6.0 WATER, HYDROLOGY & AQUEOUS EMISSIONS

6.1 INTRODUCTION

This chapter assesses and evaluates the potential impacts of aqueous emissions associated with the ABP Clones facility and includes an assessment of the potential impact on the physical and natural receiving environment. The operation of the facility generates two distinct aqueous streams. These streams are:

- Waste Water (Process and Sanitary); and
- Stormwater Run-Off.

This chapter also considers the potential impacts on water resources and local surface water quality arising from the proposed infrastructural upgrades: primarily the relocation of the treated effluent discharge point directly to the River Finn, c. 3 km south of the facility near Cumber Bridge. The potential impacts of the proposed development are assessed, taking into account the measures which have been adopted to prevent, reduce, mitigate or offset the possible impacts identified. The significance of the residual impacts is also presented.

This section of the EIS should be read in conjunction with the appended Waste Assimilative Capacity report, Stage 1 Flood Risk Assessment, Chapter 2 *Description of the Proposed Development* and Chapter 5, *Soils, Geology and Hydrogeology* of this EIS.

The Stage 1 Flood Risk Assessment is provided in Appendix 6.1 of this Chapter.

6.2 METHODOLOGY

The assessment of the potential impact of the ABP development and proposed infrastructural upgrades on the water environment was carried out having regard to the methodology specified in the following best practice guidance documents:

- Guidelines on the Information to be Contained in Environmental Impact Statements (EPA, 2002);
- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (EPA, 2003).

It should be noted that as part of the 2010 planning application for the upgrades to the facility (ref. 10/349) Inland Fisheries submitted representation in the form of technical advice from their Environmental Officer. Regard has been given to this submission as part of this development. The representation is included in Appendix 6.2 of this Chapter

6.2.1 Sources of Information

This assessment was considered in the context of the available baseline information, potential impacts, consultations with statutory bodies and other parties, and other available relevant information. In collating this information, the following sources of information and references were consulted:

- North Western International River Basin District (NBIRBD) Plan 2009-2015;
- Erne East Water Management Unit Action Plan (WMUAP) (2010);

- Integrated Water Quality Assessment for the North Western and Neagh Bann River Basin Districts 2013, EPA;
- Integrated Water Quality Report 2012 Monaghan & Louth, EPA;
- Report on River Water Quality in County Monaghan 2013, EPA;
- Office of Public Works (OPW) Hydrometric Database;
- The Planning System and Flood Risk Management, Guidelines for Planning Authorities Department of the Environment, Heritage and Local Government (DoEHLG) and the Office of Public Works (OPW));
- Latest EPA *Envision & catchment.ie* water quality monitoring data for watercourses in the area.

6.3 RECEIVING ENVIRONMENT

The topography of the area is generally rolling low drumlins with flooded hollows linked by streams, and the landscape of the area is an assortment of small pastures, drumlins, woodland and wetland. There are a small number of private residences and farm buildings scattered throughout the region, with the only major settlement in the area being Clones Town.

The ABP Clones site is located near to a number of surface waterbodies, some of which have the potential to be impacted by activities at the facility. Information for this section has been obtained predominantly from the Office of Public Works (OPW), Northern Ireland Environment Agency (NIEA), the North Western International River Basin District Project and the Environmental Protection Agency (EPA) in relation to river flows and water quality.

The main surface water bodies within the immediate vicinity of the site are the River Finn (Monaghan), Clonkeen Lough (0.5 km south of the site) and Bishops Lough (2.5 km east of the site). Neither of these loughs are expected to be impacted by the activities of the facility.

The nearest area of ecological importance is the Kilroosky Lough Cluster approximately 2 km to the north of the facility and upstream of the facility. This is classified as a Special Area of Conservation (SAC) and a proposed Natural Heritage Area (pNHA). Located 2 km to the south of the facility is Lisabuck Lough which is a pNHA that flows into the River Finn. Neither of these sites are expected to be impacted by the activities of the facility.

6.3.1 Surface Water Designations

The ABP facility is located within the North Western International River Basin District (NWIRBD), as designated under the Water Framework Directive (WFD) (2000/60/EC). Within river basin districts, water bodies relevant to a particular catchment are sub-divided into a number of Water Management Units (WMU). The ABP Clones site is located within the Erne East WMU located within the NWIRBD and therefore has been subject to the specific objectives of both the North Western River Basin Management Plan (2009-2015) and the Erne East Water Management Unit Action Plan (WMUAP) (2010). The main pollution sources identified in this WMUAP are diffuse pollution from agricultural practices and domestic septic tanks, and point sources such as wastewater treatment plants (WWTP).

In accordance with the requirements of the WFD, each water body has been 'characterised' describing the status of the water body and the pressures (anthropogenic and otherwise) on each water body.

The strategies and objectives of the WFD in Ireland have influenced a range of national legislation and regulations, since their inception in the year 2000. The Directive has been transposed into national law by the *European Communities (Water Policy) Regulations 2003 (SI No. 722 of 2003)* in the Republic of Ireland (ROI) and the *Water Environment (Water Framework Directive) Regulations (Northern Ireland) 2003* in Northern Ireland. In terms of surface water quality, the applicable legislation in the ROI is *SI No. 272 of 2009 European Communities Environmental Objectives (Surface Waters) Regulations 2009, as amended.* These regulations have been devised to implement the requirements of the WFD and establish Environmental Quality Standards (EQS) for the purpose of assessing the status of surface water bodies. These Surface Waters Regulations apply to all surface waters - including lakes, rivers, canals, transitional waters, and coastal waters and supersede all previous water quality regulations. An overview of the WFD River Water Quality Status 2010-2015 classification of surface water features in the surrounding area are presented in Figure 6.1, appended to this chapter.

6.3.2 River Finn

The River Finn flows from Smithborough in Monaghan and eventually terminates at Lough Erne in neighbouring Co. Fermanagh. The EPA monitors the River Finn for biological water quality close to the proposed discharge point at Cumber Bridge (RS36F010500). The Integrated Water Quality Assessment for the North Western and Neagh Bann River Basin Districts 2013, published by the EPA, presents the latest monitoring data for the River Finn catchment. The Cumber Bridge station was assigned a Q3-4 rating in 2013 indicating Moderate water quality status (on a scale of Bad, Poor, Moderate, Good, High). Q- values are based primarily on the relative proportions of pollution sensitive to tolerant macroinvertebrates (the young stages of insects primarily but also snails, worms, shrimps etc.) resident at a river site. A summary of the Environmental Protection Agency's (EPA) Quality Rating System (Q-values) for monitoring at Cumber Bridge is summarised in Table 6.1 below. A full summary of Biological Quality Ratings (Q-Values) 1971-2013 recorded at EPA sample locations along the River Finn are shown in Figure 6.2 appended to this chapter.

RBD	River	Full Code	Station Location	2007-2009	2008-2010	2009-2011	2010-2012	2011-2013
NWIRBD	Finn (Monaghan)	36F010500	Cumber Bridge	Fail	Fail	Fail	Pass	Pass

Table 6.1 Physico-chemical pass/fail assessment of surveillance rivers in NWIRBD & NBIRBD 2007–2013.

The EPA's Report on River Water Quality in County Monaghan 2013 identifies urbanisation pressures, point source influences and agricultural influences as the key pressures affecting the water quality of the River Finn at Cumber Bridge. The biologists assessing the river made the following observations:

"Tributary of Upper Lough Erne. Physico-chemical monitoring carried out at stations 0100, 0200 & 0500. Ortho-phosphate levels slightly elevated at all stations and ammonia slightly elevated at stations 0100 (Stone Bridge) & 0200 (Annamakiff Bridge) which are indicative of intermittent pollution. Apart from two stations, ecological conditions are no better than moderate. Agriculture and mixed rural

influences are pressures in the upper reaches while point sources and urbanisation influences are pressures at station 0500 (Cumber Bridge)."

The Water Framework Directive Ireland mapping website (*WaterMaps)* indicates that this cross-border river waterbody has an overall status of Moderate and an overall ecological status of Moderate. This Moderate ecological status of the River Finn is reportedly as a result of the invertebrate community present. This information is made available from the Q-values taken at the monitoring stations at Wattle Bridge and Ballyhoe Bridge.

This would normally require an improvement to at least Good ecological status by the year 2015 under WFD regulations. However, due to high soil phosphorus levels in the area, contributing to nutrient losses to surface waters, the River Finn has been granted an extension to 2021 to comply with WFD standards. Therefore, the objective under the Water Framework Directive is to Restore Good status by 2021. The overall risk status is '2b–Not at Risk'.

From the Cumber Bridge, the River Finn flows roughly in a south-westerly direction for ca. 8 km, tracing the Monaghan-Fermanagh border, before entering a small outlying area of Upper Lough Erne SPA in County Fermanagh.

The River Finn flows through Upper Lough Erne SPA for 2 km, then exits the designation and continues for another 7 km before entering the main section of Upper Lough Erne SAC and SPA downstream of Wattle Bridge. Upper Lough Erne SAC (Site Code: UK0016614) and SPA (Site Code: UK9020071) is located in Co. Fermanagh and extends to 5,738 ha. Upper Lough Erne SAC is designated for three habitats – natural eutrophic lakes, old oak woodlands and alluvial forests. Information from *WaterMaps* classifies Upper Lough Erne (IE-XB-36-east-2) with an overall WFD status, and ecological status, of 'Moderate'.

6.4 CHARACTERISTICS OF THE EXISTING DEVELOPMENT

The facility is situated on a c.11.3 ha site along the R212 regional road, approximately 1 km south of the centre of the town of Clones, Co. Monaghan. The site of the development is in an area of moderately undulating terrain and varies in elevation (c. 49m - 61m AOD)

The facility and its processes do not entail any point discharges to ground. All wastes are handled within covered sheds and all yards are hard paved. The focus of this assessment has therefore been on potential impacts on surface water arising from licenced discharges and accidental releases from the site. The risks from accidental emissions to ground are addressed, where relevant, below and in Chapter 5, *Soils, Geology & Hydrogeology*.

6.4.1 Current Water Infrastructure

ABP Clones has five emission points to surface water. They are as follows:

- Treated Effluent Emission (WEP-1);
- Surface Water Emissions (SWMP-1, SWMP-2, SWMP-4 & SWMP-5).

Process and foul effluent are treated by the site WWTP prior to discharge to a tributary of the River Finn (WEP-1).

6.4.2 Stormwater Emissions

Stormwater drainage at the site is collected separately from the process drains and foul drains. The stormwater drainage is a conventional gravity system. The stormwater drainage network serves the carpark, the roofs of the buildings and other outdoor areas of the site. The existing drainage system operates as follows:

- Roof areas are drained via appropriate falls provided to roof surfaces that allow the surface water run-off discharge to downpipes and into the dedicated existing surface water network.
- Hardstanding areas such as roads, paths and other hard standing areas are drained by means of a series of gullies & drains that discharge the surface water run-off into a dedicated existing surface water network.

Stormwater is not likely to be contaminated as all activities are undertaken within the building. All chemicals and liquid wastes stored on-site are bunded. Stormwater drains from the site primarily through four licenced emissions points to surface water (SWMP-1, SWMP-2, SWMP-4 & SWMP-5). There are two full retention surface water silt and grit interceptors on-site installed on emission points SWMP-1 and SWMP-5. These interceptors process the surface water on-site removing any solid materials from the surface water.

In accordance with the conditions of the sites IE Licence (P0190-02), stormwater emissions are monitored for the parameters outlined in Table 6.2 below.

Parameter	Monitoring Frequency	Analysis Method/Technique
pH	Monthly	Standard Method
COD	Monthly	Standard Method
Suspended solids	Monthly	Standard Method
Total Ammonia	Monthly	Standard Method
Conductivity	Monthly	Standard Method
Visual Inspection	Daily	Sample and examine for colour and odour

Table 6.2 *Monitoring of Storm Water Emissions, ABP Clones IE Licence (P0190-02)*

6.4.3 Foul Effluent

No process emissions are discharged to the local municipal sewer network. This effluent is treated along with process effluent by the on-site WWTP. Foul effluent consists of canteen wastewater and sanitary effluent from on-site toilets and shower facilities.

6.4.4 Process Effluent Emissions

Process effluent is directed to the site WWTP for treatment. Process effluent arises primarily from:

- Washing of livestock trucks and the lairage;
- Wash water arising from the cleaning of the slaughter hall and process areas;
- Wash water arising from the processing of various meat products and by-products.
- Wastewater arising from onsite processes

- Boiler blowdown
- Cooling towers
- Water treatment
- Other industrial processes

6.4.5 Process Effluent Monitoring

Schedule B of the current IE Licence (Ref. No. P0190-02) sets the Emission Limit Values (ELVs) for WWTP emissions (WEP-1) from the Clones facility. Table 6.3 below outlines the ELVs that apply until 31st December 2017.

Parameter	Emission Limit Value		Unit
Volume (daily)	1,000	500	m^3/day
Volume (hourly)	42	25	m^3/hour
Temperature	25	25	max. ^{O}C
pH	6-9	6-9	pH units
BOD	15	15	mg/l O_2
COD	50	70	mg/l
Suspended Solids	15	15	mg/l
Total Nitrogen (as N)	15	15	mg/l
Total Ammonia (As N)	5	10	mg/l N
Orthophosphate (as P)	1	2	mg/l P
Oils, Fats & Greases	15	15	mg/l
Sulphates (as SO_4)	1,500	1,500	mg/l SO_4
Chlorides (as Cl)	900	1,400	mg/l Cl
Detergents (as lauryl Sulphate)	10	10	mg/l

Table 6.3 *ABP Clones Emission Limits to Water, Until 31 December 2017*

6.4.6 Process Effluent Treatment

Process and sanitary effluents are treated by the on-site waste water treatment plant (WWTP). The waste water treatment plant comprises of preliminary (screening, dissolved air flotation (DAF), and balancing), secondary (aeration basin) treatment and tertiary treatment (sand filters). Nitrogen is removed via denitrification through the WWTP and phosphorus is removed by chemical precipitation.

