Curtin Agricultural Consultants Ltd

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Date : April 14TH 2015

Our ref. :

Your ref. :

Planning Section
Cork County Council
Carrigrohane Road
Cork

145815-15/04/2015-Response to Request

REFERENCE NO. 14/05815 - RESPONSE TO LETTER REQUESTING ADDITIONAL INFORMATION DATED 27/01/2015

A Chara

Please find enclosed 6 copies of this response and 6 copies of Organic Fertiliser Register in an envelope marked CONFIDENTIAL.

1. **In relation to point 1 of your letter dated 27/01/2015;**
   - We have provided additional information in relation to the occurrence of qualifying features for which the SAC has been designated in the attached *Revised And Updated NIS Report* (section 1.1 of this report sets out how the report addresses the County Councils requests for additional information);
   - We have attached a *Sediment and Water Pollution Control Method Statement* which details how impacts at the site during construction are avoided;
   - We have provided additional information in relation to the management of the additional slurry on spread lands – see attached *Pig Manure Land Spreading Impact Assessment of Proposed Development at Annakisha Pig Farm (14/05815)*;
   - There is evidence based assessment of the potential for the development to give rise to adverse effects on the integrity of the SAC in the attached *Revised and Updated NIS Report* (section 1.1 of this report sets out how the report addresses the County Councils requests for additional information);
   - There is evidence based assessment of the potential for the development to interfere with the achievement of the conservation objectives of the SAC in the attached *Revised and Updated*

NIS Report (section 1.1 of this report sets out how the report addresses the County Councils requests for additional information);

- There is evidence based assessment of the potential cumulative impacts on qualifying interests of the SAC in the attached *Revised and Updated NIS Report* (section 1.1 of this report sets out how the report addresses the County Councils requests for additional information);

2. In relation to point 2 of your letter dated 27/01/2015;

- A *Sediments and Water Pollution Control Method Statement* (with a draft drawing) is attached which refers directly to Technical Guidelines CIRIA 648 Control of Water Pollution.

3. In relation to point 3 of your letter dated 27/01/2015;

- The Organic Fertiliser Register is attached enclosed in an envelope marked CONFIDENTIAL. The format and information contained within the register is agreed with the EPA. It is the opinion of the Pig Farm that the Council should use this information for its own use only because the information is commercially sensitive and contains sensitive personal information such as the herd number identifiers.
- Section 3 and Table 1 of the attached *Pig Manure Land Spreading Impact Assessment of Proposed Development at Annakisha Pig Farm (14/05815)* provides details of the cropping and fertilizer requirements for the study area where pig manure is applied;
- Section 8 – point c) addresses the request for information on the land required for the existing and additional pig manure produced by the proposed development;
- Section 8 – point d) addresses the request for information on the quantity of pig manure produced by the pig farm in the previous calendar year;
- Section 8 – point e) addresses the request for information on the quantity of pig manure exported from the pig farm in the previous calendar year;
- Section 8 – point f) addresses the request for information on the quantity of pig manure present on the pig farm at the beginning of the previous and current year;

Yours faithfully

Con Curtin

Con Curtin (B.Agric.Sc)

Pig Manure Land spreading Impact Assessment of proposed Development at Annakisha Pig Farm (14/05815)

By

Curtin Agricultural Consultants Ltd

12 The Paddocks

Kells Road

Kilkenny

Date 9th April 2015

1.0 INTRODUCTION

Sections 1 – 7 of this report are an assessment of environmental impacts of land spreading of pig manure from the existing and the proposed development - Ref No 14/05815. Section 8 addresses the request for additional information from Cork County Council dated 27/01/2015.

Annakisha Pig Farm is applying for permission to construct additional housing to accommodate additional pigs at the site in Annakisha North, Donneraile, Co Cork – Ref No 14/05815. County Council requested additional information to allow the Authority to complete appropriate assessment for the proposed development. In order to provide the authority with detailed information on the existing environment and the potential impacts an impact assessment was carried out by Curtin Agricultural Consultants Ltd of the potential environmental impacts from land spreading of pig manure from Annakisha Farm. The proposed development at the pig farm will result in an additional 2,900m3 of pig manure being land spread. The EPA records from the pig unit indicate approximately 9,000m3 are currently being land spread. The pig manure is spread off-site and the existing client farmers for the pig manure are located in the 20 townlands shown in Figure 1.

2.0 METHODOLOGY

The following sources of information were referred to;

1. The extent of the study area was determined from a list of townlands, provided by the pig farm management, where client farmers apply pig manure;
2. Road-side surveys (conducted by Curtin Agricultural Consultants Ltd) in April 2015 were referred to in order to determine land utilisation, soil cover and topography;
3. Corine Land Coverage data (2012) was referred to in order to determine land utilisation;
4. Aerial Photography (Bing Maps 2011 and Google Maps 2012) was used to determine land utilisation;
5. eREPS Ordnance Survey mapping was used to determine location of watercourses and townland boundaries;
6. GSI Ireland digital data was used to determine land vulnerability status and location of karst features;
7. EPA database on licensable intensive agricultural enterprises was referred to and EPA website for water quality status;

3.0 EXISTING ENVIRONMENT

The existing study area is comprised of the 20 townlands as shown in Figure 1 and Table 1. The Awbeg / Blackwater SAC (Site Code 2170) is located along the northern edge and the southern edge of the study area. Approximately 88ha of land in Castlesafron (ID No. 1), Kilcanway (ID No. 18) and Wallstown (ID No. 2) is located directly within or adjoining the SAC.

According to the EPA database there are no other licensable intensive agricultural enterprises within the study area. The nearest significant pig farm (PO387-01) is located in Loghquinn, Castletownroche which is 5.8km north east of the Annakisha Pig Unit and 0.5km south of the study area. There are two other licensable intensive agricultural facilities located 8.8km (PO315-01) and 11km (PO896-01) south east of the study area. There is a chicken house located in Inchakevin (near Awbeg River but outside study area). The existing study area comprises of 3,390ha, 88% of which is agricultural land. The land utilistaion is shown in Figure 2.

