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DRAINAGE ASSESSMENT FOR A CHANGE OF USE AT STUMPS LANE, SPALDING

FINAL REPORT

ECL0059-4/G H MYERS LTD

DATE MARCH 2020

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1.0 INTRODUCTION

This Drainage Assessment has been prepared in accordance with National Planning Policy Framework (NPPF) and the Non-statutory technical standards for sustainable drainage systems.

The Lincolnshire County Council Sustainable Drainage Design and Evaluation Guide (2018) sets out the requirements for sustainable drainage. This assessment has been prepared with consideration to the guidance within this document.

This assessment has been produced on behalf of G H Myers Ltd in respect of a development that consists of a Change of Use from agriculture to industrial for an existing development at Stumps Lane, Spalding.

Pre-application advice received from Lincolnshire County Council stated that:

"It is likely that the site benefits from an existing surface water management system and this should be described. If not details of drainage proposals will be necessary"

This assessment has been produced in response to this advice and to support the planning application for the proposed Change of Use.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

The site is located at Ash Tree Lane, Stumps Lane, Spalding, PE12 6AT. The National Grid Reference of the site is 52645/32467.

The location of the site is shown in Figure 1.



Figure 1 – Location Plan (© OpenStreetMap contributors)

2.2 Existing Site

The site is on the eastern side of Ash Tree Road approximately 60m from the junction with Stumps Lane. The site comprises three Units constructed and originally used for agriculture. Units 1 and 2 are together and at the eastern end of the site and Unit 3 is at the western end. Site Plans are provided in Attachment 1. The area of development is approximately 1.1 hectares.

2.3 Site Topography

Environment Agency LIDAR data shows that typical ground levels at the site are between +3.0m OD and +3.3m OD.

2.4 Ground Conditions

The online British Geological Survey maps indicate that the site is likely to be underlain by Oxford Clay Formation mudstone. The bedrock is shown to be overlain with superficial deposits of clay and silt.

2.5 Watercourses and Available Flood Risk Information

A Flood Risk Assessment has been prepared for the site.

The site is in the South Holland Internal Drainage Board (IDB) District. The site and the surrounding land are within the Lords catchment and drains to Lords Drain Pumping Station and discharge to the tidal River Welland.

The site is located within Flood Zone 3, an area with a high probability of flooding, of the Environment Agency Flood Maps for Planning as shown in Figure 2.

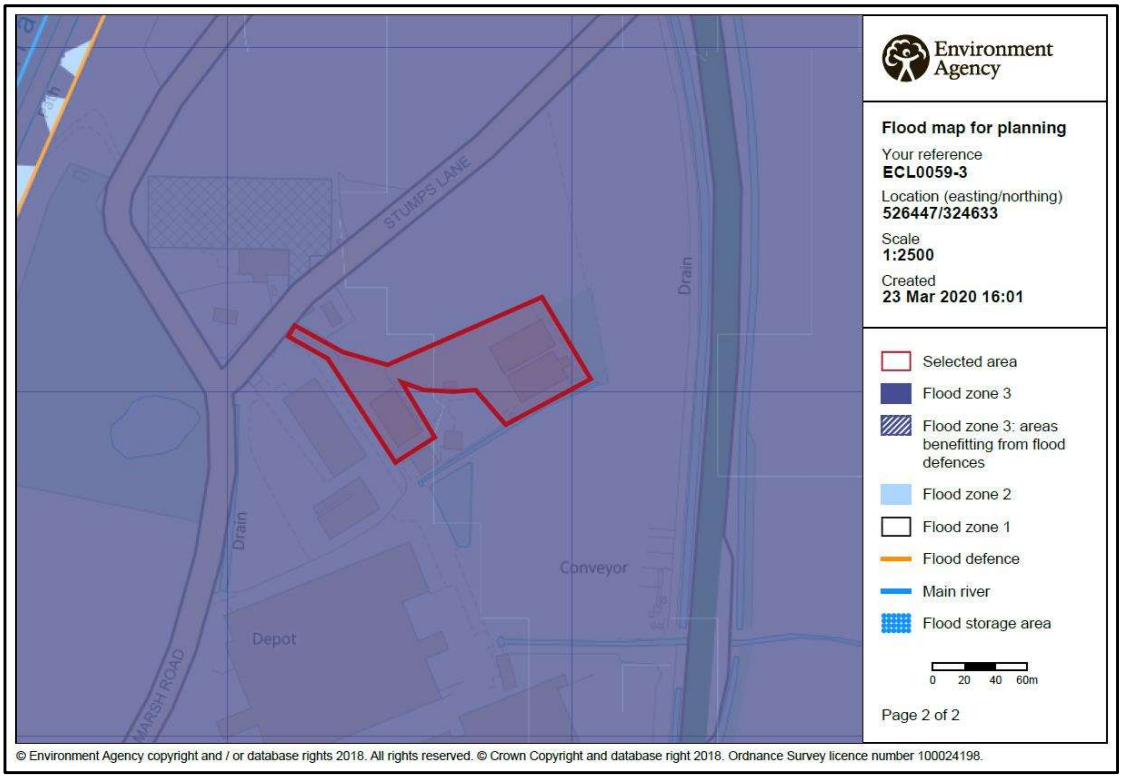


Figure 2 – Environment Agency Flood Map for Planning

The Environment Agency Long Term Flood Risk maps show that:

- the site has a very low risk of flooding from rivers or the sea (annual probability less than 0.1%);
- the site is not at risk of surface water flooding; and
- the site is not within an area at risk of reservoir flooding.

