on site will be collected from the animals by underground concrete tanks, built to Dept of Agriculture specifications. A freeboard of 200mm has been allocated to all tanks under slats to contain gasses in compliance with the conditions of the IEA / IPPC licence for the facility. This is included for in the Farm Structures Record Appendix 19. It is proposed that new storage tanks will be provided with a leak detection system.

[In addition to the under slat manure storage tanks additional external converted tanks are available and these will be used to facilitate the frequent removal of organic fertiliser from the pig houses pending transfer off-site in order to comply with the detailes as laid out in the Odour and Ammonia Impact assessments and to comply with BAT requirements, as detailed in Commission Implementing Decision (EU) 2017/302 of 15 February 2017 establishing best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for the intensive rearing of poultry or pigs;

1. BAT CONCLUSIONS FOR THE INTENSIVE REARING OF PIGS

Ammonia emissions from pig houses

BAT 30. In order to reduce ammonia emissions to air from each pig house, BAT is to use one or a combination of the techniques given below. (Selected Technique Shown Highlighted)

	Technique [28]	Animal category	Applicability
a	One of the following techniques, which apply one or a combination of the following principles: (i) reduce the ammonia emitting surface; (ii) increase the frequency of slurry (manure) removal to external storage; (iii) separate urine from faeces; (iv) keep litter clean and dry..		
	1. A vacuum system for frequent slurry removal (in case of a fully or partly slatted floor).	All pigs	May not be generally applicable to existing plants due to technical and/or economic considerations.

]

5. HYDROLOGY

……

5.3 DRAINAGE FROM THE SITE

5.3.1. Uncontaminated roof water from the pig unit **[including roof water and all clean yard water as detailed in the pig manure drainage layout plan contained in appendix 19 A]** is **[will be]** collected via the proposed stormwater collection system, to ~~a~~ **[2 No.]** monitoring point**[s]** identified as SW1 **[and SW 2]** on the site layout plan **[which will then discharge to ground]**. A sample will be taken from ~~this~~ **[these]** point**[s]** quarterly and analysed for COD **[or BOD]** at an independent laboratory. All soiled water from the site **[including all soiled yards as detailed in the pig manure drainage layout plan contained in appendix 19 A]** is diverted to the pig manure storage tanks. A visual inspection of the storm water monitoring point will be made and recorded weekly in compliance with conditions of the IEA / IPPC. License.

……

6 CUSTOMER LANDS AND APPLICATION OF PIG MANURE

……..

6.2 Pig Manure

6.2.1 The annual production of pig manure from the proposed 1,500 sow integrated unit will be 27,690m³ per annum. There is demand for 59,394m³ per annum of pig manure for fertiliser by local farmers see Appendix 6. The volume of storage capacity on the site will be ~~30,313~~ **[28,211.2 m3 (net of freeboard)]**m³ (See Farm Structures Table Appendix 19**[A]**). Statutory Instrument ~~610 of 2010~~ **[607 of 2017]** (commonly known as the Nitrates Directive) sets out a minimum capacity of 26 weeks storage for pig production units. The capacity proposed is enough to hold pig manure for 57 weeks which is far in excess of the minimum requirement of 26 weeks.

……

7. AIR QUALITY & NOISE

7.1 Air Quality

7.1.1 Impact

7.1.1.1. The proposed development will take place in an entirely agricultural hinterland where typical farm odours are to be found and expected. These odours arise from farmyards and lands during the day to day operations. New buildings will be designed with ventilation facilities that are state of the art for the pig industry based on best available technique. The Odour Assessment was prepared in support of the Planning Appeal and it is included in Appendix 3. This report outlines the key issues in relation to air quality. **[In addition to same a site specific odour dispersion modelling report has been completed for this farm. Same is included as Appendix No. 3 A and has concluded no significant adverse impact on any local third party residences.]**

[A site specific ammonia and nitrogen dispersion modelling report has been completed for this farm. Same is included as Appendix No. 3 B and has concluded no significant adverse impact on any sensitive receptor.

…….

- ***11 Effect on Climate / Climate Change***

Climate information is useful for predicting the likely impacts that the farm operation and the application of manure in the area will have upon the residents. Wind direction at the site is critical to odour movements and rainfall is critical factor in the application of manure. The prevailing wind in this area is from the south-west. Rainfall in the local area is c. 700mm -800mm, based on the average for Roches Point 1971-2000.