Influent wastewater flows to the inlet works. This process involves wastewater flowing through a screen to remove all the larger debris from the influent.

The influent is then pumped into the DAF (Dissolved Air Flotation) Unit where air is dissolved in the wastewater under pressure and then released at atmospheric pressure in a flotation tank basin. The released air forms tiny bubbles which adhere to the suspended matter in the wastewater causing the suspended matter to float to the surface where it is then removed by a skimming device. At ABP Clones, some chemicals are also added to the wastewater during this process. This aids in the removal of contaminants from the effluent stream.

After DAF treatment, the wastewater is pumped into the balance tank. The main purpose of the balance tank is to store wastewater for the purpose of equalising or balancing fluctuating demand.

The wastewater is then pumped from the balance tank into the anoxic tank. Denitrification takes place within the anoxic tank whereby nitrate is removed. A continuous loop exists between the anoxic and the adjacent aeration tank. In the aeration tank, the presence of a microbial flocs, composed of bacteria and protozoa, degrade the wastewater constituents. Wastewater eventually flows to a settlement tank from which the supernatant goes to the sand filters. The sand filters, known as tertiary treatment, further polishes the treated wastewater stream to remove any fine particulates prior to discharge. A flow measurement and monitoring system is in place to sample and measure the flow to the river on a continuous basis (WEP-1).

The sludge from the waste water treatment process is sent to a centrifuge where it is dewatered. The water from this process is pumped back through the system while the dewatered sludge is trailered for dispatch.

A process flow diagram of the site waste water treatment plant (WWTP) is shown in Figure 6.3 appended to this chapter.

6.4.7 Water Supply System

Water is predominately used for the cleaning of process and storage areas, lairage and delivery trucks. Water is also required for the process operations processing of various meat products and by-products. Water is supplied to the site exclusively from 5 on-site abstraction wells. Abstracted water is treated by softening, iron and manganese removal and reverse osmosis (RO). Consumption of water at the Clones facility is approximately 190,000 m^3 per annum.

Well water is abstracted and stored within a 3 m^3 holding (break) tank on-site. Due to the underlying geology of the region, abstracted groundwater is characterised as extremely hard with high levels of Iron, Manganese and Sulphates.

Abstracted water requires pre-treatment to reduce hardness and remove impurities prior to use. A salt softening system is in place to soften the water. This system uses ion exchange resin beds which reduces the hardness of the water. During this process, the ions calcium (Ca^{2+}) and Magnesium (Mg^{2+}) are exchanged for the Sodium (Na^{+}) ions on the resin. When all the sodium ions have been exchanged for Calcium or Magnesium, the resin must be regenerated by recharging it with Sodium ions. This is done by flushing the resin with a Sodium Chloride (NaCl) salt solution. One tonne of salt is used per day in the softening process this gives high Chloride levels at current production levels.

Periodically (less than once per day), the resin beds require regeneration. Following regeneration, the used salt solution (regen) water, which is saturated in Chloride, is sent via drain to the site WWTP.

The softened water is then sent to the reverse osmosis (RO) unit which is a continuous process operating up to 24-hours per day. Here the softened water is treated within an RO unit. Considerable volumes of reject water arise from the RO process due to the high level of contamination remaining in the softened water. Reject from the RO process at the facility can be as high as 40%. This volume of reject water is sent, via drain, to the WWTP where it is combined with process and sanitary wastewater for treatment. The high volumetric load from the RO process currently takes up a significant portion (40%) of the capacity of the WWTP. A process flow diagram of the site water treatment system is shown in Figure 6.4 appended to this chapter.

It is proposed that this effluent stream would be licenced separately to WWTP effluent as part of the revised licence. In doing so, RO reject would not be sent to the WWTP for treatment but would instead be sent directly to the River Finn through a separate measurement and monitoring station (WEP-2). This would allow for additional treatment capacity within the WWTP.

6.4.8 Flood Risk

In accordance with the guidelines produced by the then Department of the Environment, Heritage and Local Government (DoEHLG) - *The Planning System and Flood Risk Management (FRM) Guidelines for Planning Authorities*, November 2009, a Stage 1 assessment was carried out. The Stage 1 Assessment centres on 'Flood Risk Identification'. The purpose of the assessment is to identify whether there may be any flooding or surface water management issues related to the ABP Clones site that may warrant further investigation. The methodology used to prepare the flood risk identification (Stage 1) is outlined as follows:

- Base map, rivers and streams – Ordnance Survey of Ireland;
- Geological Survey of Ireland (GSI) maps on superficial deposits (current and historical);
- Flood points & Historical Floods – Office of Public Works (OPW) floods website www.floodmaps.ie;
- Relevant North Western – Neagh Bann Catchment Flood Risk Assessment and Management (CFRAM) Flood Reports.

A review of the records for previous floods in the area was carried out by viewing the OPW flood database website www.floodmaps.ie. No flood events have been recorded at the site. As part of the CFRAM programme the OPW developed provisional flood risk assessment maps to highlight areas that may be at risk of flooding and may require further assessment. The Provisional Flood Risk Assessment (PFRA) maps for the area were researched and did not indicate risks of Fluvial or Pluvial flooding at the site. The Stage 1 Flood Risk Assessment for the site has been appended to this chapter. From the site visit it is obvious the site is situated on a dramatically significant elevation above the flood plain.

6.5 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

Treated effluent from the WWTP currently discharges to a land drain, which is a tributary of the River Finn. The low volumetric flow of this tributary has presented issues for compliance with the objectives of the Water Framework Directive, which is namely to achieve 'good status' for all waterbodies.

The impact of an effluent discharge on a receiving water body is dependent upon the characteristics and magnitude of the pollution loading and on the sensitivity of the receiving water body. As such, ABP are proposing to re-locate the WWTP discharge point directly to the River Finn. ABP proposes to install new pipeline from the existing site WWTP plant, along the road (R212), to an alternative location to the south of the facility near the Cumber Bridge.

The proposed redevelopment works will involve the installation of c.3 km of 100 mm diameter pipeline. The proposed pipeline will be installed from the outfall of the site WWTP and will exit the site at a point along the southern boundary. The pipeline will follow the route of the R212 southwards to the proposed new discharge location approximately 50m downstream of Cumber Bridge. It is

proposed to install the pipeline using directional drilling rather than conventional trenching methods along public sections of the route. Pipe laying along the R212 will be undertaken using trenchless excavation; this will entail the excavation of pits along the R212, at consecutive stages, approximately every 100m (see Chapter 2, *Description of the Proposed Development* for further details).

ABP has liaised with Inland Fisheries Ireland regarding the most suitable design and location of the pipeline outfall within the river. Accordingly, it is proposed to locate the outfall of the pipeline to cover 30% of the width of the river. The outfall will be submerged within the river and a suitable end-of-pipe diffuser will be installed to minimise the impact on the aquatic environment.

ABP proposes to also undertake a review of the current IE Licence with a view to introducing a new licenced process emission to water. It is proposed that RO reject would not be sent to the WWTP for treatment but would instead be sent directly to the River Finn through a separate measurement and monitoring station (WEP-2). This would allow for additional treatment capacity within the WWTP which will enable ABP to meet the reduced ammonia and phosphate levels in the final determination. The characteristics of process effluent sent to the WWTP for treatment are expected to be identical to current streams, less the RO reject. The proposed ELVs for the WEP-1 and WEP-2 are shown in Tables 6.4 and 6.5 respectively.

ABP proposes to retain the existing discharge to the tributary at the rear of the site at the emission limit values outlined the current IE Licence (Ref. No. P0190-02) until such time as the proposed pipeline is completed (c.2018) in order to ensure that the facility can continue operation without adverse effect on the hydrological environment.

6.5.1 Proposed Effluent Emission Limits

Emissions Point Reference No: WEP 1 (WWTP Discharge)

Name of Receiving Waters: River Finn

Location of Monitoring: 250418E, 325174N

Parameter	Emission Limit Value			
pH	6-9			
Temperature	25^{O}C			
	m^3/d	m^3/hr	m^3/d	m^3/hr
Volumes to be emitted	360	15	720	30
	mg/l			
BOD	20		20	
COD	150		150	
Suspended Solids	30		30	
Total Nitrogen (as N)	15		15	
Total Ammonia (as N)	0.5		0.35	
Total Phosphorus (as P)	0.4		0.3	
Oils, Fats and Grease	15		15	
Sulphates (as SO_4)	2,000		1,000	
Chlorides (as Cl)	6,000		6,000	
Detergents (as Lauryl sulphate)	10		5	

Table 6.4 *Proposed WEP-1 ELVs*

Emissions Point Reference No: WEP 2 (Reverse Osmosis Reject)

Name of Receiving Waters: River Finn

Location of Monitoring:250418E, 325174N

Parameter	Emission Limit Value	
pH	6-9	
Temperature	25^{O}C	
	m^3/d	m^3/hr
Volumes to be emitted	360	15
	mg/l	
BOD	2	
COD	50	
Suspended Solids	20	
Total Nitrogen (as N)	2	
Total Ammonia (as N)	0.3	
Total Phosphorus (as P)	0.3	
Oils, Fats and Grease	10	
Sulphates (as SO_4)	7,000	
Chlorides (as Cl)	200	

Table 6.5 *Proposed WEP-2 ELVs*

6.6 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

6.6.1 Construction Impacts

In addition to the existing aqueous emissions from the facility, aqueous emissions during the construction phase will arise from; (i) sanitary waste water (or sewage) arising from the presence of a construction work force both on-site and off-site over an approx. 7- week period (ii) stormwater run-off from construction sites.

6.6.1.1 Sanitary Waste Water

Sanitary waste water (sewage) will arise during the construction stage due to the presence of up to an additional 10 construction workers on-site over an estimated 7-week period. Because the site is an established large-scale meat processing facility with associated amenity services, the plant is fully equipped with existing toilet, shower and canteen facilities. It is intended that these existing services will be utilised to service the construction workforce during the proposed redevelopment works. The existing WWTP at the facility has sufficient capacity for the additional site construction stage workforce.

6.6.1.2 Stormwater Run-Off

The existing stormwater drainage system serving the ABP site will be maintained in operation throughout the construction stage of the proposed redevelopment works. It is anticipated that the quantity of surface water run-off from the site will not increase as a result of the construction works, due to the nature and scale of the proposed works.

Temporary impacts on surface waters can occur during construction. Earthworks activities have the potential to result in the exposure of soil to stormwater. This in turn may affect the quality and aquatic ecology of receiving surface waters. Based on the site layout it is noted that the majority of excavation works on-site will be

confined to the south portion of the site, which is an undeveloped, permeable greenfield area. As such any impact to the environment will be localised and short-term. Construction works along the R212 may result in soiling of the local road network by plant and machinery. This may have the potential to increase sediment loading which could potentially impact local drainage and potentially local watercourses.

Pollution from mobilised suspended solids (silt) is generally the prime concern, particularly the potential impact on the River Finn during the installation of the pipeline at the proposed outfall location. Suspended sediment due to runoff from stripped construction areas and excavations can have a severe negative impact on water quality, water dependant habitats and aquatic ecology. If allowed to enter surface watercourses, this runoff can give rise to high suspended solids with potentially detrimental impacts, in particular to fisheries.

Potentially polluting substances used during the construction phase are limited to oils and fuels used to service plant. Where uncontrolled, there is a risk of accidental pollution incidences arising from leaks, spillages and uncontrolled releases. Accidental spillages may result in contamination of surface water, should contaminants migrate into the surface water runoff during the construction phase. There is a potential for leaks and spillages due to vehicle movements and parking of construction vehicles. Any accidental emissions of oil, petrol or diesel could cause contamination if the emissions enter the water environment. In relation to accidental spills and leaks the potential impact to surface water is considered to be moderately adverse due the scale of the proposed works.

6.6.2 Operational Impacts

6.6.2.1 Stormwater

It is also not anticipated that there will be any change to emission characteristics or volumes of stormwater at the site as a result of the proposed upgrade works. The proposed works will not result in any increase or decrease of hardstanding areas on-site. The stormwater system is expected to function as is the case currently.

6.6.2.2 Sanitary Waste Water

It is also not anticipated that there will be any change to emission characteristics or volumes of sanitary effluent upon completion of the proposed works. Sanitary effluent will arise from toilets, showers, hand sinks and canteen facilities and will undergo treatment in the site WWTP.

6.6.2.3 Process Waste Water

It is proposed that both WEP-1 and WEP-2 would be discharged, via the proposed pipeline, to the River Finn at Cumber Bridge. A Waste Assimilative Capacity (WAC) Assessment (appended to this chapter) was undertaken to determine the impact on the receiving aquatic environment from effluent emissions. The main objective of the assessment was to establish ELVs for both effluent streams that would satisfy the objectives of the Water Framework Directive and comply with the relevant Environmental Quality Standards in accordance with European Communities Environmental Objectives (Surface Waters) Regulation 2009 (S.I. 272 of 2009).

The WAC assessment has demonstrated that the receiving water body has sufficient capacity to assimilate effluent discharged within the ELVs proposed for WEP-1 (Table 6.4) and WEP-2 (Table 6.5) and would not result in a deterioration in the WFD status of the river.

6.7 REMEDIAL AND MITIGATION MEASURES

6.7.1 Construction Phase

The following mitigation measures will, at a minimum, be implemented during the construction phase as part of the Construction Management Programme (CMP):

1. Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles, will take place in a designated area (where possible) of the site, which will be away from stormwater gullies or drains. An adequate supply of spill kits will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Relevant guidelines and Method Statements will be adhered to.

2. Concrete will be mixed off–site and imported to the site. The pouring of concrete will take place within a designated area to prevent concrete runoff into the site stormwater drainage network. Washing of concrete transporting vehicles will not be permitted on-site.

3. Appropriate measures will be taken (i.e spill kits for the management of accidental spills) where construction activities are liable to impact of watercourses. Method Statements will include a series of measures to ensure that nearby watercourses are sufficiently protected from silt, hydrocarbon, petrol, oil, etc. or other contaminated run-off that could potentially arise from these proposed constructions work.

