9. SURFACE WATER

9.1 Introduction

This section assesses the potential impacts of the construction and operational phases of the development on surface waters. Mitigation measures are outlined to minimise any significant impacts identified.

During construction and during operation, the only potential impact on surface water is from surface runoff from the site, either through contamination of surface run-off or from excessive flow from hardstanding areas.

The potential impact due to contamination is addressed by assessing the storage and containment measures.

The potential of flooding due to excessive runoff from hardstanding areas is addressed by establishing the existing surface runoff pattern and comparing this to the runoff regime after the proposed facility is built.

9.2 Existing Environment

There are no surface water features such as rivers, streams, lakes or ponds on the development site. There are a number of drainage ditches on site running alongside the field hedgerow boundaries, all of which were observed to be dry during the summer months. There is a wide ditch (ca. 2 m width in places) along the northern site boundary, another ditch along part of the western site boundary and ditches running along two field boundaries within the site.

All of the drainage ditches on site feed into a wet drain which runs from a point on the western boundary of the site into a ditch in a field to the south-west of the development site. This ditch is located approximately 150 metres from the site boundary and eventually drains into the River Nanny. The ditch is approximately 1.5m wide by 2m deep and appears to be dry during the summer months.

The site currently drains into the Nanny via these drainage ditches.

The River Nanny runs in an easterly direction approximately 2 km south of the development site and surface water in the vicinity of the site appears to drain naturally through land drains, following the natural topography of the landscape towards the river. The River Nanny rises near Kentstown and flows east through Duleek and Julianstown to enter the sea at Laytown. The River Nanny drains a catchment area of 180 km^2 and a hydrological station located at Duleek has estimated a dry weather flow of 0.04 m^3/s and a 95 percentile flow of 0.25 m^3/s. The river is not a designated salmonid river under the 1988 European Communities (Quality of Salmonid Waters) Regulations but a number of angling clubs use the river for trout fishing.

9.3 Construction Impacts and Mitigation

If the ditch that feeds into the River Nanny became contaminated as a result of construction activities on site there could a negative impact on the River Nanny.

During construction the ditch could become contaminated as a result of an uncontained spillage of polluting substances or the discharge of large amounts of soil / silt from the site into the drain.

A number of mitigation measures will be put in place to prevent any significant contamination of surface waters during the construction phase. Any oils, chemicals, paints or other potentially polluting substances used during construction will be stored in properly bunded areas which will contain any spillages. All domestic effluent generated on site will be discharged to temporary sewage containment facilities prior to transport and treatment off-site. A silt trap will be installed on the site to prevent any wash out of silt or mud into the ditch which drains into the River Nanny.

Therefore the construction phase of the development will not have any significant negative impacts on surface waters.

9.4 Operational Impacts and Mitigation

9.4.1 Impact due to Runoff from Hardstanding Areas

All surface water run-off from hard-surfaced areas and building roofs and on the site will drain via one of two petrol interceptors into a 1,500 m^3 storage tank located underground beneath the main building complex. The surface water collection system and domestic effluent system is shown in Figure 9.1 – Site Services.

The water stored in the tank will be used to supplement process water requirements and up to 10 m^3/hr (of rain water) can be used in the process. During periods of prolonged heavy rainfall, when the amount of rainwater collected exceeds the process water use and storage capacity of the tank, the overflow will be discharged to the wet drain to the west.

The existing ditches on site will be regraded and rerouted to maintain the existing surface runoff regime from areas outside of the site and from some of the non hardstanding area on site. The remaining non hardstanding area on site will drain, via land drains, into the water storage tank.

The construction of large areas of hardstanding can potentially lead to flooding during periods of heavy rainfall. This will be prevented by using rain water in the process and by storing excess runoff in the 1,500 m^3 storage tank.

There will be approximately 4 hectares (40,000 m^2) of hardstanding on the proposed facility. The natural runoff from 4 Ha greenfield site was calculated using the method contained in the Institute of Hydrology Report No 124 and rainfall data from the Duleek weather station. On this basis it is estimated that the natural runoff is 10.73 l/s.

Table 9.1 shows the runoff that would be discharged to a ditch for a 1 in 20 year storm and a 1 in 50 year storm.