Table 1 : Land Utilisation in the Study Area[1]

	Map Unit ID	Gross Map Area (Ha)	Forestry / Woodland (Ha)	Other non-agricultural Areas) (Ha)	Agricultural Land	
					Pasture (Ha)	Arable (Ha)
ANNAKISHA	15	20			20	
ANNAKISHA NORTH	6	244	37	8	199	
ANNAKISHA SOUTH	12	109		4	64	41
BALLYANDREW	3	172	20	9	143	
BALLYBRACK	7	170		2	167	
BALLYVINITER LOWER	20	161	5	32	91	33
BALLYVINITER MIDDLE	16	187	8	9	170	
BALLYVINITER UPPER	13	223	44	4	172	4
CAHERDUGGAN NORTH	5	137	2	8	71	56
CAHERDUGGAN SOUTH	10	190	7	2	163	18
CASTLEKEVIN	14	156		3	66	88
CASTLESAFFRON	1	196	29	5	162	
CLENOR NORTH	8	118	2	2	113	
CLENOR SOUTH	11	88		2	86	
COOLDURRAGHA	9	405	72	3	230	99
CORNAHINCH	4	67		1	65	
KILCANWAY	18	272	31	9		232
LISSANISKY	19	122		3	83	36
MOUNTNAGLE	17	124	26	2	68	28
WALLSTOWN	2	228	6	9	124	89
Total area =>		3390	289	119	2258	723
			8.5%	3.5%	67%	21%

The topography is generally undulating. The highest land in the study area is located at 130m OD and the lowest areas adjoining the Blackwater is 60m OD. The land drainage is shown in Figure 3. There is a single watershed for the study area which runs east – west approximately 1km north of the pig unit (See Figure 3). The watercourses north of this drain to the Awbeg (which in turn joins the Blackwater) and the watercourses south of the watershed drain directly to the Blackwater.

There are two aquifer types in the study area i) regionally important aquifers with Karstified (diffuse) flows and, ii) locally important aquifers containing bedrock which is moderately productive only in local zones. Also shown in Figure 3 are areas of extreme vulnerability and karst features[2]. In summary;

[1] Source : Corine 2012, Aerial Photography, Road side surveys

[2] Source – GSI digital data

- Approximately 50% of the agricultural area is overlying locally important aquifers and 50% is overlying regionally important aquifers;
- Approximately 80% of the agricultural area is categorised as High/Low Vulnerable and 20% is categorised as Extreme Vulnerable;
- Approximately 76% of Extreme Vulnerable land is located on Locally Important Aquifers.

Table 2: Land Vulnerability and Aquifer Type in the Study Area

	Map Unit ID	Agricultural Area (ha)	Aquifer Status		Aquifer Vulnerability	
			Rkd	Ll	E	H
ANNAKISHA	15	20	96%	4%	29%	71%
ANNAKISHA NORTH	6	199	21%	79%	31%	69%
ANNAKISHA SOUTH	12	105	99%	1%	23%	77%
BALLYANDREW	3	143	62%	38%	10%	90%
BALLYBRACK	7	167	0%	100%	0%	100%
BALLYVINITER LOWER	20	124	64%	36%	1%	99%
BALLYVINITER MIDDLE	16	170	0%	100%	15%	85%
BALLYVINITER UPPER	13	175	0%	100%	11%	89%
CAHERDUGGAN NORTH	5	127	70%	30%	48%	52%
CAHERDUGGAN SOUTH	10	181	0%	100%	0%	100%
CASTLEKEVIN	14	153	100%	0%	5%	95%
CASTLESAFFRON	1	162	84%	16%	50%	50%
CLENOR NORTH	8	113	0%	100%	0%	100%
CLENOR SOUTH	11	86	46%	54%	74%	26%
COOLDURRAGHA	9	329	27%	73%	56%	44%
CORNAHINCH	4	65	86%	14%	5%	95%
KILCANWAY	18	232	57%	43%	26%	74%
LISSANISKY	19	119	100%	0%	4%	96%
MOUNTNAGLE	17	96	83%	17%	41%	59%
WALLSTOWN	2	213	84%	16%	6%	94%

There are two EPA monitoring points on the Awbeg that are relevant to the study area; Labbavacun Bridge, 550m north of Castleaffron (No. 1 - on the River Ogeen) and Ballynamona Bridge at the northern edge of Wallstown (No. 2). The water quality at both of these sites is high and good respectively, however the Awbeg is rated poor quality overall on the EPA database. There are three EPA monitoring points on the Blackwater that are relevant to the study area; Mallow town, 3,000m south west of Ballyviniter Lower (No. 20), Ballymagooly 1,000m south of Lissanisky (No.19) and Killavullen Bridge, 1,500m south east of Kilcanney (No 18). The water quality at these sites is good quality, however overall the Blackwater is rated moderate quality on the EPA website. The EPA website identifies watercourses in the study area (including the Awbeg and Blackwater) as at risk of not meeting good status for the Water Framework Directive.

4.0 POTENTIAL SIGNIFICANT IMPACTS FROM LAND SPREADING PIG MANURE

The existing pig farm produces approximately 9,000m3 of pig manure per annum and the proposed development will increase this by approximately 2,900m3; so that approximately 12,000m3 in total is produced each year. This organic manure is not spread on the site of the pig farm. It is land spread on

farms located in the study area. The potential environmental impacts from land spreading the pig manure are discussed under three heading;

4.1 Potential Impacts on Surface Water

Organic manure can potentially contaminate surface waters. Direct contamination could occur if;

- Organic manure is spread directly on to watercourses or adjoining watercourses in conditions conducive to run-off (e.g. waterlogged soils or steep slopes);
- Organic manure is spread at a rate per hectare which exceeds the hydraulic capacity of soils leading to run-off;
- Organic manure is stored in leaking tanks.

Where organic manure contaminates surface waters the quality will deteriorate. Given that the current status of the Awbeg and Blackwater rivers this must be avoided.

4.2 Potential Impacts on Groundwater

- Where organic manure is spread directly on to karstic features there is a risk of groundwater enrichment due to the leaching of nutrients or the direct contamination of the groundwater;
- Direct contamination of wells and / or springs could lead to a contamination of ground water;
- Storage of organic manure in leaking tanks could contaminate ground water;
- Gradual enrichment of soils will lead to increased nutrient losses (Nitrates & Phosphates) to ground water.

Contamination of ground waters must be avoided.

4.3 Potential impacts on Natura/SAC sites

The surface waters of the study area drain into site 2170.

- Where organic manures contaminate surface waters within the SAC or surface waters that drain into the SAC there will be a deterioration of water quality at the SAC site;
- Where organic manures contaminate ground waters there is a potential impact on the surface water quality at the Natura site when these surface waters are re charged from aquifers;
- Application of organic manures on the land within the Natura site may lead to enrichment of soils in the SAC and consequently may have unforeseen impacts flora and fauna within the SAC.

Negative impacts on the SAC / Natura sites must be avoided.