4. Management of sediment from the construction works will be addressed in detail in the CMP as finalised in consultation with Inland Fisheries.

5. The existing site petrol interceptors will be used to filter out hydrocarbon pollutants from rainwater runoff. These petrol interceptors are included in a regular inspection and maintenance programme as part of the site's Environmental Management System.

6.7.2 Operational Phase

6.7.2.1 Surface Water

During the operational phase, there will be a high degree of containment and bunding of materials on-site and no direct discharges or polluting substances to any water body. Surface water discharge will be periodically monitored to demonstrate compliance with any Warning or Action Limits agreed with the EPA.

All materials related to the production process will be delivered to site in suitably sealed containers and storage of these materials will be confined to within the main building or dedicated stores in line with best practice described in the '*Reference Document on Best Available Techniques on Emissions from Storage*' (EU IPPC Bureau, 2006). All rainwater that gathers in bunded areas (i.e. tank farms, drum stores) will be tested to ensure compliance with Warning or Action limits, prior to discharge. Uncontaminated bund water will be discharged to the stormwater network. All bunds/containment structures will be tested every three years or as per IE Licence requirements.

Any waste chemicals will be collected and temporarily stored in the site chemical store pending collection for treatment/disposal off-site by a licensed waste contractor.

Spill kits will be maintained on-site at designated locations and the spill response procedure will be implemented, if required, to contain and clean up any leakages/spills of chemicals or other polluting substances.

Green field areas are allowed to drain naturally to soil as industrial operations are prohibited on these areas. All other hardstanding and roofed areas are drained via the site stormwater catchment system (underground drainage).

In accordance with the sites Industrial Emissions (IE) Licence, ABP operate an Environmental Management System which includes measures for the prevention of pollutant release to the stormwater drainage system. Preventative measures which are in place at the ABP site include full secondary containment (bunding) of all internal and external vessels containing potentially polluting materials.

In the event of a major spill or emergency, an immediate cessation of the surface water discharges is to take place. For SWMP-1, the shut off valve will be closed and any surface water will be tankered back to the effluent plant. For SWMP- 2 the line will be blocked with a bung in the pipeline and any surface water will be tankered to the effluent plant. For SWMP-4 the line will be blocked with a bung and any surface water will be pumped back to the pump house using a small submersible pump. For SWMP-5 the shut off valve will be closed and any surface water will be allowed gravity flow into the inlet works of the WWTP.

Following the retention of surface water discharges, an investigation would then be undertaken to determine the source of the contamination, followed by cleaning of the affected pipeline. A sampling programme (daily) for pH, COD, Total Ammonia, Suspended Solids and Conductivity would then be undertaken to demonstrate return to compliance.

6.7.2.2 Process Emissions

Process waste water generated at the facility will undergo treatment in the site WWTP, as is the case currently. In accordance with the requirements of BAT (Best Available Techniques), ABP will ensure that preventative measures are taken against aqueous pollution and that suitable abatement technologies are implemented to reduce the impact on the environment.

All aqueous emissions from the site, both stormwater run-off and process waste water, will ultimately be regulated by the conditions of IE Licence issued by the Environmental Protection Agency (EPA).

6.7.2.3 Fire Fighting Water

Fire water can be retained in the wastewater treatment area of the site in a former sludge holding tank and is not expected to be released to ground or to surface waters.

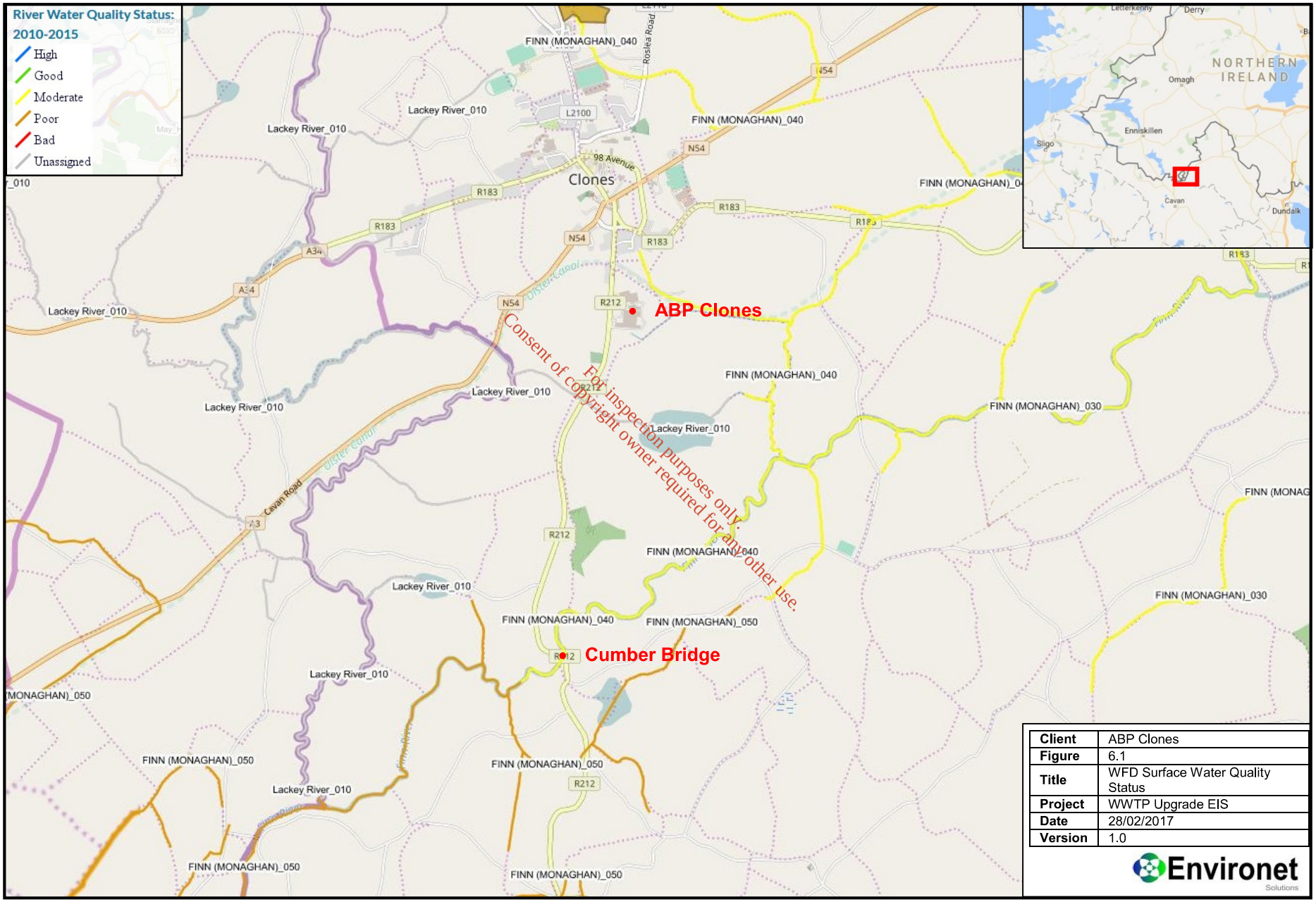
6.8 PREDICTED RESIDUAL IMPACT OF THE DEVELOPMENT

A number of operational phase mitigation measures have been identified for the prevention and management of accidental spills and releases. Consistent with current ABP practices, the operation of an Environmental Management System on-site will ensure the ongoing management, control and monitoring of all aqueous emissions. Accordingly, the residual risk of impacts on the water resources on-site and the surrounding environment will be imperceptible in the long term. No significant negative residual impact is foreseen. The relocation of the site effluent emission discharge point to the Cumber Bridge and will have a long-term positive

impact, in particular with respect to the objectives of the Water Framework Directive.

6.8.1 Assessment of Cumulative Impact with Neighbouring Facilities

The proposed development will have an imperceptible residual impact on water resources and aqueous emissions due to the implementation of the mitigation measures outlined in the previous sections. Accordingly, there will be no negative impact (either short term, long term, direct or indirect) as a result of this proposed development on the surrounding neighbouring facilities.



Client	ABP Clones
Figure	6.1
Title	WFD Surface Water Quality Status
Project	WWTP Upgrade EIS
Date	28/02/2017
Version	1.0

Environet Solutions

River and Code: FINN (MONAGHAN)	36F01
Tributary of: Upper Lough Erne	OS Catchment No: 123
OS Grid Ref of confluence: H 422 200	

Date(s) Surveyed: 31/12/1971, 31/12/1973, 31/12/1977, 31/12/1980, 31/12/1982, 31/12/1984, 31/12/1989, 31/12/1993, 7/7/1997, 8/7/1997, 15/10/1998, 16/10/1998, 17/8/1998, 22/7/1998, 28/9/1998, 28/8/2001, 10/8/2004, 9/8/2004, 17/7/2007, 5/7/2007, 8/8/2007, 15/7/2010, 10/7/2013, 3/7/2013, 4/7/2013

Station No.	Station Location	National X	Grid Ref. Y	Discovery Series No.	County Code
0010	Br at Mill NW of Kilcreen	256057	335418	27	MN
0080	E of Aghafin Lough	252797	329862	27	MN
0100	Stone Br	254401	328407	27	MN
0200	Annamakiff Br	254563	326483	27	MN
0400	Scarvy Br	251806	324610	27	MN
0500	Cumber Br	249939	323331	27	MN
0600	Annie's Br	0	0	0	MN
1000	Wattle Br.	242572	320237	27	

Biological Quality Ratings (Q Values)

Station Nos.	1971	1973	1977	1980	1982	1984	1989	1993	1997	1998	2001	2004	2007	2010	2013
0010	-	-	-	-	-	-	3-4	4-5	4-5	4	3	3-4*	4	4	4
0080	-	-	-	-	-	-	3	4	3	4	4	4	-	3-4	3-4
0100	5	5	4-5	4	4-5	4-5	3-4	4	3-4	4	3-4	3-4	3	3-4	4
0200	5	4-5	4-5	4	4	4	3-4	4	3	3-4	3	4	3-4	3-4	3-4
0400	-	-	3-4	3-4	3-4	3-4	3-4	3	3-4	3-4	3	4	-	3-4	3-4
0500	3-4	3	1	3	3	3	3	3	3	3	3	3-4	3-4	3-4	3-4
0600	-	-	-	-	3	3	3	-	-	-	-	-	-	-	-
1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3

Site Altitude and Upstream Catchment Characteristics (where available):

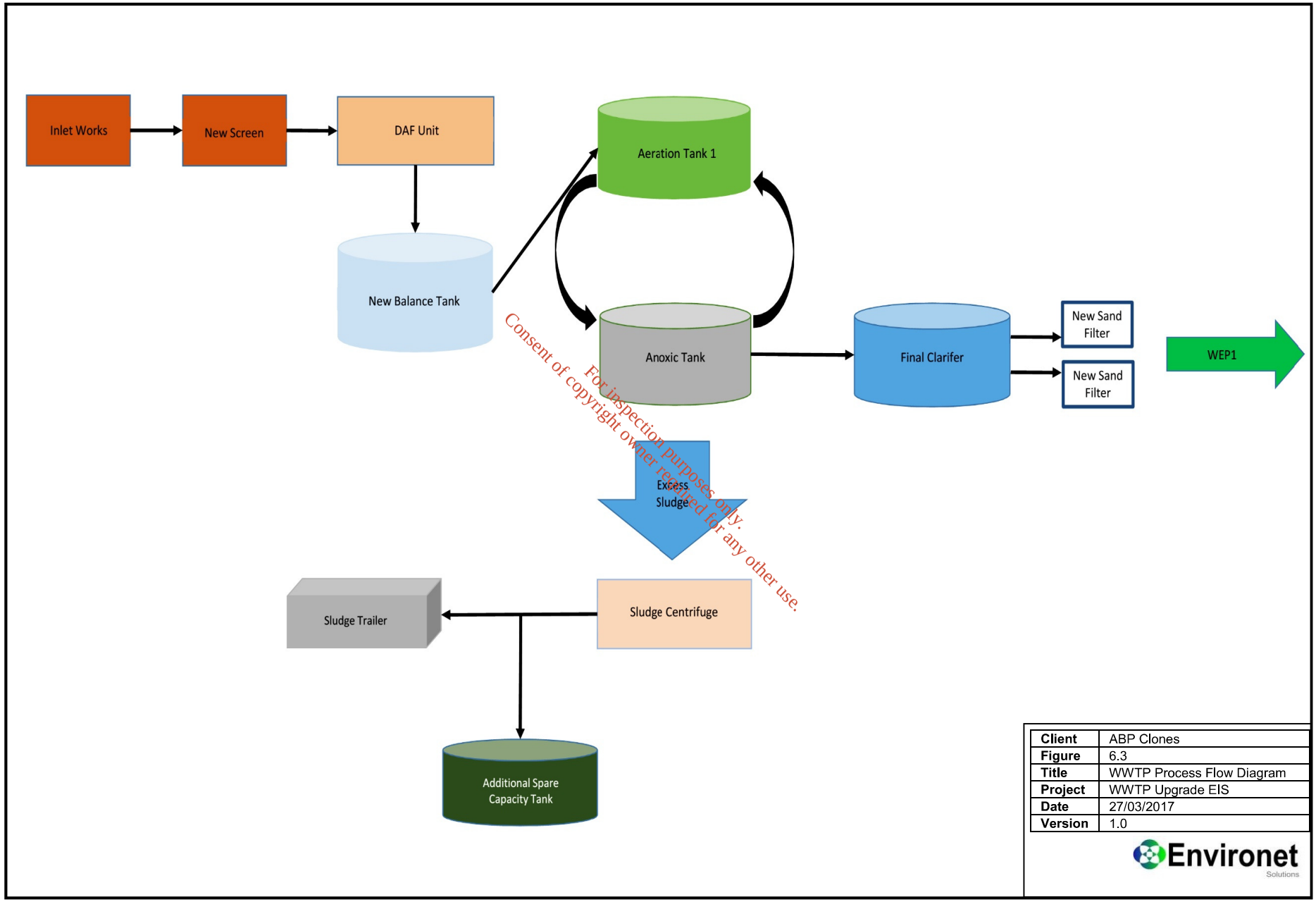
Station No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0010	80	1	0	100	100	0	0	0	0	0	0
0080	56	1	0	100	94	6	0	0	0	0	0
0100	56	5	0	100	99	1	0	0	1	0	0
0200	48	79	26	74	95	1	1	0	0	0	2
0400	47	103	43	57	97	1	1	0	0	0	1
0500	47	118	41	59	96	1	1	1	0	0	1
0600	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1000	N/A	0	0	0	0	0	0	0	0	0	0