Table 9.1 Runoff to ditch before and after development

Rain Event	Runoff from hardstanding area (litres/s)	Natural Runoff (litres/s)	Impact (litres/s)
1 in 20 year	7.57	10.73	-3.16
1 in 50 year	13.29	10.73	2.56

As can be seen the facility will not lead to any impact for a 1 in 20 year storm, (that is the most rainfall over a day that will occur once in twenty years). Based on the institute of hydrology methodology of calculating the existing runoff, the volume of runoff to the ditch will be increased by about 25% during a 1 in 50 year storm. However, the overburden on the site consists of impermeable clay and during a 1 in 50 year storm it is likely that the site would flood and that all the rain water would run off to the ditch. The above is therefore a very conservative assessment.

9.4.2 Potential for Contamination

One of the primary means by which water could be contaminated is in the event of a fire on site and the contamination of fire water. As the waste to energy plant is for non hazardous waste this potential is negligible.

A 12,000 m^3 waste bunker located below ground level will be used to store incoming waste prior to treatment in the waste to energy plant. The waste bunker will be designed in accordance with the relevant standards for water retaining structures and in the event of a fire occurring the large capacity of the waste bunker would be used to contain any firewater generated and would prevent any firewater from entering the surface water drainage system.

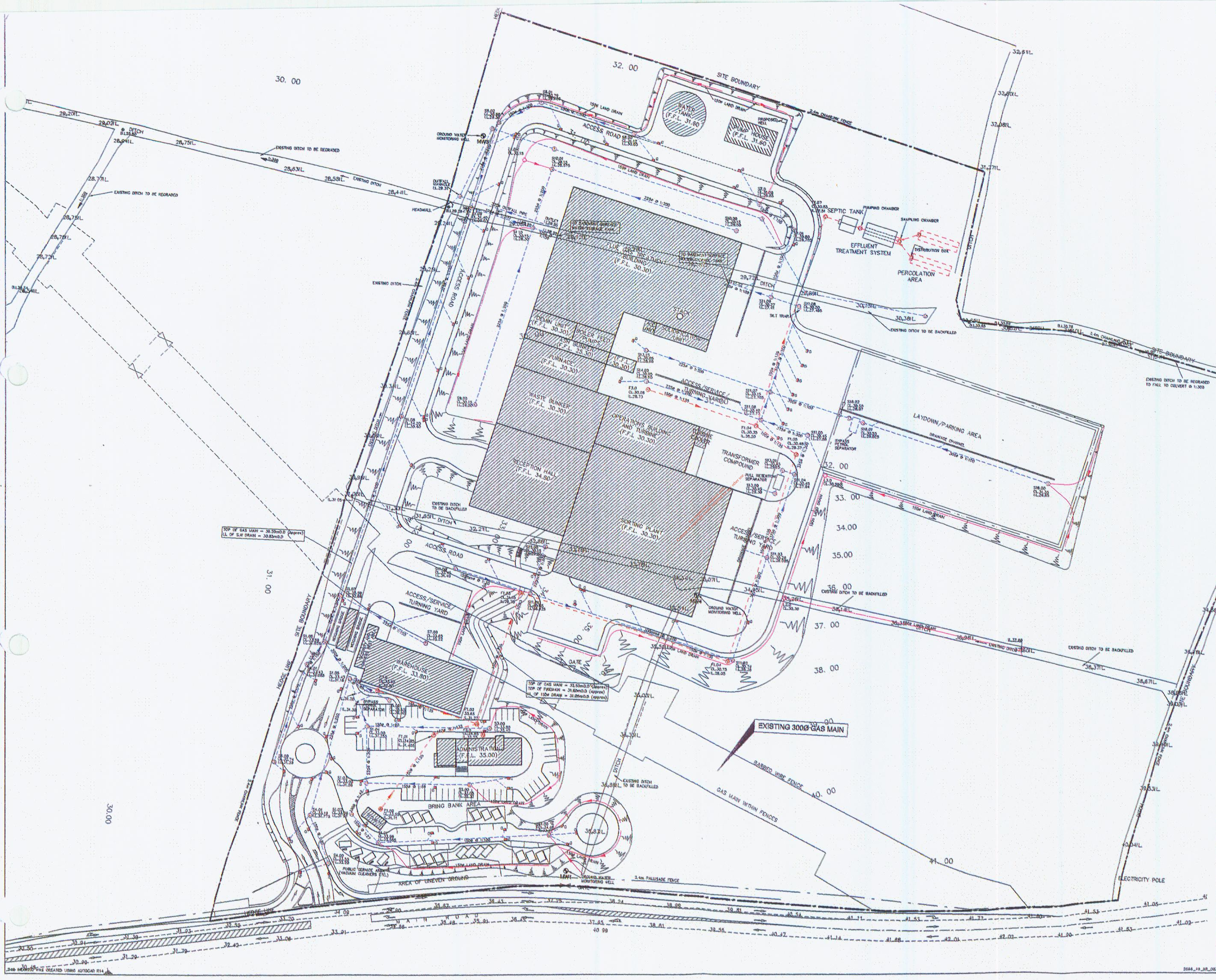
Contamination of surface water could occur in the event of any uncontained spillages of polluting substances on site. A number of mitigation measures will be put in place to prevent the contamination of any surface water and consequently the River Nanny. The mitigation measures outlined are similar to those for the protection of groundwater as discussed in Section 8.