5.0 ASSESSMENT OF ACTUAL IMPACTS CONSIDERING MITIGATION MEASURES

5.1 Assessment of Actual Impacts on Surface Water

a) This assessment has identified potential risks if the pig manure is applied in a manner that contaminates surface waters. Si 31 of 2014[3] contains specific statutory measures applicable on farms within the study area, relating to the management of organic manure, to avoid impacts on the surface waters within the study area. In particular Articles 17, 18 and 19 of Part 4 of the regulations specifically apply to the land spreading of pig manure from the Annakisha Pig Farm.

   i. Article 17 (2) (f) states; - *Organic fertiliser or soiled water shall not be applied to land within 5m of any surface waters ...*
   ii. Article 18 (2) (a – c) states; - *Organic fertiliser shall not be applied to land in any of the following circumstances ;*
      a) *The land is waterlogged;*
      b) The land is flooded or likely to flood;
      c) The land is snow-covered or frozen;
      d) heavy rain is forecast within 48 hours, or
      e) *The ground slopes steeply and there is a risk of water pollution having regard to factors such as surface runoff pathways, the presence of land drains, the absence of hedgerows to mitigate surface flow, soil condition and ground cover.*
   iii. Article 19 (1) (a – c) states - *the application of fertiliser to land is prohibited during the periods specified in Schedule 4 ie 15 October to 12 January in the case of the application of organic fertiliser (other than farmyard manure).*

b) The watercourses within the study area were identified from site surveys and from 1:2500 ordnance survey mapping (i.e. watercourses with a direction arrow). When a 5m buffer is allowed at each side of the watercourse the land area available for land spreading is reduced by approximately 20ha (2.5ha of arable and 17.5ha of pasture) – this area reduction (0.7% of agricultural area) does not significantly impact on the land spreading capacity of the study area.

c) The assessment identifies risks if pig manure is applied at rates per hectare which exceed the hydraulic capacity of the soil. This is prevented by adhering to the conditions in point a) ii. above and by adhering to Article 16 (1) of Si 31 of 2014 which restricts application rates to crop requirements (with a 3kg/ha derogation allowed for pig manure until 2017). The P index of the study area is P-index 3. Therefore application rates on pastures will be on average 17.5m3/ha[4] (with a maximum rate of 24m3/ha) and application rates on arable ground will be 35m3/ha[5]. These application rates will not exceed the hydraulic capacity of the soils in the study area (subject to avoiding water logged soils);

d) The pig unit is an EPA licensed facility and its tanks and pipelines are integrity tested every 5 years. This has been completed to the satisfaction of the Agency and therefore the tanks are not leaking and there is no threat to surface waters from the slurry storage tanks. New tanks will be built to Department of Agriculture specifications;

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[3] Statutory Instrument 31 of 2014 European Union (GOOD AGRICULTURAL PRACTICE FOR THE PROTECTION OF WATERS) REGULATIONS 2014.

[4] Si 31 of 2014, Table 12; P-index 3 – 11-16kg P /ha (plus 3kgs allowed as per table 22) will be supplied in 17.5 - 24m3/ha.

[5] Si 31 of 2014, Table 17; P-index 3 – cereals - 25kg P /ha (plus 3kgs allowed as per table 22) will be supplied in 35m3/ha.

e) The slurry storage capacity of the proposed development is over 52 weeks. Having adequate surplus storage is the most effective way insuring that Article 18 & 19 of the regulations are adhered to.

f) The topography of the study area is very even and no slopes were observed in the agricultural area which would give rise to run-off.

Therefore it is the conclusion of this assessment that, given the relatively even topography, quantity and quality of land available for land spreading and the surplus slurry storage at the pig farm; the application of the statutory national legislation is sufficient to insure that there is no impact on the surface waters in the study area from land spreading pig manure.

5.2 Assessment of Actual Impacts on Ground Water

a. This assessment has identified potential risks to ground waters if pig manure is applied directly on karst features and areas where soil cover is not continuous – particularly in areas identified as having extreme vulnerability. Si 31 of 2014 contains specific statutory measures applicable on farms within the study area, relating to the management of organic manure and application of this manure near Karst features. In particular Article 18 of Part 4 of the regulations specifically apply to the land spreading of pig manure from the Annakisha Pig Farm.

    i. Article 17 (2) (e) states; - *Organic fertiliser or soiled water shall not be applied to land within 15m of exposed cavernous or karsified limestone features (such as swallow-holes and collapse features)*

The main Soil Parent Material in the study area is Sandstone Till and Shales (TNSSs). There is an area classified as Extreme vulnerable as shown in Figure 4 which accounts for approx. 20% of the agricultural area. The agricultural land was surveyed and there is continuous soil cover with a few minor exceptions. The karst features from the GSI database and from observations were mapped. Approximately 1 hectare of land would need to be excluded around these 13 features – this will not have a significant effect on the availability of land for the pig manure.

b. This assessment has identified potential risks to ground waters if pig manure is applied directly on top of or in close proximity to bore wells. Si 31 of 2014 contains specific statutory measures applicable on farms within the study area, relating to the application of organic manure near bore wells. In particular Article 17 of Part 4 of the regulations specifically apply to the land spreading of pig manure from the Annakisha Pig Farm.

    i. Article 17 (2) (c) states; - *Organic fertiliser or soiled water shall not be applied to land within 25m of any borehole, spring or well used for the abstraction of water for human consumption ....*

And additional buffers are specified for public / group water supplies.

Within the study area several private bore wells have been identified in close proximity to the pig farm. However this assessment does not have information on the locations of private wells within the study area. This information would be available to land owners and farmers. Most private wells are located near dwelling houses and farm yards. These houses and yards were mapped using aerial photography and road

side surveys. In addition wells noted during the surveys were noted and the GSI data base on bore wells was referred to. In total, 336 potential well sites were mapped and a 25m buffer around each was created using GIS software. The total area within these buffers is approximately 55ha (45ha pasture / 10ha arable). Excluding this area from the land spreading would reduce the area available for pig manure by 2% - which would not have a significant effect.

c. This assessment has identified potential risks to ground waters if pig manure leaks from slurry storage tanks on the Pig Farm. The pig unit is an EPA licensed facility and has to have its tanks and pipelines integrity tested every 5 years. This has been completed to the satisfaction of the Agency and therefore the tanks are not leaking and there is no threat to ground waters from the slurry storage tanks.

d. This assessment has identified potential risks to ground waters if pig manure fertiliser results in an increase in soil N and P. The existing annual fertiliser requirement for the study area is approximately 290,000kgs of chemical N and 43,000kgs of chemical P[6] - this is a conservative estimate. Without the availability of pig manure this requirement will be filled with chemical fertiliser. Making pig manure available to farmers in the study area at a competitive price area will allow farmers to replace the chemical fertiliser. Farmers are required by the statutory instrument Si 31 of 2014, Article 16 (1) to apply fertilisers (whether organic or chemical) in a manner that minimises or prevents the application of pig manure fertiliser in excess of crop requirements or at levels to maintain soil P levels at P-index 3. This will prevent enrichment of soils. The proposed development will supply 60,000 kgs of N and 9,600 kgs of P[7] per annum in 12,000 m3 of pig manure - which has to be used to replace chemical fertiliser. This will replace approximately 20% of chemical fertiliser requirement.