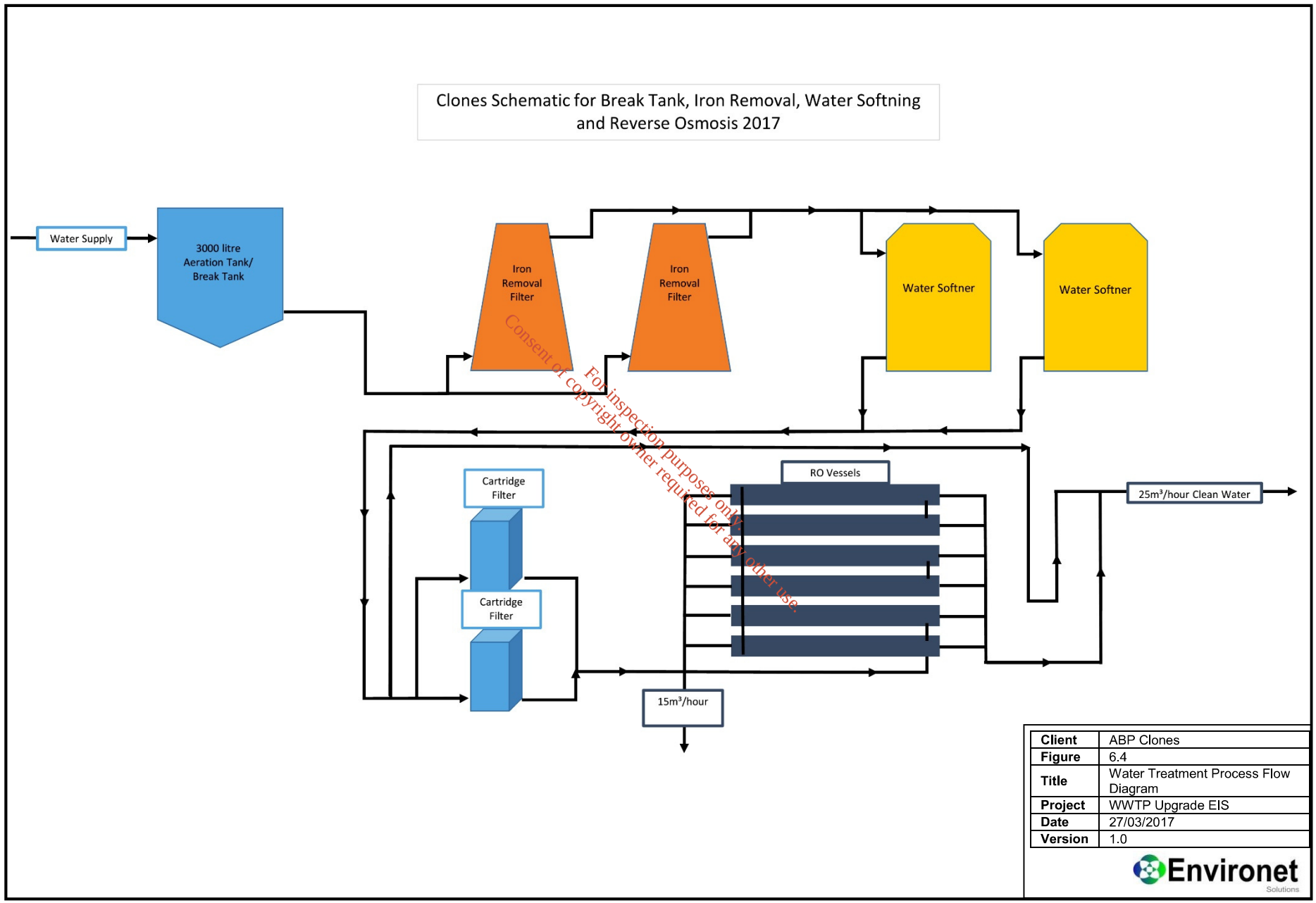
Assessment: The macroinvertebrate fauna continues to indicate generally unsatisfactory ecological conditions on the Finn (Monaghan) in 2013. Only the uppermost Station 0010 (SW of Shanroe) and Station 0100 (Stone Bridge) showed satisfactory standards out of the seven sites sampled. Low DO (dissolved oxygen) levels were recorded below the Magherarney confluence (station 0400 - 68%) and again below Clones (station 0500 -72%)

Alt is in metres Area is km2 and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.

Client	ABP Clones
Figure	6.2
Title	Biological Quality Ratings (Q-Values) 1971-2013
Project	WWTP Upgrade EIS
Date	03/02/2017
Version	1.0

Environet Solutions





APPENDIX 6.1

STAGE 1 FLOOD RISK ASSESSMENT

STAGE 1 FLOOD RISK ASSESSMENT

1.1 INTRODUCTION

In accordance with the guidelines produced by the Department of the Environment, Heritage and Local Government - *The Planning System and Flood Risk Management (FRM) Guidelines for Planning Authorities*, November 2009 [1], a Stage 1 assessment was carried out for the ABP facility in Clones, Co. Monaghan. The Stage 1 Assessment is 'Flood Risk Identification'. The purpose of the assessment is to identify whether there may be any flooding or surface water management issues related to a plan area or proposed development site that may warrant further investigation. Relevant watercourses in the surrounding area were identified as part of the Stage 1 assessment.

The methodology used to prepare the flood risk identification (Stage 1) is outlined as follows:

- Review of the Monaghan County Development Plan (2013-2019) and the Clones Town Development Plan (2013-2019);
- Flood Risk Review Report, Co. Monaghan, Catchment Flood Risk Assessment and Management (CFRAM);
- Geological Survey of Ireland (GSI) online mapping, www.gsi.ie - Bedrock Geology, Subsoils, Aquifers and Groundwater vulnerability;
- Flood points & Historical Floods – Office of Public Works (OPW) floods website. www.floodmaps.ie.

1.2 DESCRIPTION OF THE FACILITY

Anglo Beef Processors Ireland t/a ABP Clones operates as an integrated animal slaughter, meat processing and cold storage facility. The site has an area of approximately 1 hectare. All process and sanitary effluents are treated at the on-site waste water treatment plant (WWTP). Treated process effluent currently discharges to a tributary of the Finn River.

The topography of the region is generally rolling low drumlins with flooded hollows linked by streams, and the landscape of the area is an assortment of small pastures, drumlins, woodland and wetland. There are a small number of private residences and farm buildings scattered throughout the region, with the only major settlement in the area being Clones Town.

The immediate area surrounding the site is rural with agricultural land uses and low density residential housing along the local road network and regional road network including the R212. The Clones Municipal WWTP is located approximately 100m to the east of the ABP site.

1.3 ENVIRONMENTAL SENSITIVITY

The bedrock geology in the area consists of Ballysteen Limestone Formation (also known as the Argillaceous Bioclastic Limestone, ABL), with subsidiary shale. Groundwater vulnerability is classified as Moderate and the aquifer is Regionally Important with fissured bedrock.

The nearest area of ecological importance is the Kilroosky Lough Cluster approximately 2 km to the north of the facility. This is classified as a Special Area of Conservation (SAC) and a proposed Natural Heritage Area (pNHA). 4 km to the south of the facility is Lisabuck Lough

[1] Department of the Environment, Heritage and Local Government and Office of Public Works, 2009

which is a pNHA. Neither of these sites is expected to be impacted by the activities of the facility.

1.4 DESCRIPTION OF THE PROPOSED WORKS

Currently, the site treats process effluent in the on-site waste water treatment plant (WWTP). The plant comprises preliminary screening, dissolved air flotation (DAF), balancing, secondary (activated sludge aeration basin) and tertiary (sand filters) treatment stages. Denitrification occurs within the waste water treatment plant and phosphorus is removed by chemical precipitation.

Treated effluent from the WWTP currently discharges a land drain, which is a tributary of the River Finn. The low volumetric flow of this tributary has presented issues for compliance with the objectives of the Water Framework Directive, which is namely to achieve 'good status' for all waterbodies.

The impact of an effluent discharge on a receiving water body is dependent upon the characteristics and magnitude of the pollution loading and on the sensitivity of the receiving water body. As such, ABP are proposing to re-locate the WWTP discharge point directly to the River Finn. ABP proposes to install a new pipeline from the existing site WWTP plant, along the road (R212), to an alternative location to the south of the facility near the Cumber Bridge.

The development works will involve the installation of c.3 km of 100 mm diameter pipeline. The proposed pipeline will be installed from the outfall of the site WWTP and will exit the site at a point along the southern boundary. The pipeline will follow the route of the R212 southwards to the proposed new discharge location approximately 50m downstream of Cumber Bridge. It is proposed to install the pipeline using directional drilling rather than conventional trenching methods along public sections of the route. Pipe laying along the R212 will be undertaken using trenchless excavation; this will entail the excavation of pits along the R212, at consecutive stages, approximately every 100m.

1.5 SCOPE OF THE ASSESSMENT

This Stage 1 Flood Risk Assessment will focus primarily on the site of the ABP Clones facility as shown in Figure 1. Once completed, the proposed pipeline will be located predominately underground, with the exception of the outfall to the River Finn, which will be submerged within the river. As such, the proposed pipeline is not considered a sensitive receptor in the context of flood management.

1.6 FLOOD RISK MANAGEMENT GUIDELINES

1.6.1 Introduction and Core Objectives

In 2009, the OPW and the then Department of the Environment and Local Government and Office of Public Works published Guidelines on flood risk management for planning authorities entitled *The Planning System and Flood Risk Management - Guidelines for Planning Authorities*. These Guidelines introduce mechanisms for the incorporation of flood risk identification, assessment and management into the planning process. Planning authorities and An Bord Pleanála are required to have regard to the Guidelines in carrying out their functions under the Planning Acts. The core objectives of the Guidelines are to:

- Avoid inappropriate development in areas at risk of flooding;
- Avoid new developments increasing flood risk elsewhere, including that which may arise from surface water run-off;

- Ensure effective management of residual risks for development permitted in floodplains;
- Avoid unnecessary restriction of national, regional or local economic and social growth;
- Improve the understanding of flood risk among relevant stakeholders; and
- Ensure that the requirements of EU and national law in relation to the natural environment and nature conservation are complied with at all stages of flood risk management.

1.7 PRINCIPLES

The key principles of flood risk management set out in the Guidelines are to:

- Avoid development that will be at risk of flooding or that will increase the flooding risk elsewhere, where possible;
- Substitute less vulnerable uses, where avoidance is not possible; and
- Mitigate and manage the risk, where avoidance and substitution are not possible.

The Guidelines follow the principle that development should not be permitted in flood risk areas, particularly floodplains, except where there are no alternative and appropriate sites available in lower risk areas that are consistent with the objectives of proper planning and sustainable development. Development in areas which have the highest flood risk should be avoided and/or only considered in exceptional circumstances (through a prescribed Justification Test) if adequate land or sites are not available in areas which have lower flood risk. Most types of development would be considered inappropriate in areas which have the highest flood risk. Only water-compatible development such as docks and marinas, dockside activities that require a waterside location, amenity open space, outdoor sports and recreation and essential transport infrastructure that cannot be located elsewhere would be considered appropriate in these areas.

1.8 STAGES OF ASSESSMENT

The Flood Risk Management Guidelines recommend a staged approach to Flood Risk Assessment (FRA) that covers both the likelihood of flooding and the potential consequences. The stages of appraisal and assessment are:

Stage 1 Flood Risk Identification – to identify whether there may be any flooding or surface water management issues related to the proposed development site that may warrant further investigation;

Stage 2 Initial Flood Risk Assessment – to confirm sources of flooding that may affect a proposed development site, to appraise the adequacy of existing information and to scope the extent of the risk of flooding which may involve preparing flood zone maps. Where hydraulic models exist the potential impact of a development on flooding elsewhere and of the scope of possible mitigation measures can be assessed. In addition, the requirements of the detailed assessment should be scoped; and

Stage 3 Detailed Flood Risk Assessment – to assess flood risk issues in sufficient detail and to provide a quantitative appraisal of potential flood risk to a proposed development, of its potential impact on flood risk elsewhere and of the effectiveness of any proposed mitigation measures.

1.9 FLOOD TYPES

1.9.1 Fluvial Flooding

Fluvial or river flooding occurs when the capacity of a watercourse is exceeded or the channel is blocked or restricted, and excess water spills out from the channel onto adjacent low-lying areas (the floodplain). This can occur rapidly in short steep rivers or after some time and some distance from where the rain fell in rivers with a gentler gradient.

1.9.2 Groundwater Flooding

Groundwater flooding occurs when the level of water stored in the ground rises as a result of prolonged rainfall to meet the ground surface and flows out over it, i.e. when the capacity of this underground reservoir is exceeded. Groundwater flooding tends to be very local and results from interactions of site-specific factors such as tidal variations. While water level may rise slowly, it may be in place for extended periods of time. Hence, such flooding may often result in significant damage to property rather than be a potential risk to life.

1.9.3 Coastal and Estuarine Flooding

Coastal flooding is caused by higher sea levels than normal, largely as a result of storm surges, resulting in the sea overflowing onto the land. Estuarial flooding may occur due to a combination of tidal and fluvial flows, i.e. interaction between rivers and the sea, with tidal levels being dominant in most cases.