Large livestock populations and nitrogen inputs to soil generate approximately one-third of all greenhouse gases in Ireland. The amount of *methane* emitted by livestock is a lot higher for ruminants such as cattle and sheep versus non-ruminants such as poultry/pigs. This is as a result of the different digestive systems.

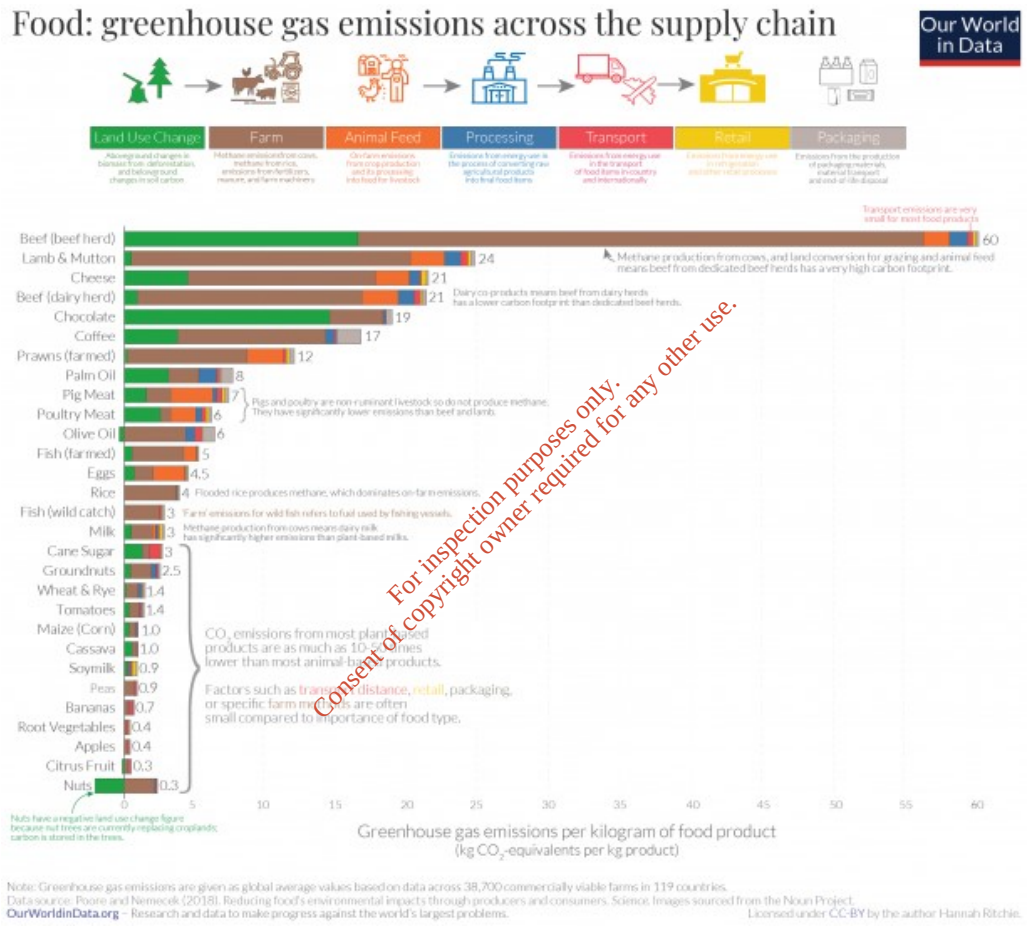

Fig. 11.1 Source http:// https://ourworldindata.org/food-choice-vs-eating-local

As can be seen from the table above, the GHC emissions from mono-gastric animals such as pigs and poultry is significantly less than ruminants, albeit that a majority of the GHG from ruminant agriculture (i.e. CH4) is eventually absorbed by plants etc. to be eaten by ruminants to carry on the cycle (Carbon Cycle).