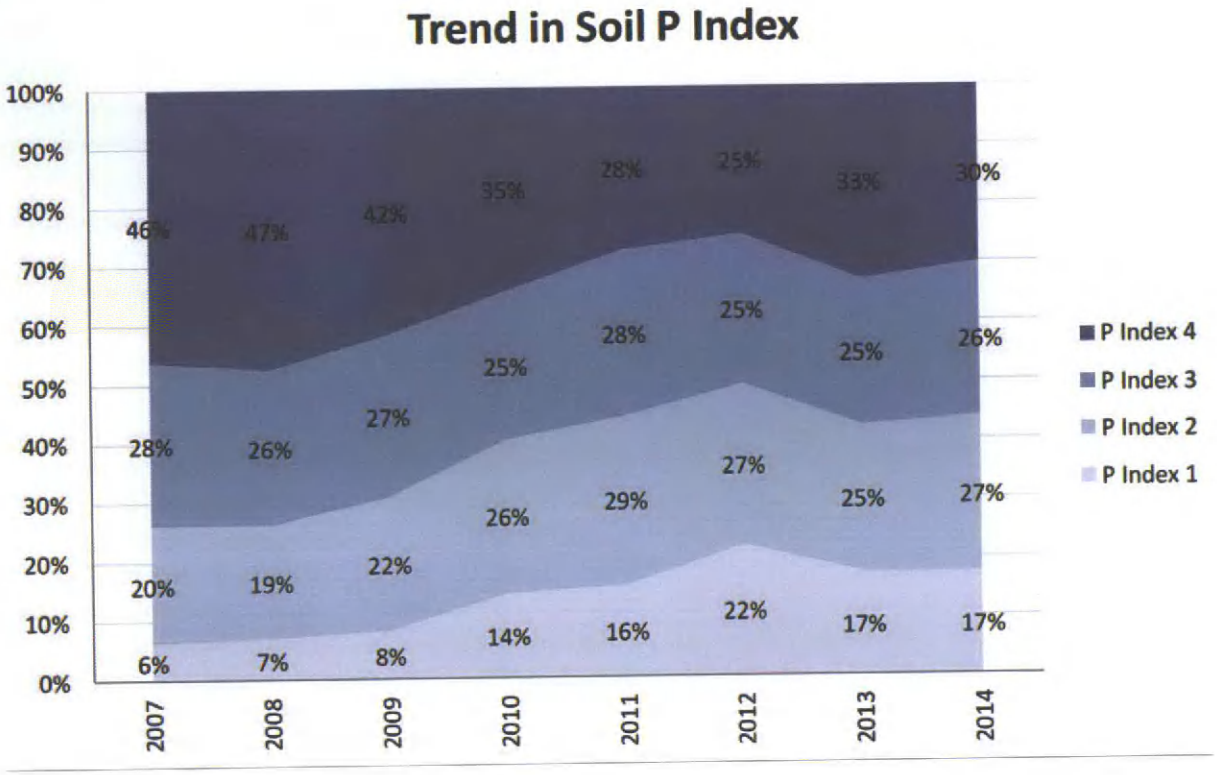
There is evidence from Teagasc, based on soil sample results from 2007 – 2014, that on a national basis the level of soil P is decreasing. Figure 5 below shows that the percentage of P-index 1 & 2 soils is increasing and P index 4 is decreasing.

Therefore it is the conclusion of this assessment that, given the quantity and quality of land available for land spreading and the statutory restrictions that apply to the application of pig manure, there is no impact on the ground waters in the study area from land spreading pig manure.

[6] Si 31 of 2014, Table 12, 13, 16 & 17 assuming a grassland stocking rate of <85kgs / ha – 2,258ha of grass @ 85kgs & 11kgs of N and P; and 723ha of arable @ 135kgs & 25kgs of N and P.

[7] As per Si 31 of 2014, Table 9.

Figure 5: Teagasc Data showing reducing soil-P trends



6.0 ASSESSMENT OF ACTUAL IMPACTS ON NATURA/SAC SITES

a) There will be no impacts on the surface waters that drain into the Natura/SAC site 2170 (Awbeg/Blackwater) as per points 5.1 (a – f) above.

b) There will be no impacts on the ground waters that recharge into the Natura/SAC site 2170 (Awbeg/Blackwater) as per points 5.2 (a – d) above.

c) To avoid any direct impacts on the Natura Site pig manure will be excluded from agricultural areas within the Natura/SAC. There is 53ha of pasture and 35ha of arable land in the SAC which combined make up 3% of the agricultural land area.

Therefore it is the conclusion of this assessment that, given the avoidance of impacts on surface and ground waters and avoidance of spreading organic manure on the SAC/Natura sites, there is no impact on the SAC/Natura Sites in the study area from land spreading pig manure.

7.0 Conclusions

a) Based on the proposed development producing 12,000m3 of pig manure; 2,814 ha of agricultural land in the study area and an average application rate of 22.5[8] m3/ha the

[8] 2,891ha of agricultural land less 20ha buffer strips on watercourses, less 55ha potential buffer zones around bore wells less 1ha buffers around karst features = 2,814ha; 2,194ha pastures @ 11 + 3 kgs/ha = 17.5m3/ha and 710ha arable @ 25 + 3 kgs/ha = 35 m3/ha => average application / ha to meet P requirements = 22.5m3.

proposed development will supply the phosphorous fertiliser for approximately 535ha of land (approx. 20% of the available land in the study area).

b) There will be no impact on surface waters due to land spreading pig manure from the proposed development because there is a statutory requirement;
   - to apply the pig manure to avoid run-off;
   - to maintain a 5m buffer from watercourses; and
   - to not apply from October 15th to January 12th.

   Also;

   - The pig farm has 52+ weeks slurry storage to insure that slurry does not have to be applied in unsuitable weather conditions;
   - There are no steep slopes in the study area;
   - The slurry storage tanks at the Pig Farm are leak-proof;
   - The pig manure is applied at maximum rates which supply crop requirement.

c) There will be no impact on ground waters due to land spreading pig manure from the proposed development because;
   - there is a statutory requirement that the pig manure is applied at maximum rates which supply crop requirement or maintain soil P levels at P-index 3, thus insuring soils do not become enriched with nitrates and or phosphorous;
   - there is a statutory requirement that the pig manure is not applied 25m from a bore well;
   - The slurry storage tanks at the Pig Farm are leak-proof;

d) There will be no impact on SAC/Natura sites because;
   - The surface waters draining to the Awbeg and Blackwater will not be affected by land spreading pig manure;
   - The ground waters re charging into the Awbeg and Blackwater will not be affected by land spreading pig manure;
   - Pig Manure will not be spread on lands within the Natura/SAC boundary.

e) There is adequate demand for pig manure from farmers within the study area for the existing pig manure. The proposed increase in production will also be used by farmers within the study area because the proposed development will produce just 20% of the fertiliser required for the study area. According to statutory regulations pig manure can only replace the chemical fertiliser required for crop growth – it cannot be used in addition to the chemical fertiliser required for crop growth.