1.9.4 Pluvial Flooding

Pluvial flooding includes overland flow and flooding from artificial drainage systems. Overland flow which occurs when the amount of rainfall exceeds the infiltration capacity of the ground to absorb it. This excess water flows overland, ponding in natural hollows and low-lying areas or behind obstructions. This occurs as a rapid response to intense rainfall and eventually enters a piped or natural drainage system. Flooding from artificial drainage systems results when flow entering a system, such as an urban storm water drainage system, exceeds its discharge capacity and the system becomes blocked, and / or cannot discharge due to a high-water level in the receiving watercourse. This mostly occurs as a rapid response to intense rainfall. Together with overland flow, it is often known as pluvial flooding.

1.10 FLOOD RISK IDENTIFICATION

Stage 1 FRA (Food Risk Identification) has been undertaken in order to identify whether there may be any flooding or surface water management issues related to the ABP Clones site.

Relevant watercourses in the surrounding area were identified as part of the Stage 1 assessment. These were the River Finn (Monaghan), Clonkeen Lough (0.5 km south of the site) and Bishops Lough (2.5 km east of the site) and all tributaries and field drains associated with same.

Indicators of flood risk that are based on historical flooding events that were considered, along with indicators of flood risk that are based on computational models include those identified and described on Table 1 below.

Information Source	Description	Spatial Spread	Strategic Limitations	Reference
Flood Events and Flood Extents from the OPW	A flood event is the occurrence of recorded flooding at a given location on a given date. The flood event is derived from different types of information (reports, photographs etc.). A flood event that has occurred more than once at a certain area is named a recurring flood event. A flood extent is an inundated area as recorded at a certain moment in time.	There are no flood events or extents within or adjacent to the site recorded on the floodmaps.ie dataset. A flood extent area is identified adjacent to stretches of the River Finn at Scarvy Bridge and a tributary of same at Clontreat.	This dataset does not include flood events/extents which have not been recorded as part of the dataset.	Appendix A
Alluvium Soils	Mineral alluvial soil mapping is indicative of recurrent or significant fluvial flooding at some point in the past and was generated by Teagasc with cooperation of the Forest Service, EPA and GSI. This project was completed May 2006.	Mineral Alluvium soil is not identified within or adjacent to the site. The site is identified as 'made ground' bordered by 'cutover/ cutaway peat' to the north and east, and 'deep well drained mineral' to the south and west.	Drainage may have changed significantly since these soils were deposited.	Figure 2
'Liable to flood' markings on the historic OSI '6 Inch' maps and generalised OSI '6 Inch' Cassini Data	The Ordnance Survey of Ireland (OSI) 6" mapping identifies broad areas as being Liable to Floods. Generalised Cassini data has been generated from OSI Cassini 6" raster mapping dated 1830s to 1930s	There are no 'Liable to flood' areas identified within or adjacent to the site. There are no marshes, flood plains or seasonal lakes identified in the vicinity of the site.	As these maps were based on survey work carried out from 1833- 1844 with many updated in the 1930s and 40s, they do not show or take any account of recent changes including changes in surface drainage, such as development in floodplains, road realignments or drainage works for forestry or agriculture. So there is significant potential that flood risk in some areas may have increased or reduced since they were prepared.	Figure 3 & Figure 4
OPW Preliminary Flood Risk Assessment (PFRA) Fluvial, Groundwater and Pluvial flood maps	The OPW PFRA mapping dataset has been arrived at by: • Reviewing records of floods that have happened in the past; • Undertaking analysis to determine which areas might flood in the future, and what the impacts might be; and • Extensive consultation with each local authorities and other Government departments and agencies.	The map shown in Figure 5 refers to flood event probabilities in terms of a percentage Annual Exceedance Probability, or 'AEP'. This represents the probability of an event of this, or greater, severity occurring in any given year. These probabilities may also be expressed as odds (e.g. 100 to 1) of the event occurring in any given year. They are also commonly referred to in terms of a return period (e.g. the 100-year flood), although this period is not the length of time that will elapse between	It is noted the PFRA is a screening tool until final CFRAM flood maps are available. The purpose of the flood maps is to guide decision making when determining whether a detailed Flood Risk Assessment is required for any given site. Analysis has been undertaken to identify areas prone to flooding, and the risks associated with such flooding, but this analysis is purely indicative and undertaken for the purpose of completing the draft PFRA. The mapping has been developed using simple and cost-effective	Figure 5

Information Source	Description	Spatial Spread	Strategic Limitations	Reference
	• This assessment has considered all types of flooding, including that which can occur from rivers, the sea and estuaries, heavy rain, groundwater, the failure of infrastructure, and so on. It has also considered the impacts flooding can have on people, property, businesses, the environment and cultural assets. Further information on the purpose and development of the OPW PFRA Maps are available on www.cfram.ie.	two such events occurring, as, although unlikely, two very severe events may occur within a very short space of time. The ABP site is not located within an area that are estimated to be inundated at some point during a flood with the respective Annual Exceedance Probabilities (AEPs) (>1% AEP fluvial or pluvial).	methods and is based on broad-scale simple analysis and may not be accurate for a specific location/use. The Predictive Flood Zones Map is intended for guidance, and cannot provide details for individual properties.	
Emerging data from the North Western – Neagh Bann Catchment-based Flood Risk Assessment and Management (CFRAM) Study	The National CFRAM is currently producing draft flood maps. The Programme is being undertaken by the Office of Public Works to meet national policy needs and the requirements of the EU 'Floods' Directive. It involves a comprehensive flood risk assessment focused on 300 areas of potentially significant flood risk (or 'Areas for Further Assessment'), and the development of long-term, sustainable plans to reduce and manage flood risk. Draft Flood Risk and Hazard mapping has been prepared for certain areas. Work on draft flood maps has involved extensive surveying and analysis of river flows and the development of computer models to determine how flooding occurs. These CFRAMS aim to map out current and possible future flood risk areas and develop risk assessment plans. They will also identify possible structural and non-structural measures to improve the flood risk of the area.	Figure 6 shows the latest draft flood maps based on works done to date. It should also be noted that the site is not located within either a possible or probable are for further assessment. The CFRAMS site assessment report for Clones and Environs (Appendix B) states "*Local knowledge indicates some degree of flood risk, but predictive / historic assessments do not provide sufficient evidence of potentially significant risk as defined*." The ABP Clones site is not identified as an area where flooding has occurred historically.	The flood extents shown on these maps are based on broad scale simple analysis and may not be accurate for a specific location. Information on the purpose, development and limitations of these maps is available in the relevant reports (see www.cfram.ie).	Figure 6 & Appendix B

Table 1 : Stage 1 Flood Risk Identification

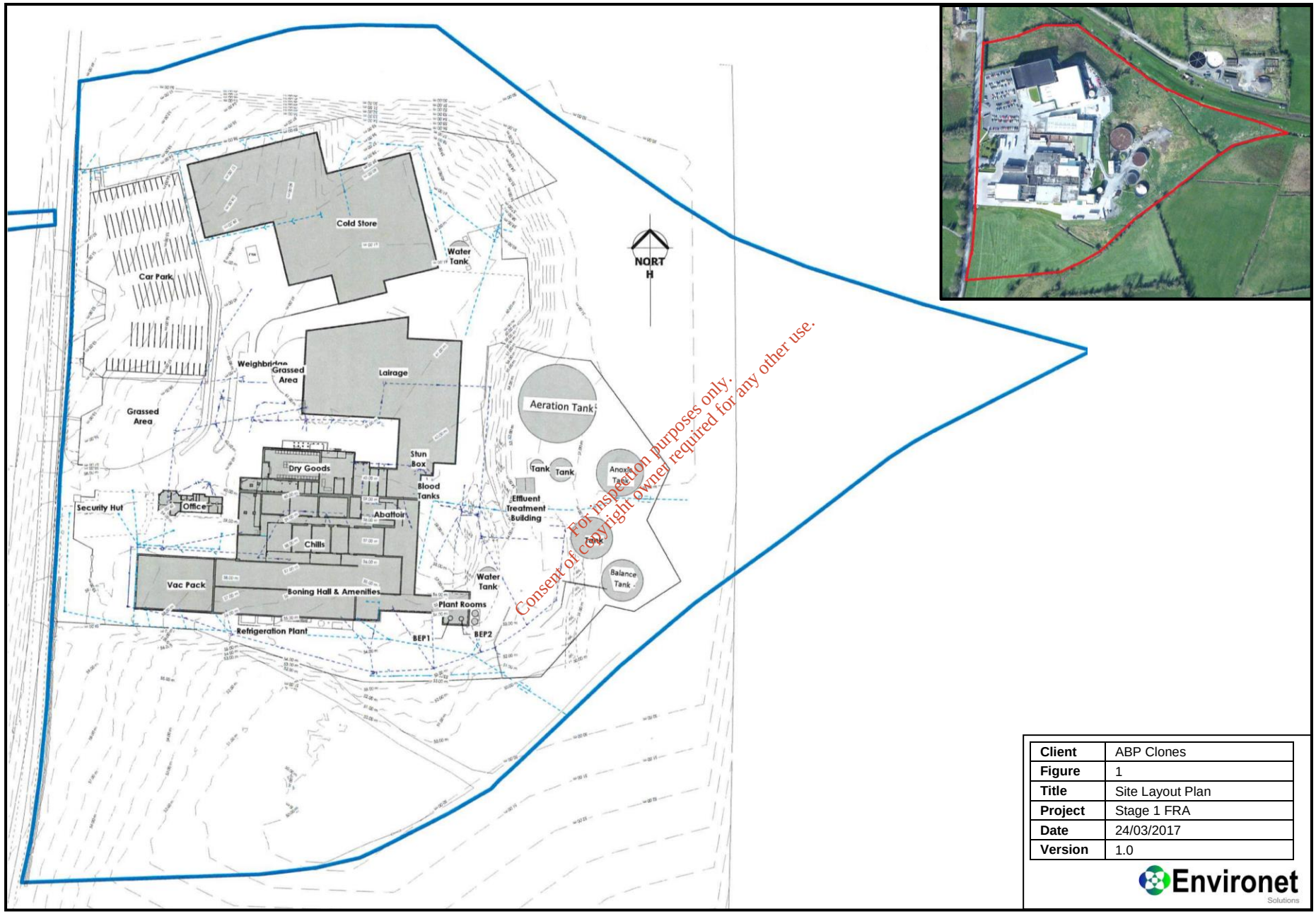
1.11 CONCLUSION

This Stage 1 FRA (Flood Risk Identification) has been undertaken in order to identify whether there may be any flooding or surface water management issues that warrant further investigation related to the ABP site at Clones.

In terms of the study site, the Stage 1 assessment has identified no flood risks for the facility location therefore; in accordance with *The Planning System and Flood Risk Management Guidelines for Planning Authorities*, there is no requirement to proceed to the Stage 2 assessment. This is based on the fact that the site of the facility is not at risk to flooding due to its location. In addition, the nature of the proposed upgrade works to take place on the site is such that there will be no increase in storm water run-off from the site.

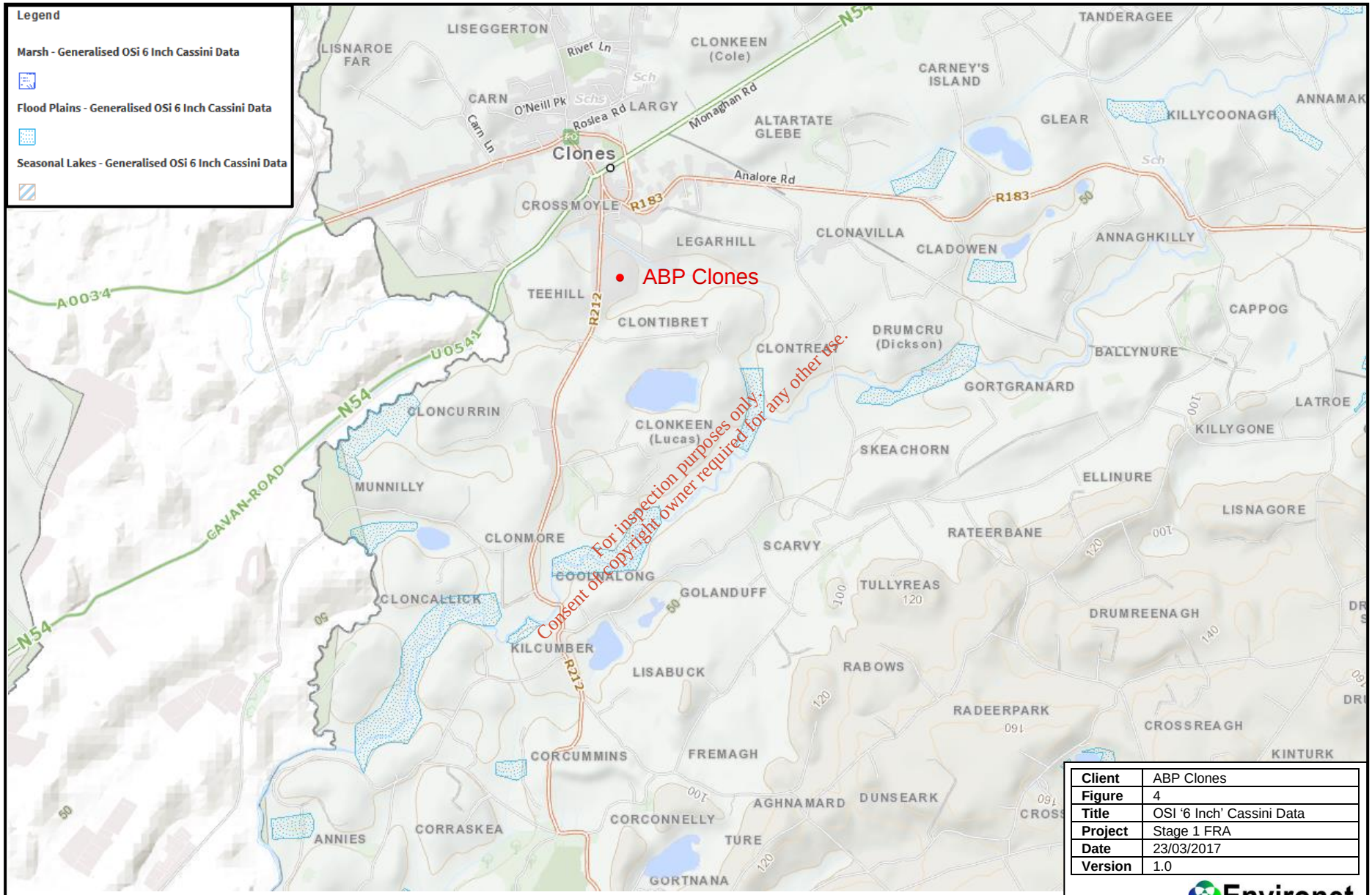
There are no flooding or surface water management issues related to the site that warrant further investigation through a Stage 2 FRA (Initial Flood Risk Assessment). This conclusion has been arrived at taking into account the following:

- Available information indicates that the subject lands are not prone flooding (Table 1); and
- The proposed upgrade works at the site will not include modifications to the stormwater management system. It is anticipated that there will be no increase in storm water run-off from the site as a result of these works.