Table 1, which is based upon maps in the South East Lincolnshire SFRA, shows the level of residual risk at the site associated with a breach of defences.

SFRA Map	Present Day	2116
Residual Flood Hazard Map for the 1% fluvial and 0.5% tidal event	The site is in a 'Danger for All' area	The site is in a 'Danger for All' area
Residual Peak Depth Map for the 1% fluvial and 0.5% tidal	The site is in an area with a peak flood depth between 1.0m and 2.0m	The site is in an area with a peak flood depth between 1.0m and 2.0m

Table 1 – Flood Risk within SFRA Maps

3.0 THE DEVELOPMENT SITE AND DRAINAGE

3.1 Key Drainage Areas

In terms of the surface water drainage the eastern and western parts of the site can be considered to be independent. Environment Agency LiDAR data shows that the highest area of the site is on the access to the north east of the north east corner of Unit 3. This location can be considered as a watershed between the drainage in the eastern and western parts of the site.

Based upon a site inspection undertaken on 4 March 2020 the features of the surface water management system are shown in Figure 3.

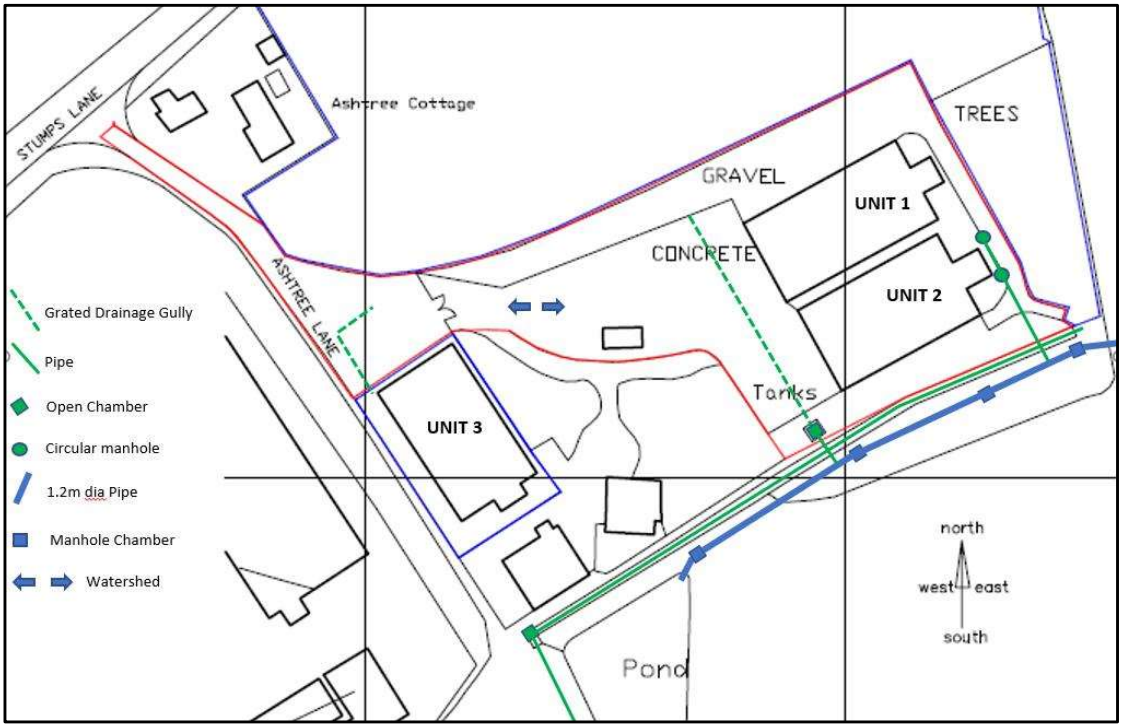


Figure 3 – Surface Water Management

Figure 3 includes elements of the drainage system within the T F Bowman & Son Ltd site that is to the south. The drainage system within the adjoining site, which comprises a 1.2m diameter pipe discharging to a stormwater lagoon (Photo 1), was constructed in 2018. At the time of the T F Bowman & Son Ltd development, drainage from the G H Myers Ltd site, which previously discharged to a riparian channel along the boundary between the sites, was connected to the 1.2m diameter pipe. The riparian channel on the boundary was replaced with a French drain.

3.2 Drainage in the Eastern Part of the Site

There are three primary areas in the eastern part of the site in terms of surface water management. The areas are:

- the roofs of Unit 1 and Unit 2;

- the site access and area in front of Unit 1 and Units 2; and
- the land on either site of the access and between and surrounding the units.