***N_2O* emissions can be divided into three areas,**

- **Direct from agricultural soils and from agricultural production systems.**
- **Indirect emissions which take place after nitrogen is lost from the field**
- **Emissions resulting from agricultural burning.**

Organic fertiliser from this farm will be used by customer farmers. The fact that the customer farmers utilising organic fertiliser from this farm will allocate it in accordance with the provisions of S.I. 605 of 2017,

as amended, particularly with regard to amounts applied, weather and ground conditions at the time of spreading, and even application, etc., should ensure that emissions generated are kept to an absolute minimum.

All customer farmers will be advised that in order to minimise any potential adverse environmental impact including odour/emissions, and to ensure that they get maximum fertiliser benefit from the organic fertiliser, that all manure from this farm should be stored, managed and applied in accordance with S.I. 605 of 2017, as amended and where possible incorporated/ploughed into the soil as soon as practicable after application.

All practicable steps, such as landscaping, management routines etc., will be planned for and will be taken so as to minimise odour from the site. Its rural setting and location distant from local residences will ensure no effect on human health / population.

Appropriate mitigation measures have been detailed (incl. low protein diets ands frequent removal of organic fertiliser) to minimise any potential effects and ensure compliance with BAT requirements and these are discussed in more detail in the site specific Ammonia and Odour impact assessments as detailed in Appendix No. 3 A.

This development will have no significant adverse effect on Climate / Climate Change.

12 Inter-relationships

As a requirement of the European Communities (Environmental Impact Assessment) Amendment Regulations, not only are the individual significant impacts required to be considered, but so must the inter-relationship between these factors be identified and assessed.

Part II (Second Schedule) of the Regulations requires that the interactions between human health / population, Bio-diversity (Flora and Fauna), Land / Soil, water, air and climatic factors, landscape, material assets and cultural heritage (incl. architectural and archaeological) be assessed. The aspects of the environment likely to be significantly affected by the licensable activity has been considered in detail in the relevant Chapters of the E.I.S. In order to demonstrate the areas in which significant interactions occur a matrix has been prepared, see figure 4.1 below.

Where any environmental element in the top row of the matrix (the receptor) is likely to be affected in any way by any element in the left most column (the impactor), which contains the list of aspects of the environment likely to be significantly affected by the activity these have been indicated. A distinction has been made between positive, negative and neutral impacts in this matrix.

Figure 12.1 Matrix Indicating Inter-relationships between EIA Factors

	Land / Soil	W Water ater	Climate / Climate Change	Landscape & Visual	Noise	Traffic	diversity (Flora and Fauna)	health / population	Cultural Heritage	Material Assets
Land / Soil		N	N/a	N	N/a	N/a	N	Pos	N/a	N/a
Water	N/a		N/a	N/a	N/a	N/a	N	N/a	N/a	N/a
Air & Climate / Climate Change	N/a	N/a		N/a	N/a	N/a	N	N	N/a	N/a
Landscape & Visual	N/a	N/a	N/a		N/a	N/a	N/a	N/a	N/a	N/a
Noise	N/a	N/a	N/a	N/a		N/a	N/a	N/a	N/a	N/a
Traffic	N/a	N/a	N	N/a	N		N/a	N	N/a	N/a
Bio-diversity (Flora & Fauna)	N/a	N/a	N/a	N	N/a	N/a		N/a	N/a	N/a
Human health / population	Pos	Pos	Pos	Pos	N/a	N	Pos		Pos	Pos
Cultural Heritage	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a		N/a
Material Assets	N/a	N/a	N/a	N/a	N/a	N/a	N/a	Pos	N/a	

Neutral	N
Positive	Pos
Negative	Neg
Not Applicable	N/a

12 (1) (i) Discussion – Positive Impacts

The following details the rationale for concluding that there is a net positive impact as a result of the inter-relationship between the factors listed below.