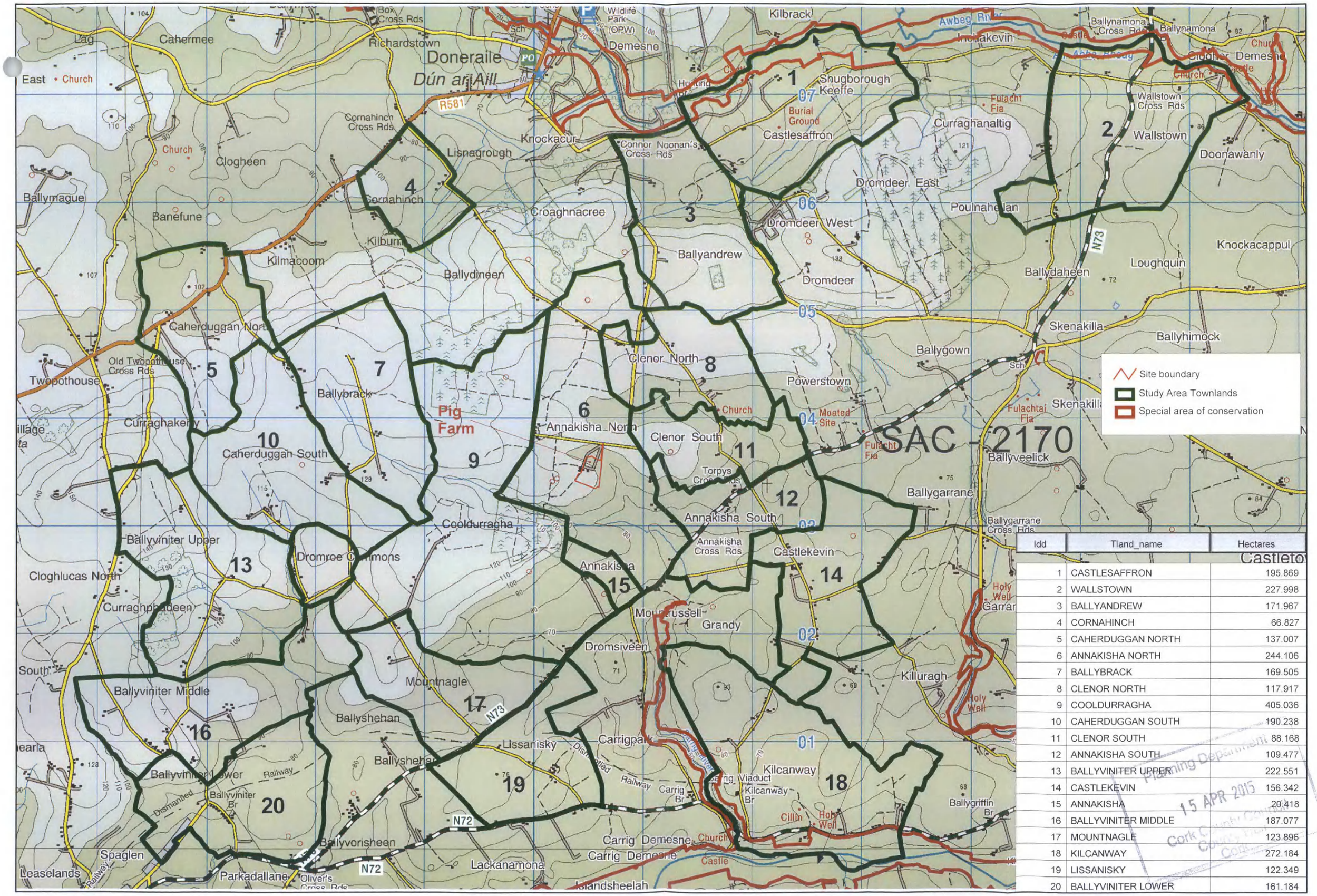
8.0 Answers to request for additional information dated 27/01/2015

a) A copy of the organic fertiliser register/record 3 record of slurry movement is attached in correspondence marked confidential;
b) Details of the cropping in the study area is supplied in section 3 and Table 1 of this report;
c) The proposed development (12,000m3) can supply the P fertiliser on approximately 535ha. The additional 2,900m3 pig manure produced can supply the fertiliser P for 130ha of land within the study area;
d) The quantity of pig manure produced in 2013 and 2014 is approx. 9,000m3 and 9,000m3 respectively;

e) The quantity of organic fertiliser moved of site according to the record 3 in 2013 and 2014 is approximately 8,475 m3 and 6,800m3 respectively;

f) The opening quantity of pig manure in 2013 and 2014 is approx. 4,000m3 and 4,500m3 respectively. The closing quantity of pig manure in 2013 and 2014 is approx. 4,500m3 and 6,750m3 respectively.

Figure 1 - Location of Slurry Landspreading Assessment



Idd	Tland_name	Hectares
1	CASTLESAFFRON	195.869
2	WALLSTOWN	227.998
3	BALLYANDREW	171.967
4	CORNAHINCH	66.827
5	CAHERDUGGAN NORTH	137.007
6	ANNAKISHA NORTH	244.106
7	BALLYBRACK	169.505
8	CLENOR NORTH	117.917
9	COOLDURRAGHA	405.036
10	CAHERDUGGAN SOUTH	190.238
11	CLENOR SOUTH	88.168
12	ANNAKISHA SOUTH	109.477
13	BALLYVINITER UPPER	222.551
14	CASTLEKEVIN	156.342
15	ANNAKISHA	20.418
16	BALLYVINITER MIDDLE	187.077
17	MOUNTNAGLE	123.896
18	KILCANWAY	272.184
19	LISSANISKY	122.349
20	BALLYVINITER LOWER	161.184