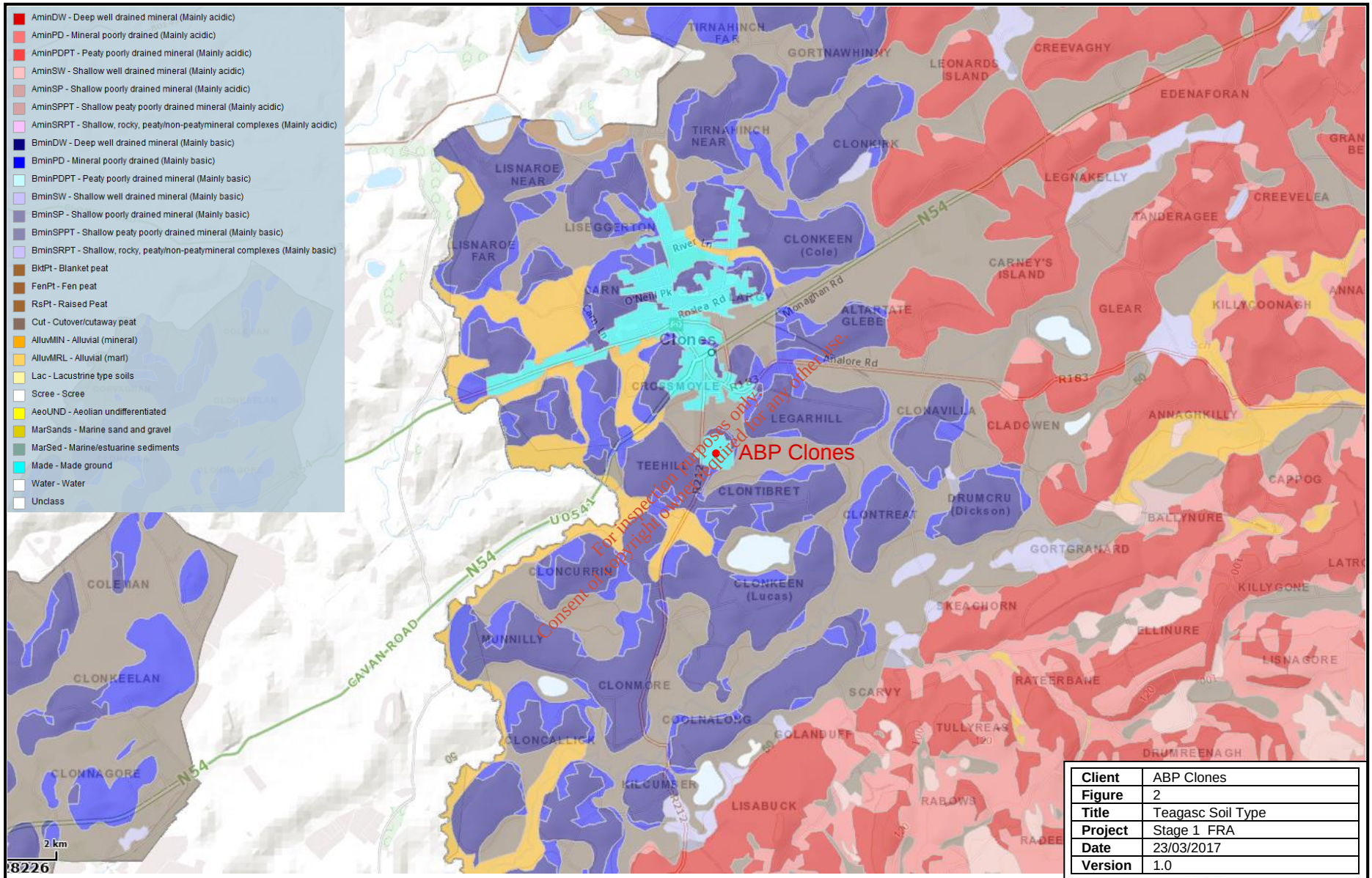
Client	ABP Clones
Figure	1
Title	Site Layout Plan
Project	Stage 1 FRA
Date	24/03/2017
Version	1.0

Environet Solutions



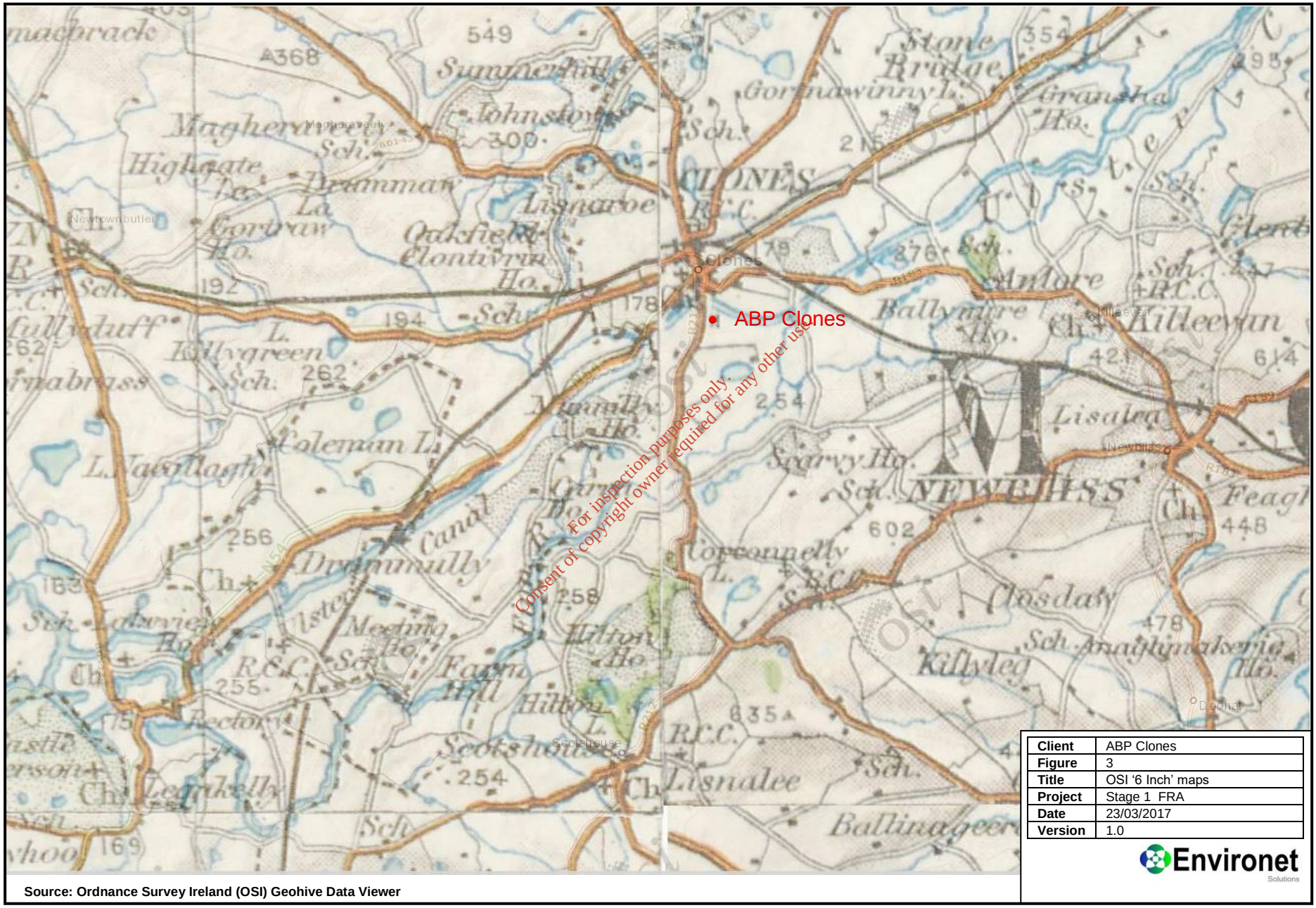
Client	ABP Clones
Figure	4
Title	OSI '6 Inch' Cassini Data
Project	Stage 1 FRA
Date	23/03/2017
Version	1.0

Source: Ordnance Survey Ireland (OSI) Geohive Data Viewer



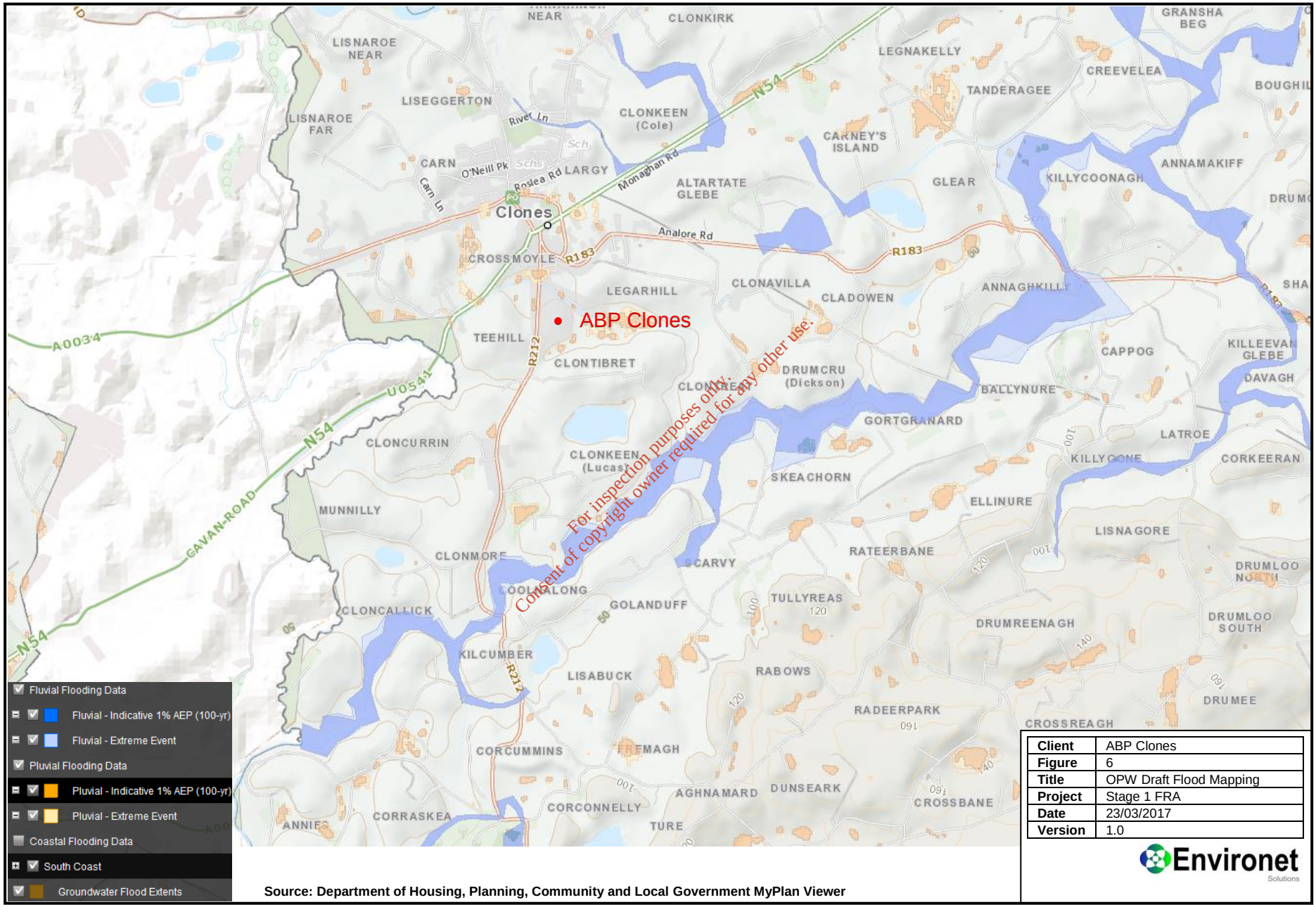
Client	ABP Clones
Figure	2
Title	Teagasc Soil Type
Project	Stage 1 FRA
Date	23/03/2017
Version	1.0

Source: Geological Survey of Ireland (GSI) Groundwater Data Viewer



Client	ABP Clones
Figure	3
Title	OSI '6 Inch' maps
Project	Stage 1 FRA
Date	23/03/2017
Version	1.0