- **Impacts of Land / Soil on Human health / population – the carrying on of the licensable activity will provide for a supply of pig manure which is a valuable fertiliser used by customer farmers to offset the cost of purchasing chemical fertiliser. The supply of organic manure will result in a financial gain to the recipient farmers and therefore a net positive impact of the activity.**

- **Impacts of Human health / population on other factors - The increase in wealth as a result of the operation of the farm would mean that there will be funds available to facilitate improvements through human endeavor in the following factors Land / Soil, water, air & Climate / Climate Change, landscape & visual, Bio-diversity (Flora and Fauna) and cultural heritage. Improvements in Land / Soil can be achieved through the addition of organic fertilizer, improvements in water through improved management and separation of storm and soiled waters, improvements in air through better manure management processes, improvement in Bio-diversity (Flora and Fauna) through the provision of additional site landscaping and maintenance and improvement in cultural heritage by the availability of time and money for the enjoyment of heritage. The impact on human health / population will ultimately result in improvements to material assets.**

12 (1) (ii) Discussion – Neutral Impacts

The following details the rationale for concluding that there is a neutral impact as a result of the inter-relationship between the factors listed below.

- **Impacts of Land / Soil on Water, Landscape & Visual and Bio-diversity (Flora and Fauna) – The organic fertilizer will have a positive overall impact on Land / Soil adding additional nutrients. However there is potential for leaching of these nutrients to water. This threat has been mitigated as all organic manure is allocated to customer farmers for use in accordance with S.I. 605 of 2017, as amended and excessive application of this organic fertilizer will not occur. There will be no increase in the volume of organic fertiliser to be produced on the farm, over and above that previously detailed in the E.I.S..**

  The positive impact on Land / Soils in the customer farmland areas will potentially see a change in landscape through the improvement in field pastures, this may be viewed as a slightly positive impact overall and any changes will be minimal through compliance with S.I. 605 of 2017, as amended, as this organic fertiliser will be used to replace chemical fertiliser. The changes in Land / Soil may result in a reduction in diversity of Bio-diversity (Flora and Fauna) in receiving lands. However all lands proposed for receipt of organic fertilizer will comprise productive agricultural lands for the production of crops or improved grassland and organic manure will not be applied to areas of scrub or other habitats.

- **Impacts of Water on Bio-diversity (Flora and Fauna) – The organic manure generated together with any soiled water on site has the potential to negatively impact on water. A reduction in water quality in the area would have an effect on both local Bio-diversity (Flora and Fauna) and Bio-diversity (Flora and Fauna) in the wider river catchment area. This potential threat has been mitigated through the proposal to allocate all organic fertilizer for use in accordance with S.I. 605 of 2017, as amended. This is further mitigated through the provision of an appropriate on site storm water drainage system. These mitigating measures are sufficient to ensure that there is no negative impact on Bio-diversity (Flora and Fauna) as a result of its relationship with water.**

- **Impacts of Air & Climate / Climate Change on Bio-diversity (Flora and Fauna) and Human health / population – There is a potential threat to Bio-diversity (Flora and Fauna) and Human health / population as a result of any impact on air due to the proposed development. The generation of mal-odour on site may have a slight negative impact on Bio-diversity (Flora and Fauna) and in particular on human health / population, however this is mitigated by the fact that the activity location is in excess of 180-200 m from any existing third party dwelling. Adequate mitigating measures have been described in this E.I.S. to ensure that this threat does not materialise and thereby ensuring the potential impact is neutral.**

  Furthermore the site specific odour and ammonia impact assessments have detailed that, there will be no adverse impact on any sensitive receptors, subject to the mitigation measures proposed.

12 (1) (iii) Potential Impacts and Mitigation Measures

This section presents the significance of potential impacts following the implementation of mitigation measures. The E.P.A. classifies impacts as follows:

Impact	Description
Negative	A change which reduces the quality of the environment.
Positive	A change which improves the quality of the environment.
Neutral	A change which does not affect the quality of the environment.
Temporary	Impact lasting for 1 year or less.
Short-term	Impact lasting for 1 – 7 years.
Medium-term	Impact lasting for 7 – 20 years.
Long-term	Impact lasting for 10 – 50 years.
Permanent	Impact lasting for >50 years.
Slight	An impact which causes changes in the character of the environment which are not significant or profound.
Significant	An impact which by its magnitude, duration or intensity alters an important aspect of the environment.

Interactions between the above environmental factors show the potential effect of the pig farm on the community and its environs. Human health / population are the main impact receptor, Bio-diversity (Flora and Fauna) being the other. The pig farm and its production processes will minimally impact upon the landscape, archaeology, terrestrial, water quality and Climate / Climate Change described under the heading natural environment.