Figure 2 - Land Utilisation

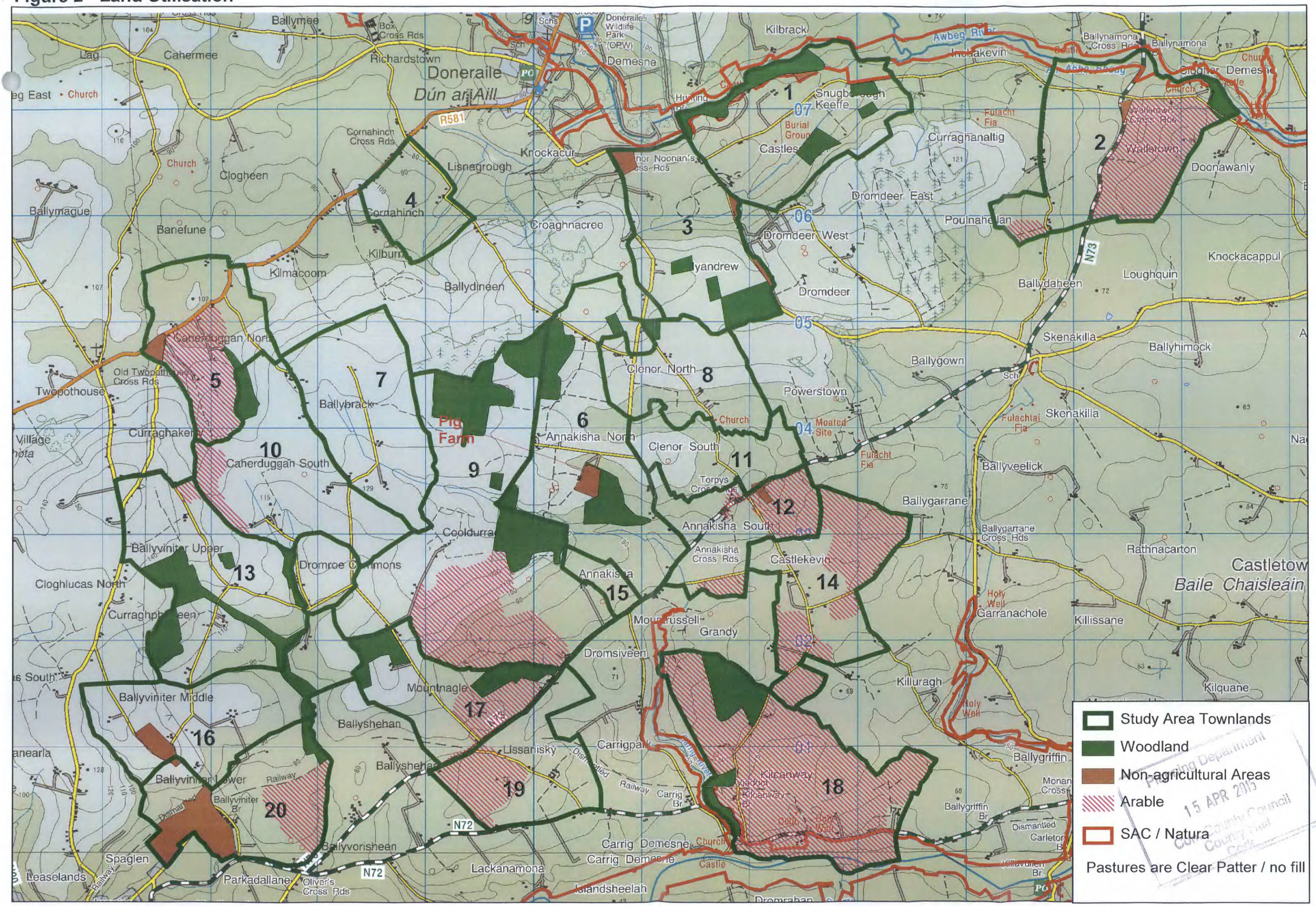


Figure 3 - Location of Watercourses and Rivers

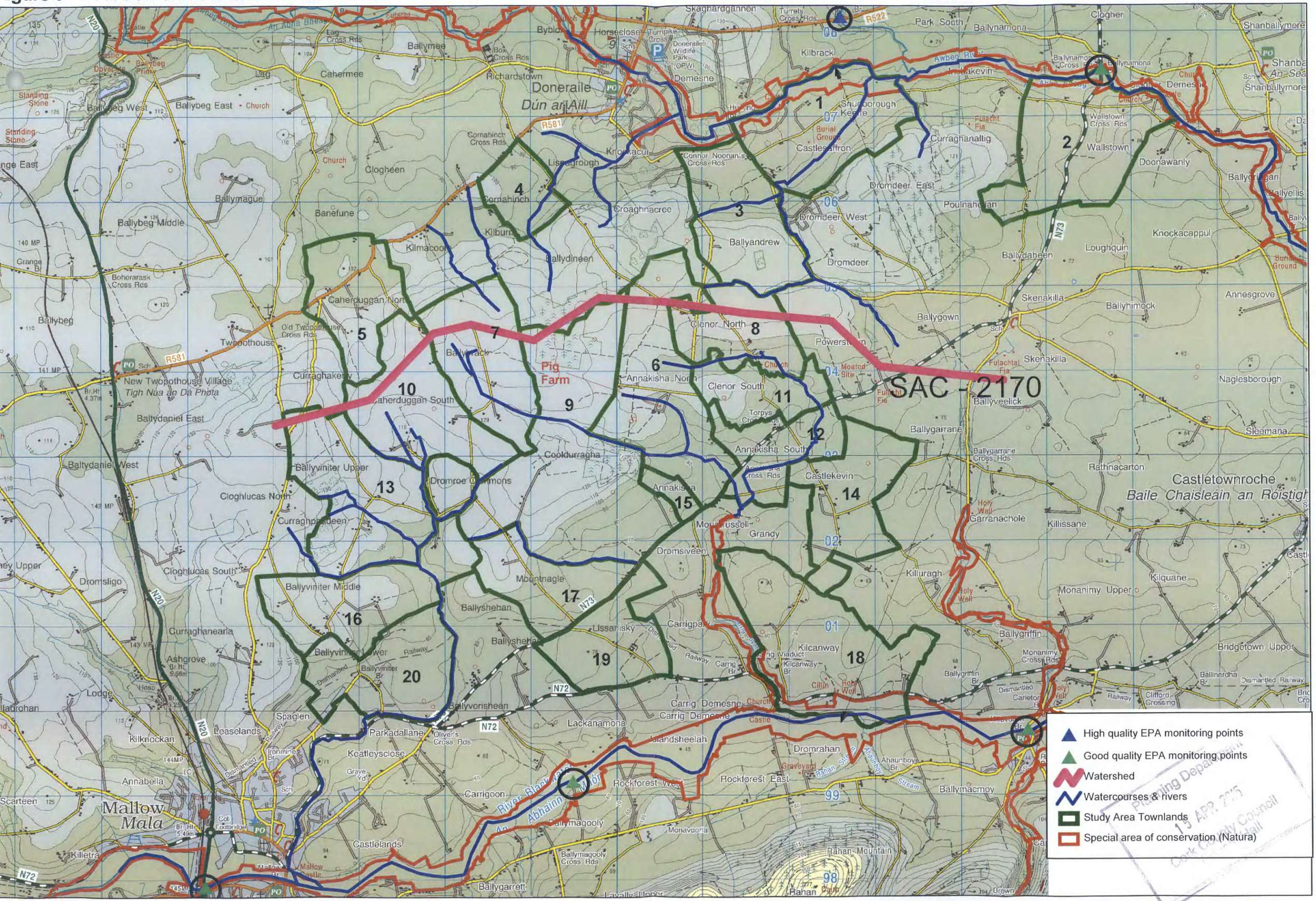
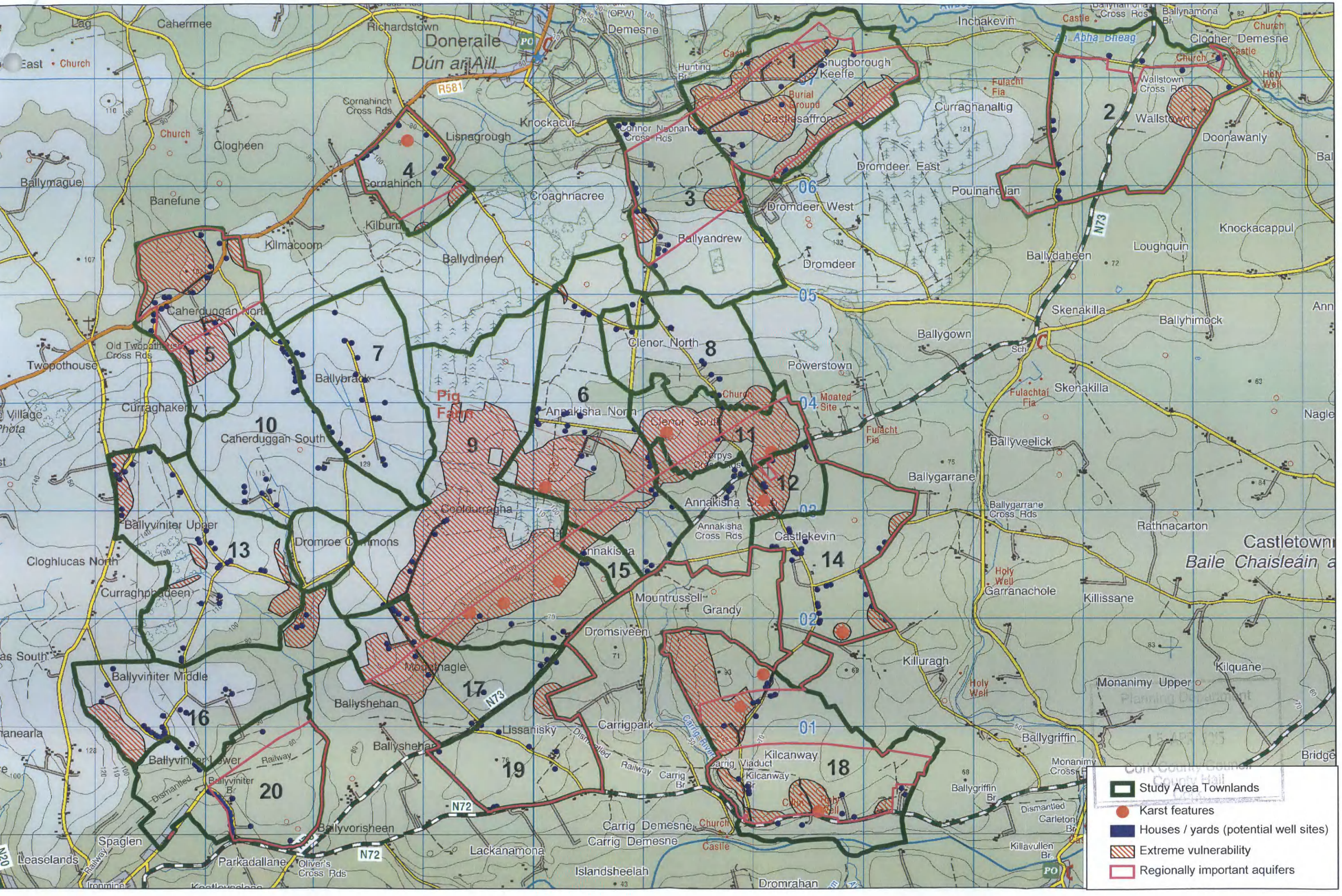