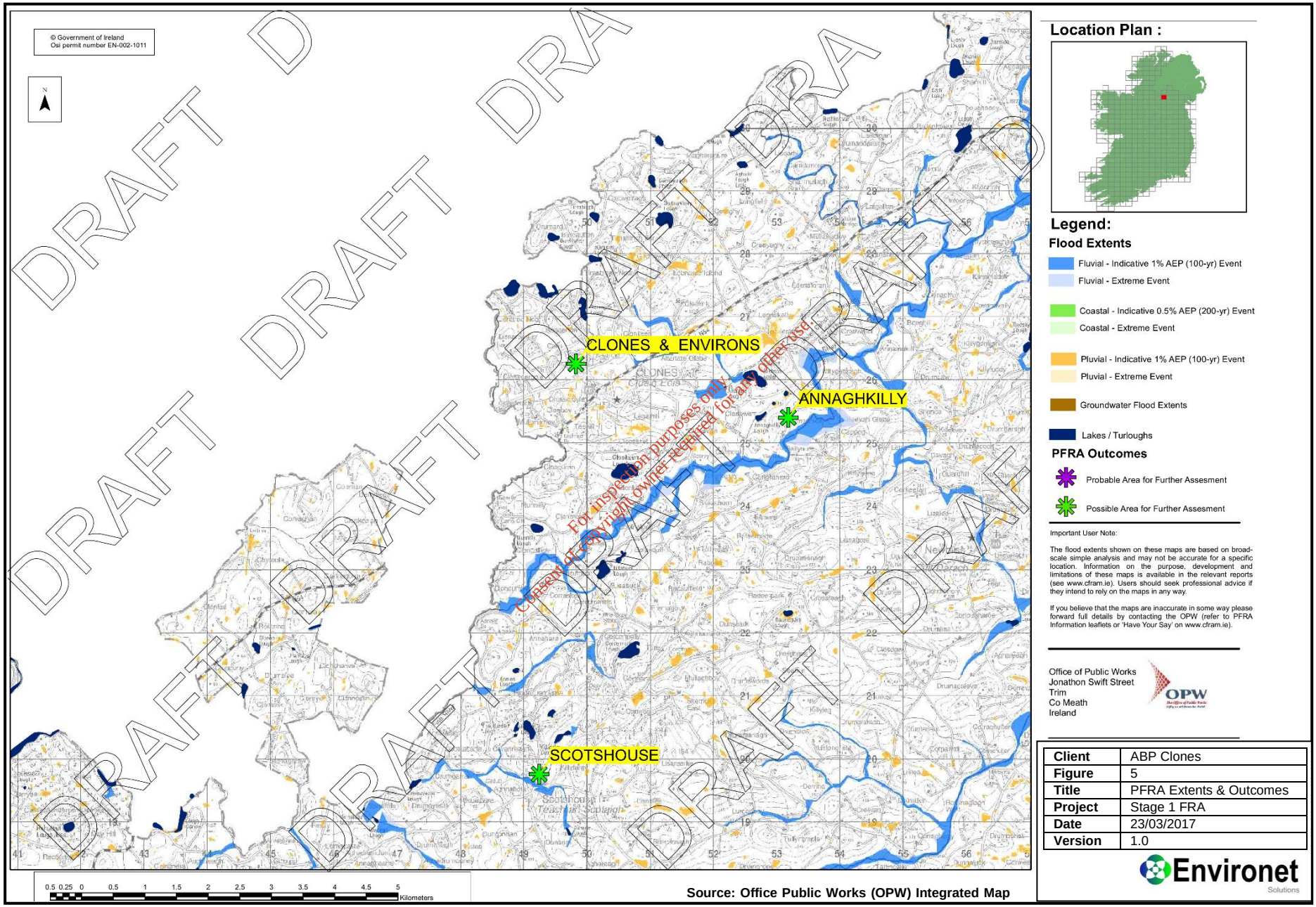
Environet Solutions



Source: Department of Housing, Planning, Community and Local Government MyPlan Viewer

Client	ABP Clones
Figure	6
Title	OPW Draft Flood Mapping
Project	Stage 1 FRA
Date	23/03/2017
Version	1.0

Environet Solutions



Client	ABP Clones
Figure	5
Title	PFRA Extents & Outcomes
Project	Stage 1 FRA
Date	23/03/2017
Version	1.0

Environet Solutions

Appendix A - OPW Flood Hazard Map

OPW National Flood Hazard Mapping

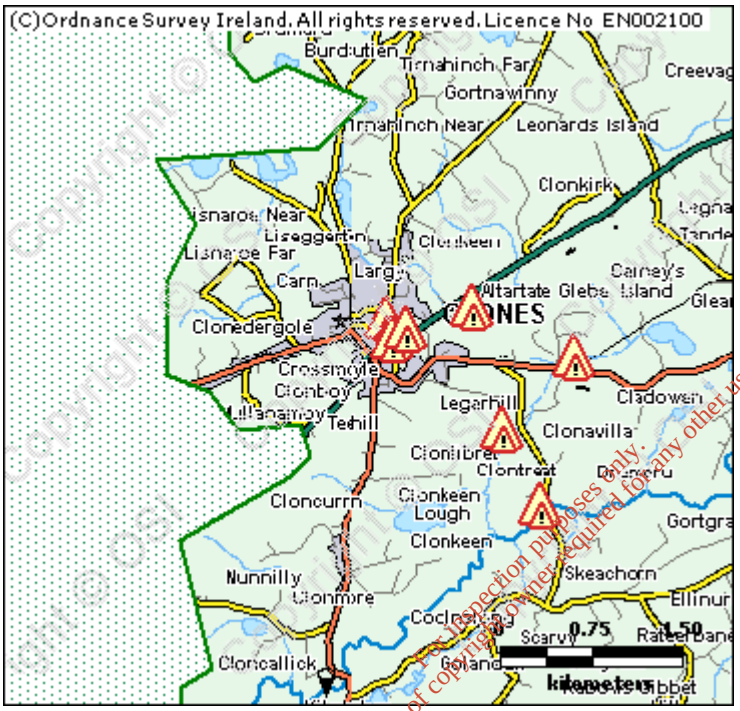
Summary Local Area Report

This Flood Report summarises all flood events within 2.5 kilometres of the map centre.

The map centre is in:

County: Monaghan

NGR: H 501 258



Map Scale 1:62,129

Map Legend	
	Flood Points
	Multiple / Recurring Flood Points
	Areas Flooded
	Hydrometric Stations
	Rivers
	Lakes
	River Catchment Areas
	Land Commission *
	Drainage Districts *
	Benefiting Lands *

* Important: These maps do not indicate flood hazard or flood extent. Thier purpose and scope is explained in the Glossary.

7 Results

1. Ninety Eight Avenue, Clones Recurring — Start Date:
County: Monaghan — Flood Quality Code:2
Additional Information: Reports (3) More Mapped Information

2. Clones Recurring — Start Date:
County: Monaghan — Flood Quality Code:2
Additional Information: Reports (3) Press Archive (9) More Mapped Information

3. Minor drainage channels adjacent to R183 and N54 Clones Co Monaghan Nov 2009 and Aug 2008 — Start Date:
County: Monaghan — Flood Quality Code:4
Additional Information: Reports (1) More Mapped Information

4. Altartate Glebe 1 Recurring — Start Date:
County: Monaghan — Flood Quality Code:4
Additional Information: Reports (1) More Mapped Information

5. Altartate Glebe 2 Recurring — Start Date:
County: Monaghan — Flood Quality Code:4

Report Produced: 22-Mar-2017 16:47

Additional Information: Reports (1) More Mapped Information

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6. Finn Scarvy Bridge Recurring

Start Date:

County: Monaghan

Flood Quality Code: 4

Additional Information: Reports (1) More Mapped Information

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7. Clontreat Recurring

Start Date:

County: Monaghan

Flood Quality Code: 4

Additional Information: Reports (1) More Mapped Information

Appendix B - OPW Site Assessment Report

SITE ASSESSMENT

Job Title:	**North-West & Neagh-Bann CFRAM**	JBA Job number:	2011s5232
		Sheet number:	1 of 4
Site Name:	CLONES AND ENVIRONS	UM Approval:	Ross Bryant

Name: Clones	**County:** Monaghan	**HA:** 36	**Unique ID:** 365094
Source of Flooding (Fluvial / Tidal): Fluvial		**Type:** Risk Review	
Visit By: Ross Bryant		**Date of Visit:** 09/09/2011	

PFRA Data / Comments (taken from 110310_Final Database):

Local knowledge indicates some degree of flood risk, but predictive / historic assessments do not provide sufficient evidence of potentially significant risk as defined.

PFRA Database Comments (taken from 110309_ALL_VAL - Post Round Two - MA.mdb):

OPW comments

Occasional flooding on Monaghan Road, no property damage.

LA comments

River Finn leading to Erne after heavy rainfall. Clones affected as well as N54. There is a treatment works at risk but not flooded yet. Some houses on R183 at Scotshouse road nearly flooded. Entrances to businesses on N54 cot off. Frequency – Twice a y

Watercourses / Sources of Flooding:

Parts of Clones are at risk from three fluvial watercourses, two of which are un-named and one is known as the Tirnahinch Stream (originating in Ramages Lough).

Maps:

See Flood Risk Review Site Map below.

Flood Outlines and Receptors:

The PFRA does not include a flood outline for the main source of flooding in Clones, which is the small watercourse that flows under the N54 junction with 98 Avenue, and the area was not formally flagged as requiring assessment and consequently does not have a FRI score. The town is built on a hill with most of the risk associated with lower lying land on the periphery. A new Fire Station has been constructed on 98 Avenue adjacent to a house that was flooded in November 2009, however the station is built on raised land and is unlikely to be inundated although access might be restricted. The Local Authority mention the Waster Water Treatment Works is at risk.

Comment on Flood Outlines:

The settlement is on a hill but surrounding flood risk highlighted by floodmaps.ie. No PFRA mapping is provided for the watercourse along 98 Avenue or the N54, despite the risk highlighted. These outlines have been estimated and are included for under the Site Visit Findings section.

Defence Assets and Structures:

A sluice gate was found on the un-named stream adjacent to the disused tractor sales warehouse on O'Duffy Street, it is assumed this is used to exert some kind of control on the drainage network. The town is subject to a minor works application but this mainly relates to culverting and channel alterations.

Environmental Impacts & Opportunities:

Part of the Kilroosky Lough Cluster SAC and pNHA is located within this Risk Review site. This site is designated for alkaline fens, hard oligo-mesotrophic waters and calcareous fens. These habitats are all wetlands, but with specific nutrient conditions, therefore flooding which impacts on the trophic status of these sites would have an adverse impact. The site is also designated for its White-clawed Crayfish population, which is generally tolerant of flooding, however, extreme floods may disturb spawning habitats and animals. In-channel flood risk management activities could also adversely impact on this species.

There are approximately 13 monuments located within and around this site, including a motte and bailey castle and a shrine.

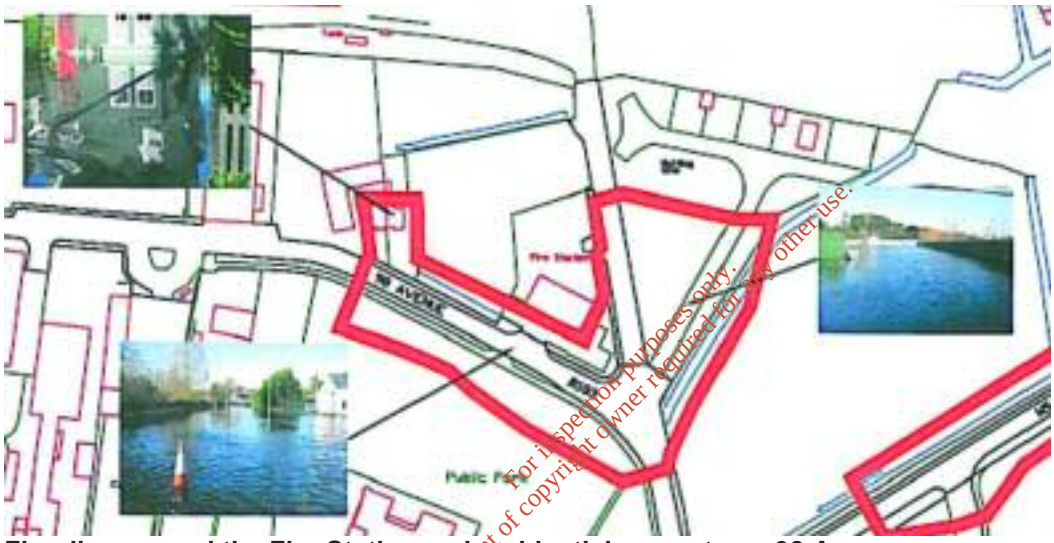
SITE ASSESSMENT

Job Title:	**North-West & Neagh-Bann CFRAM**	JBA Job number:	2011s5232
		Sheet number:	2 of 4
Site Name:	CLONES AND ENVIRONS	UM Approval:	Ross Bryant

Floodmaps.ie Data:

Floodmaps.ie contains a good level of detail on the flooding of 98 Avenue and the N54, it indicates that the area comprises part of a Minor Works application to the OPW:

Ninety Eight Avenue, Clones Recurring
Clones Recurring
Minor drainage channels adjacent to R183 and N54 Clones Co Monaghan Nov 2009 and Aug 2008
Altartate Glebe 1 Recurring
Altartate Glebe 2 Recurring
Clontreat recurring



Flooding around the Fire Station and residential property on 98 Avenue.

Other Relevant Information (e.g. web search, SFRA, other OPW studies and supplied data):

None found

Discussions with Key Stakeholders:

A meeting was held in Monaghan County Council Offices in Monaghan Town on 8th September 2011, in attendance were all Area Engineers. The engineers confirmed that Clones is part of a Minor Works application to the OPW and risk exists on 98 Avenue and N54.

The residents of the house on 98 Avenue that flooded in November 2009 were also consulted. They confirmed that there was four inches of water in the property during that flood and that no other properties, including the Fire Station, were affected.

Shane Hayes, OPW Area Engineer confirmed the Minor Flood Relief Works application in the Clones area.