Traffic, air quality, noise, tourism and material assets are the factors that affect the community directly. This pig farm with its associated fertiliser substitution programme will have no significant impact on the rural community.

As previously detailed there will be no intensification of activities on the farm and/or increase in manure volumes, over and above that as detailed in the original E.I.S., thus there will be no increased risk of potential impacts in the area of the farm.]

	Category	Potential Environmental Issues/Effects	Potential Impact ~ Site	Potential Impact ~ Customer Lands	Duration	Mitigation	Residual Impact
Natural Environment	Terrestrial						
	Bio-diversity (Flora and Fauna)	Destruction/loss of habitats.	Neutral	Neutral	Long -term	Existing site of no significant ecological importance. Organic fertilizer to replace chemical fertilizer in accordance with S.I. 605 of 2017, as amended, no impact. Integration with existing farm enterprise. No additional infrastructure.	None
		Eutrophication	Positive	Neutral	Long -term	High quality development and storm water discharge systems. Nutrient balance / organic fertiliser substitution. Organic fertiliser will replace chemical fertiliser. No intensification of activities, over and above E.I.S.	slight
	Fresh Water/ Ground water	Risk of contamination	Neutral	Neutral	Long -term	Fertiliser planning / Buffer Zones / Codes of Good Practice applied (S.I. 605 of 2017, as amended, Customer Farmlands). No intensification of activities, over and above E.I.S.	Slight
	Landscape	Visual impact	Negative	Neutral	Long -term	Site relatively low set in landscape. Low finished floor level relative to average ground level. Well set back from the local road, integrated with and/or to the rear of existing farmyard, with significant screening. No additional infrastructure.	Slight
	Archaeology	Disturbance of archaeological finds	Neutral	Neutral	Long -term	No archaeological finds within this site. Site not located near to, or likely to impact on any archaeological sites. No additional infrastructure.	Neutral
	Climate	Contribution of greenhouse gases	Neutral	Neutral	Long -term	Pig production is less harmful than ruminant production in terms of methane. Organic manure will replace inorganic fertilisers eliminating manufacturing / transport energy use. Integration with existing farming activities. No intensification of activities over and above E.I.S.	None

Human Health / Population	Agriculture and land use	Fertiliser substitution	Neutral	Positive	Long -term	No loss of agricultural land (activity confined to existing site). Improves profitability by reducing costs and improving output. Integration with existing farming activities.	None
	Community	Application of manure	Neutral	Neutral	Long -term	Significant requirement for additional organic fertiliser. No intensification of activities or increase in organic fertiliser production over and above E.I.S.. No additional infrastructure.	None
		Vermin and pest infestation	Neutral	Neutral	Long -term	Control programme to be practiced on farm in line with Bord Bia requirements. Improved infrastructure.	None
		Fire Hazards	Negative	Neutral	Long -term	Fire points / extinguishers / staff training	None
	Traffic	Long-term increase in traffic.	Neutral	Neutral	Long -term	In-ward/out-ward traffic primarily during working hours. Minimise traffic volume by optimising load sizes. Good road infrastructure. No intensification of activities over and above E.I.S.. No additional infrastructure.	None
	Noise	Stock Noise at feeding/moving Feed deliveries, manure removal	Neutral	Neutral	Long -term	Prioritise activities during working hours. Remote Location. No intensification of activities over and above E.I.S..	None
	Air	Generation of Odours	Neutral	Neutral	Short -term	Adherence to Code of Good Practice to Reduce Odour Emissions at Spreading. High standard of housing and management and washing between batches. Buffer zones from sensitive dwellings / areas. No intensification of activities.	None
	Tourism/ Ammenities	Landscape	Neutral	Neutral	Long -term	Site location will result in no adverse impact on the environment.	None
		Water Quality	Positive	Neutral	Long -term	High standard of development/management. Fertiliser planning / Buffer Zones / Codes of Good Practice applied / Integration with existing farming activities. No intensification of activities over and above E.I.S.	Slight
	Material Assets	Reduction in material / residential quality	Neutral	N/A	Long / short -term	Site location will ensure that there is no negative impact on the material assets of the area.	None

APPENDICES

1 A
Natura Impact Statement

2 A/B
Odour and Ammonia Impact Assessments

19 A
Farm Structures and Site Maps Revised.