Figure 4 - Groundwater Vulnerability Map



In response to Question 2 in the County Council request for additional information dated 27/01/2015 the following Sediment and Water Pollution Control Method Statement is prepared.

SEDIMENT AND WATER POLLUTION CONTROL METHOD STATEMENT

A Construction Management Plan will be implemented to ensure that the impacts of all construction activities upon the public, visitors to the site and workers are fully considered and proactively managed/programmed ensuring safety is maintained at all times, disruption is minimised and impacts on the environment are minimised. In relation specifically to water quality the commitments of this Sediment and Water Pollution Control Method Statement will be adhered to (along with and any other requirements of Cork County Council) and included in the final draft of Construction Management Plan. The construction phase duration is estimated as follows;

- Excavation and preparation of the site – 1 week
- Installing shuttering for tanks – 2 weeks
- Construction of tanks and back-filling around tanks – 3 weeks
- Construction of building – 8 weeks

1.0 Potential Impacts of Surface and Ground Waters

Potential Impacts on surface and ground water from the construction activity at the Annakisha Pig Farm are;

a) Traffic generated sediment / suspended solids from deliveries of materials and equipment;
b) Excavation of soil and subsoil may lead to contamination of storm water;
c) Stock Piling soil and subsoil on site may lead to run-off of suspended solids;
d) Storage of diesel and refuelling on site may lead to contamination of surface and ground waters;
e) Landscaping / spreading back stockpiled topsoil on the site may lead to run-off of suspended solids.

There is no direct discharge to a watercourse, rather the runoff crosses the remaining field surface before entering the watercourse on northern boundary of the pig site.

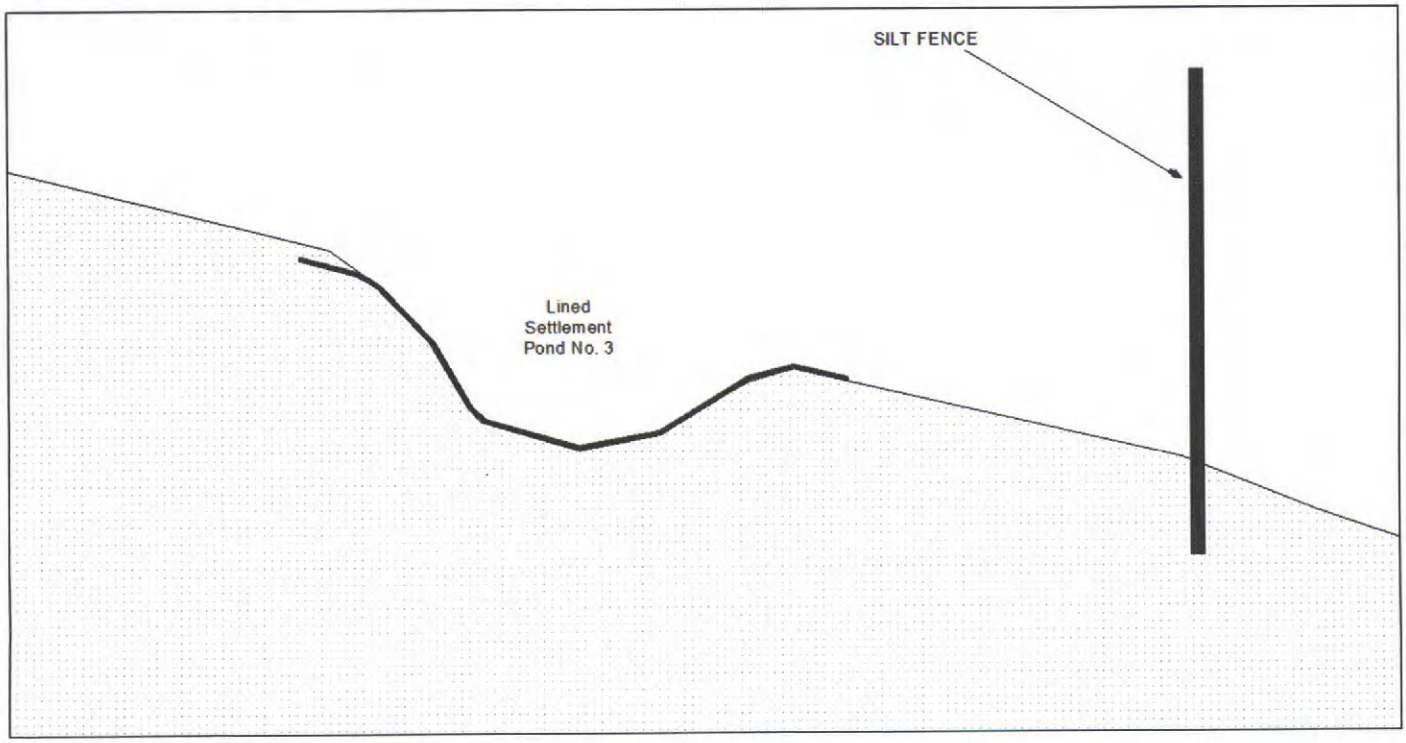
2.0 Mitigation - Sediment & Water Pollution Control