There will be no trade effluent generated on site. As detailed in Section 8 a domestic effluent treatment system will be used to treat all the domestic effluent from the facility. The treatment system will treat the effluent to a very high standard prior to discharging it to a percolation area on the site.

All chemicals or other potentially polluting substances used during the operation of the facility will be stored in special containers and will also be handled in a manner to minimise the risk of any spillages occurring.

The Domestic Waste Community Recycling Park area will provide for the collection of a number of types of waste including car oil and car batteries which will be then be transported off-site for treatment. Waste oil and batteries will be stored in special containers to fully contain any spillages which could negatively impact on surface waters.

As previously mentioned petrol interceptors will be placed on the surface water line draining hard-surfaced areas (car-parking and marshalling areas) to contain any leakages of petrol/oil from vehicles on site.



NOTES

1. LEVELS ARE GIVEN IN METRES AND RELATE TO O.S. DATUM MALIN HEAD.

LEGEND

- PROPOSED S WATER SEWER/MANHOLE
- PROPOSED F SEWER/MANHOLE
- PROPOSED LAND DRAIN/MANHOLE
- MW — PROPOSED GRD WATER MONITORING W

A	PRELIMINARY				
ISSUE	DESCRIPTION	DRN	CHKD	AUTH CHK	APP

INDAVER

INDAVER IRE
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Project Management Group
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WILSON ASSOCIATES
architects

PROJECT WASTE MGMT FACILITY - CARRANSTOWN

TITLE
FIGURE 9.1
PROPOSED SITE DRAINAGE
(PAGE 127 OF DOCUMENT 266-22-DR-001A)

CLIENT REF.		CLIENT DRG No.	
PROJECT No.	2666		
A0 SCALE	1:500	CONTR DRG No.	2666-49-DR-005

Operation of the waste to energy plant will result in the emission to atmosphere of a number of substances which could have a negative impact if they entered surface waters at sufficiently high concentrations. The emission to atmosphere of acidifying gases (sulphur dioxide, nitrogen oxides) and other substances is assessed in Section 4 on Air Quality and Section 10 on Climate. The concentrations of emissions to atmospheric will be relatively low and will not exceed regulatory limit values. The atmosphere emissions from the plant will not result in high concentrations in the surrounding environmental media and will therefore not have any significant negative impact on surface water quality.

In summary, the operational phase of the development will not result in any significant negative impacts on the surface water drainage from the site and consequently the River Nanny. Mitigation measures will be put in place to prevent any significant negative impacts occurring.

9.5 Conclusions

There are no surface water courses on the development site. The site is drained by a number of drainage ditches which drain to a ditch in an adjacent field which eventually feeds into the River Nanny. A number of mitigation measures will be put in place during the construction and operational phases of the development to prevent any contamination of surface waters on the site and consequently the River Nanny. Therefore the development will not have any significant negative impacts on surface waters.

The drainage ditch has adequate capacity to accommodate the maximum expected surface runoff. As the storage tank will act as an attenuation tank, allowing large quantities of surface runoff to be discharged gradually, the existing surface water flow regime will not be significantly altered by the proposed development.