Key Contacts (local authority, local or community groups):

Name	Position	Email	Tel
Shane Hayes	OPW Area Engineer	shane.hayes@opw.ie	046 9431352 087 2627583
John McGrath	Senior Engineer Monaghan Co. Council	jmcgrath@monaghancoco.ie	04730500 ext 351

SITE ASSESSMENT

Job Title:	**North-West & Neagh-Bann CFRAM**	JBA Job number:	2011s5232
		Sheet number:	3 of 4
Site Name:	CLONES AND ENVIRONS	UM Approval:	Ross Bryant

Site Visit Findings:

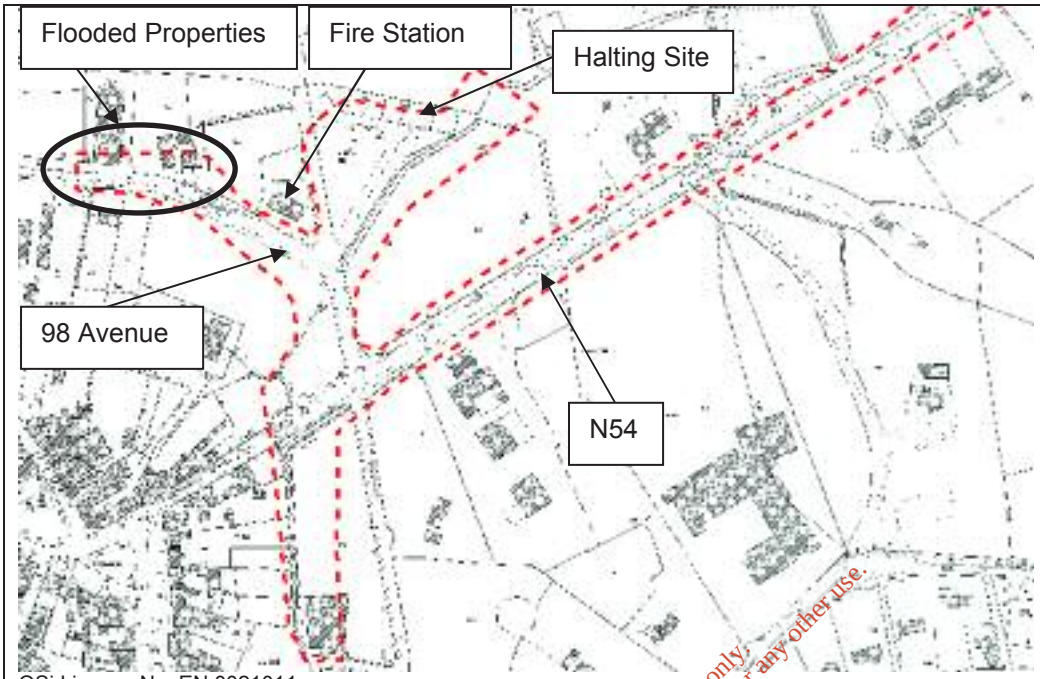
The site visit has confirmed that there is additional flood risk than that reported by the PFRA study, however, this is limited to a very small number of residential properties. A fire station is situated in the area of risk but the ground levels are raised, there is a potential risk from blocked access along 98 Avenue. The depths of flooding along this route are not thought to be severe enough to prevent access by a fire engine. An amended figure indicating the Recommended Extreme Flood Outline is presented over the page it includes for 2 residential and 2 commercial properties as well as a WWTP and an unoccupied halting site.

Green house (98 Avenue) flooded to a depth of four inches in November 2009

Clones Fire Station (on 98 Avenue) situated on raised land, but access is onto the flooded 98 Avenue.

SITE ASSESSMENT

Job Title:	**North-West & Neagh-Bann CFRAM**	JBA Job number:	2011s5232
		Sheet number:	4 of 4
Site Name:	CLONES AND ENVIRONS	UM Approval:	Ross Bryant



OSi Licence No. EN 0021011

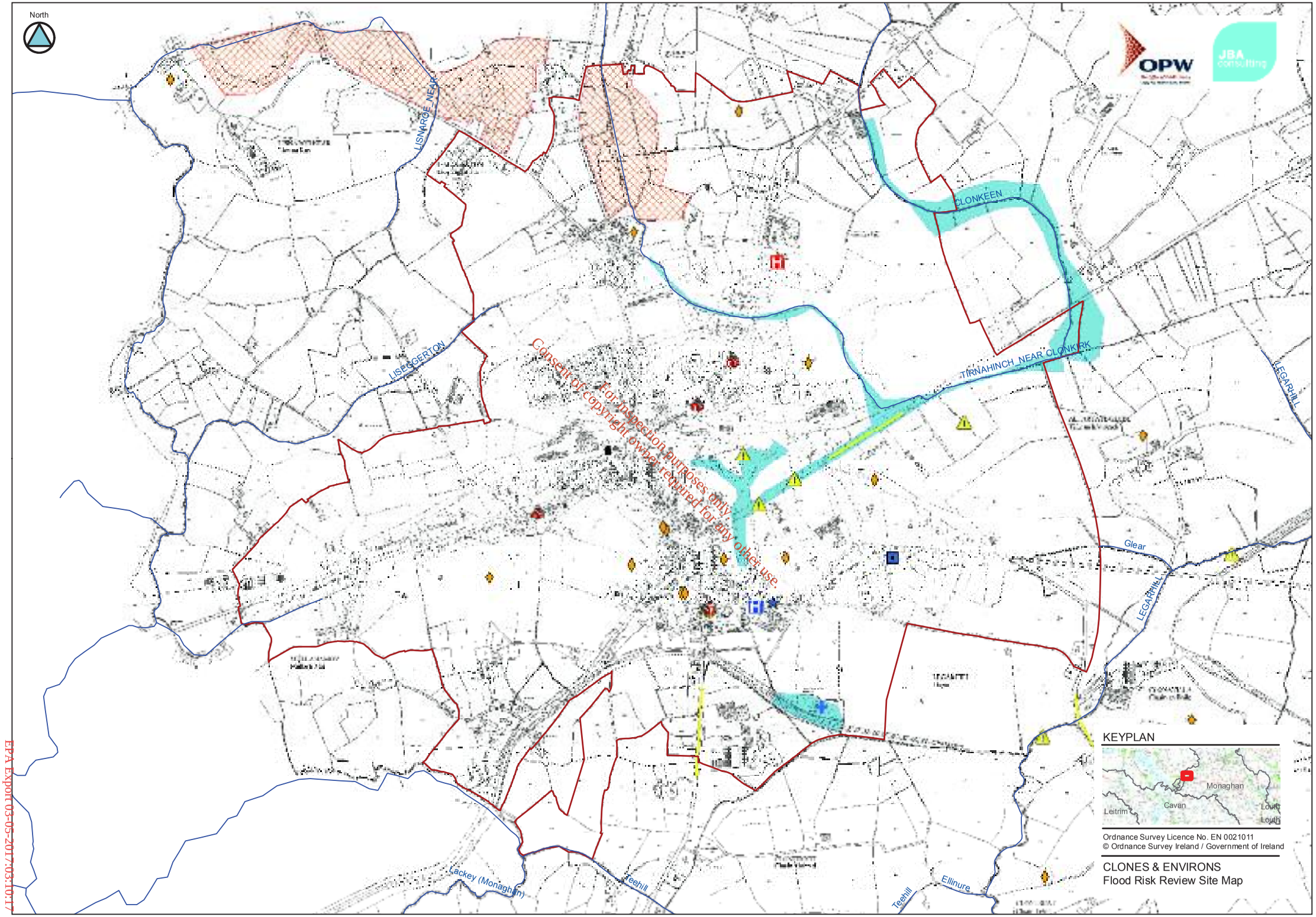
Recommended Extreme Flood Outline to include the flood extent from previously un-modelled watercourses.

Summary:

As a result of the limited risk of flooding in Clones the Flood Risk Index score is estimated to be 65 based on two residential and two commercial properties within the 10% AEP outline as well as a foul pumping station within the 10% AEP flood extent. Any effluent discharge from the pumping station would not impact the SAC.

It was noted that there is an unoccupied halting site adjacent to 98 Avenue, on the OSi mapping the site appears to have space for approximately six pitches, if included within the 10% AEP then the site contributes a score of 60. The Local Authority also note that the Waster Water Treatment Plant is at risk which would add a maximum score of 25 to the total which would provide a final FRI score of 150 As such it is not recommended that Clones is included as an AFA.

Final FRR Status:	**Non-AFA**



APPENDIX 6.2

REPRESENTATION FROM INLAND FISHERIES (PLANNING APPLICATION REFERENCE 10/349)

PK

SCANNED

PLANNING & DEVELOPMENT REGULATIONS 2001 TO 2007
Article 29(2)

ACKNOWLEDGEMENT of RECEIPT of REPRESENTATION
on a
PLANNING APPLICATION

THIS IS AN IMPORTANT DOCUMENT!

KEEP THIS DOCUMENT SAFELY. YOU WILL BE REQUIRED TO PRODUCE THIS ACKNOWLEDGEMENT TO AN BORD PLEANALA IF YOU WISH TO APPEAL THE DECISION OF THE PLANNING AUTHORITY. IT IS THE ONY FORM OF EVIDENCE WHICH WILL BE ACCEPTED BY AN BORD PLEANALA THAT A SUBMISSION OR OBSERVATION HAS BEEN MADE TO THE PLANNING AUTHORITY ON THE PLANNING APPLICATION.

PLANNING AUTHORITY NAME :- MONAGHAN COUNTY COUNCIL
PLANNING APPLICATION REFERENCE NO. 10/349
(consist of the replacement of existing hide processing and lairage facilities with new enlarged lariage (1959m2) and hide processing facility (881m2) together with new loading/unloading facilities with a new weighbridge to replace existing weighbridge on site and a rainwater harvesting tank and all associated site development works at existing AIBP factory Teehill, Clones, Co. Monaghan. The Planning application involves the demolition of industrial buildings with a cumulative floor area exceeding 100m2 and relates to an activity requiring an integrated pollution prevention and control licence (Reg. No. P0190-01) at Teehill Clones Co. Monaghan for AIBP T/A AIBP Clones)

A submission/observation in writing has been received from: **Inland Fisheries Ireland, Wateraughy, Corlesmore, Co Cavan,** on: **09/09/2010** in relation to the above planning application.

The appropriate fee of **(exempt from fee)** has been paid.

The submission/observation is in accordance with the appropriate provisions of the Planning & Development Regulations 2001 to 2007 and will be taken into account by the Planning Authority in its determination of the planning application.

MON. CO. CO.
PLANNING SECTION
14 SEP 2010
REG NO.

Samantha McBride
Bernadette McElvaney
Senior Staff Officer
for Planning Authority
Stamp
Date: **09/09/2010**

Iascach Intíre Éireann
Inland Fisheries Ireland

The Secretary,
Monaghan County Council,
County Offices,
The Glen,
Monaghan.

Our Ref: Finn/P/AK/10

7th. September, 2010

Re: Planning Application Reg: Ref: 10/349

Dear Sir,

We refer to the above planning application and attach herewith a copy of Technical Report prepared by the Fisheries Environmental Officer.

We request that you have particular regard to these issues in assessing this planning application.

Yours faithfully,

pp
Ailish Keane
Fisheries Environmental Officer

Ceantar Abhantraí an Iarthuaiscirt, Uachtar Achaidh, Corrlios Mór, An Cabhán.
- North Western River Basin District, Woteraughy, Corlesmore, Co. Cavan.
+ 353 (0) 49 4337174 - corlesmore@fisheriesireland.ie - www.fisheriesireland.ie

Comments in Relation to Proposed Development/Planning Application

RE: Planning Application – AIBB Clones Teehill, Clones, Co. Monaghan.
Your Ref: 10/349 Our Ref: Finn/P/AK/10

We refer to the above planning application.

Potential damage during the construction phase should also be minimised; this includes damage to riparian vegetation, increased sediment runoff, and spillages and discharges (e.g. cement, paints, oils). Care should be taken to minimise environmental damage to watercourses and waterbodies in the area during construction works. Useful guideline documents in this regard include:

- The National Roads Authority 'Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes' (http://www.nra.ie/Publications/DownloadableDocumentation/Environment/file,3493,en.pdf)
- Eastern Regional Fisheries Board 'Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites' (http://www.fishingireland.net/environment/constructionanddevelopment.htm

We are also concerned should concrete or cement be used that precautions are taken to ensure no entry or discharge of this material occur to waters because it can have a highly deleterious effect on fish and to ensure that no silt/mud/earth or other solid material runs off construction areas in a manner likely to result in the discharge of suspended solids to waters. We are concerned to ensure that no silt, hydrocarbon, petrol, oil, etc or other contaminated run off would discharge from this proposed roadway constructions to surface waters. We are concerned to ensure that leakages from tanks would be contained and would not discharge to these waters. All chemicals, fuels and oils need to be stored in a secure and adequately bunded area. All fuel storage tanks should have an adequately designed reinforced concrete bund system complete with impervious base. Chemical absorbent material should be on site at all times and a contingency plan prepared in the event of a spill. Accordingly, we request that provision would be made to deal with these issues, prior to grant of permission. We also suggest that a contingency/remedial plan be prepared to deal with any accidents or other occurrences which might cause polluting discharge to waters, including the provision of oil booms to contain oils, etc. and that conditions attached to a grant of permission would require system(s) to be maintained to ensure that no polluting discharges (sediments, oils, etc) would reach waters during the construction phase (ref. CIRIA document C532 – Control of Water Pollution from Construction Sites).

Regard should be given the extent of hard (paved) surfaces in the area. Stormwater runoff from hard surfaces can contain potential pollutants (e.g. oil, litter, and debris), which find their way into adjacent waterbodies. Stormwater drainage should have grease traps installed to intercept any potential pollutants; these traps must also be regularly maintained. Only clean, uncontaminated surface waters should be discharged from the site. Hard surfaces can also result in increased surface runoff, which can lead to potential flooding in downstream areas; this can have significant adverse effects on fish, fish habitat and fisheries. Where appropriate, water attenuation systems should be put in place to buffer such discharges.

We further request that any stream or watercourse on the site would be protected in terms of water quality, topography and habitat. Watercourses contribute towards maintaining biodiversity which is important in terms of Fisheries protection.

In conclusion, we stress the importance of the Finn River and associated tributaries as sensitive salmonid habitat, and urge extreme care and diligence in preventing adverse impacts during construction and operation of the above scheme if planning is approved.

Ailish Keane
Fisheries Environmental Officer
Inland Fisheries Ireland

Dated: 7th September 2010