a) All works carried out will comply with all Statutory Legislation including the Local Government (Water Pollution) acts, 1977 and 1990 and the contractor will co-operate in full with the Environmental Section of Cork County Council;
b) The guidelines in chapters 16, 17 and 18 of CIRIA C648 – "*Control of Water Pollution from Linear Construction Projects*" will be adhered to and are presented in this report.
c) A primary source of sediment is erosion at the construction site. The following measures will be taken to mitigate erosion and therefore prevent sediment and suspended solids;

- The main access road to the construction site is a concrete road which will minimise erosion on access road into the construction site;
- The slopes of excavated stock piled top-soil will be maintained at less than 1:2;
- The slopes will be planted with grass seed;
- If excavation occurs outside a period when grass seed can be planted then an organic fibre membrane will be used on the stock-pile (eg coconut fibre membrane).

d) To prevent potential contamination of surface water with lime from cement which subsequently may find its way into the local adjacent watercourses it is proposed to create an exclusion zone along the northern boundary of the site by the erection of a visible 1.0m high fence (as shown in Figure 3) with warning signs appropriately fixed at regular intervals. The signs shall read "NOTICE – NO DISCHARGE OF ANY KIND IS PERMITTED IN THIS VICINITY OR BEYOND THIS EXCLUSION ZONE". In addition to this the washing out of concrete trucks on site will not be permitted as they are a potential source of high alkalinity contamination. Consequently it is a requirement that all concrete truck washouts takes place back in the concrete depot.

Figure 1 : Cross Section of proposed Settlement Pond No 3 in Figure 3



e) To prevent construction sediment in storm water leaving the site during construction;
- A series of 3 (minimum) settlement ponds will be constructed;
- A long settlement pond will be constructed along the northern boundary of the construction site to intercept surface water flow and allow settlement before water discharges to field surface;
- Silt fences will be installed between the watercourse and the construction site boundary (see Figures 1 & 3);

f) If water has to be pumped from excavated site (eg during laying of tanks) this water will be passed through settlement ponds 1 and 2 containing baffles to remove silt;

g) To prevent contamination of water by diesel and oil the following measures will be implemented;

- All oil / diesel storage will be located within a designated area placed furthest away from adjacent watercourse and contained within constructed bunded 150mm concrete slab with the perimeter constructed with 225mm solid blockwork rendered internally. The capacity of the bund will be 110% of diesel tank storage volume;
- There will be an Accident & Emergency plan operational on the site to deal with accidental spillages. This will require that sand bags and organic oil absorbents are maintained on site to contain small accidental spillages and that any contaminated material will be removed immediately to an approved waste facility by an approved waste contractor;
- Alternatively an approved mobile fuel bowser with an integrated bund will be used (Figure 2 below). Operatives will be made aware of the potential risks associated with refuelling and told what to do in the case of spillages.

h) To prevent contamination of water from toilet and waste water the toilet and canteen facilities on the pig farm can be used instead of bringing in mobile equipment onto the site;

i) To prevent generation of sediment due to soil contamination on the access road;

- A wheel wash facility with silt trap will be provided to clean traffic leaving the construction site;
- Waste water generated at this washing facility will be treated via the settlement ponds 1 & 2 on site and all settled silts disposed offsite to licensed landfill;
- A road sweeping vacuum vehicle will be employed to collect soil material on the concrete access road. This vehicle will be emptied off site at a suitably licensed facility;
- All lorries delivering sand and gravel will have suitable load covers to prevent dust emissions.

j) Stock piles of soil and materials will be 50m (minimum) away from the on-site wells and 10m (minimum) from watercourse. Building materials will be purchased on site as close to construction as possible – this should be possible given the relatively short construction phase. Building materials such as sand gravel should be stored away from moving plant and machinery in a designated material storage zone;

k) Construction staff car parking will be provided on the concrete surface in front of the pig buildings. Construction machinery will be kept on the construction site;

l) A material storage zone will be provided in the construction compound area. This storage zone will include material recycling skips;

m) On completion of the works all construction materials, debris, temporary hardstands etc. from the site compound will be removed off site and the site compound area reinstated and reseeded.

n) The top-soil will be spread over the construction site, levelled and reseeded. This operation will only take place when weather is not conducive to run-off and growing conditions are suitable for grass seed growth.

Figure 2 : Mobile fuel bowser

Figure 3 : Draft Drawing Showing Proposed Water Protection Measures - Scale @ A3 = 1:500

STREAM

TREES

SITE BOUNDARY IN RED

FARM ACCESS ROAD

TREES

N

Proposed Silt Fence

Existing Grass Field (0.45ha)

Land Countour

Edges of sediment pond No 3 level with land countours
Water flow over top of northern edge to field surface

WOODEN FENCE

CONCRETE KERBS

AREA PLANTED WITH LIME TREES

Proposed Top Soil Stock Pile

Proposed Construction Boundary Fence

Material Storage Zone

Construction Site (0.5ha)

Proposed Settlement Ponds

Proposed Diesel Bunded Area

PROPOSED FATTENING HOUSE

87600

18200

18713

7000

DIESEL TANKS (bunded)

4" PIPE

6" PIPE

MH 3.3'x3.3' 6' deep

MH 2'6"x2' 2'6" deep

MONITORING POINT

Proposed Wheel Wash & Silt Trap

SITE BOUNDARY

STORM WA MONITORIN

GALV. FENCE 2.4m HIGH

SLATTED RAMP & HOLDING AREA

SKIP

SLURRY COLLECTION POINT DRAINED BACK

SLURRY EXTRACTION POINT

13367

69494