The areas and their drainage are described in Table 2.

Area	Permeability	Management of Runoff	Point of Discharge
Unit 1 and Unit 2 Roofs	100% impermeable	Gutters and downpipes connected to drainage pipe to the east of units	Discharges to the 1.2m diameter pipe in adjoining site
Access and Hardstanding Areas	100% impermeable	Combination of sheet runoff to surrounding permeable areas and to a grated drainage gully	Infiltration and drainage gully that discharges to the 1.2m diameter pipe in adjoining site
Unsurfaced Areas	100% permeable	No formal management of runoff	Infiltration at source

Table 2 – Primary Drainage Areas (East)

As indicated in Table 2 it is anticipated runoff from the access and hardstanding areas will either:

- drain to the edge of the surfaced area such that it runs off as sheet flow onto the permeable area; or
- drain to the grated drainage gully (Photo 2) where it would be collected and discharged to the adjoining site. The drainage passes through an open brick manhole (Photo 3).

The 1.2m diameter pipe in the adjoining site discharges to a stormwater lagoon that provides attenuation during storm events. Surface water is pumped from the stormwater lagoon and discharges through the site in an easterly direction. This drain flows below the A16 and into the IDB system.

3.3 Drainage in the Western Part of the Site

There are three primary areas in the eastern part of the site in terms of surface water management. The areas are:

- the roof of Unit 3;
- the site access and area in front of Unit 3; and
- the land surrounding Unit 3.

The areas and the arrangements for drainage are described in Table 3.

Area	Permeability	Management of Runoff	Point of Discharge
Unit 3 Roof	100% impermeable	Gutters and downpipes draining to the south of the unit	Discharges to the riparian drain on the southern site boundary site.
Access and Hardstanding Areas	100% impermeable	A combination of sheet runoff to surrounding permeable areas and to a grated drainage gully	Infiltration and to the riparian drain on the southern site boundary site.
Unsurfaced Areas	100% permeable	No formal management if runoff	Infiltration

Table 3 – Primary Drainage Areas (West)

As indicated in Table 3 it is anticipated runoff from the access and hardstanding areas will either:

- drain to the edge of the surfaced area such that it runs off as sheet flow onto the permeable area; or
- drain to the grated drainage gully (Photo 4).

There is anecdotal evidence that the runoff collected from the roof and surfaced areas is discharged to an open chamber at the western end of the boundary between the development site and the site to the south (Photo 5). The French drain on the boundary between the two sites discharges to this chamber.

The outflow from this chamber passes through the adjoining site. It is combined with pumped discharge from the stormwater lagoon and flows into the IDB network.

3.4 The Development and Modified Flow Routes

The proposed Change of Use does not change the drainage at the site. There is no change to the impermeable area.

4.0 PERFORMANCE OF THE EXISTING DRAINAGE

4.1 Access and Hardstanding Areas

As noted in Section 3 the runoff from the access and hardstanding areas is discharged as sheet runoff to surrounding permeable areas and to the grated drainage gullies. The hardstanding areas are used for the storage of materials.

At the time of the inspection a limited section of the grated drainage gully in the east of the site was covered by materials. The capacity of the channel was reduced by debris and silt. The capacity of the grated drainage gully in the west of the site (Photo 4) was significantly reduced by debris and silt.

4.2 Units 1, 2 & 3

As described in Section 3 the runoff from the roofs of the Units is collected by gutters and downpipes and discharges to a pipe drainage system.

The condition of the gutters and the connections to downpipes is mixed. In some locations the downpipe was not connected to the gutter and the gutters contained considerable amounts of material (Photo 6).

Two inspection covers on the drainage pipe to the east of Unit 1 & 2 (Photo 7) were lifted during the inspection. The condition of the chambers was good (Photo 8).

4.3 Surrounding Land

The land surrounding the Units, access and hardstanding areas is permeable. Prior to the site visit rainfall levels had been higher than average. There was no evidence of standing water within the surrounding areas.

4.4 Exceedance Events

The non-statutory technical standards for sustainable drainage systems requires consideration of flood risk within the development. An exceedance event would occur during an event that exceeded the design standard of the drainage system. In this instance it is likely that runoff from roofs and impermeable areas would spill onto the permeable areas. It is likely that overland flow would occur with drainage to the French drain along the southern boundary of the site.

4.5 Management and Maintenance

Based upon the site inspection it appears that the drainage features within the site have had a minimum level of maintenance. This level of maintenance has led to the reduced performance of the system and its capacity to deal with surface water runoff.

The drainage system within the adjoining site to the south, that receives the flow from the site, is new.

5.0 SUMMARY AND RECOMMENDATIONS

The key points identified during this assessment are:

- Pre-application advice for a retrospective application for a Change of Use requested a description of the existing surface water management system.

- The Change of Use does not increase the impermeable area at the site and there are no proposals to modify the drainage system that is in place.

- Runoff from three Units at the site is managed through a gutter, downpipe and pipe network. Runoff from the access and hardstanding areas is collected in grated drainage gullies or drains to the adjacent permeable areas.

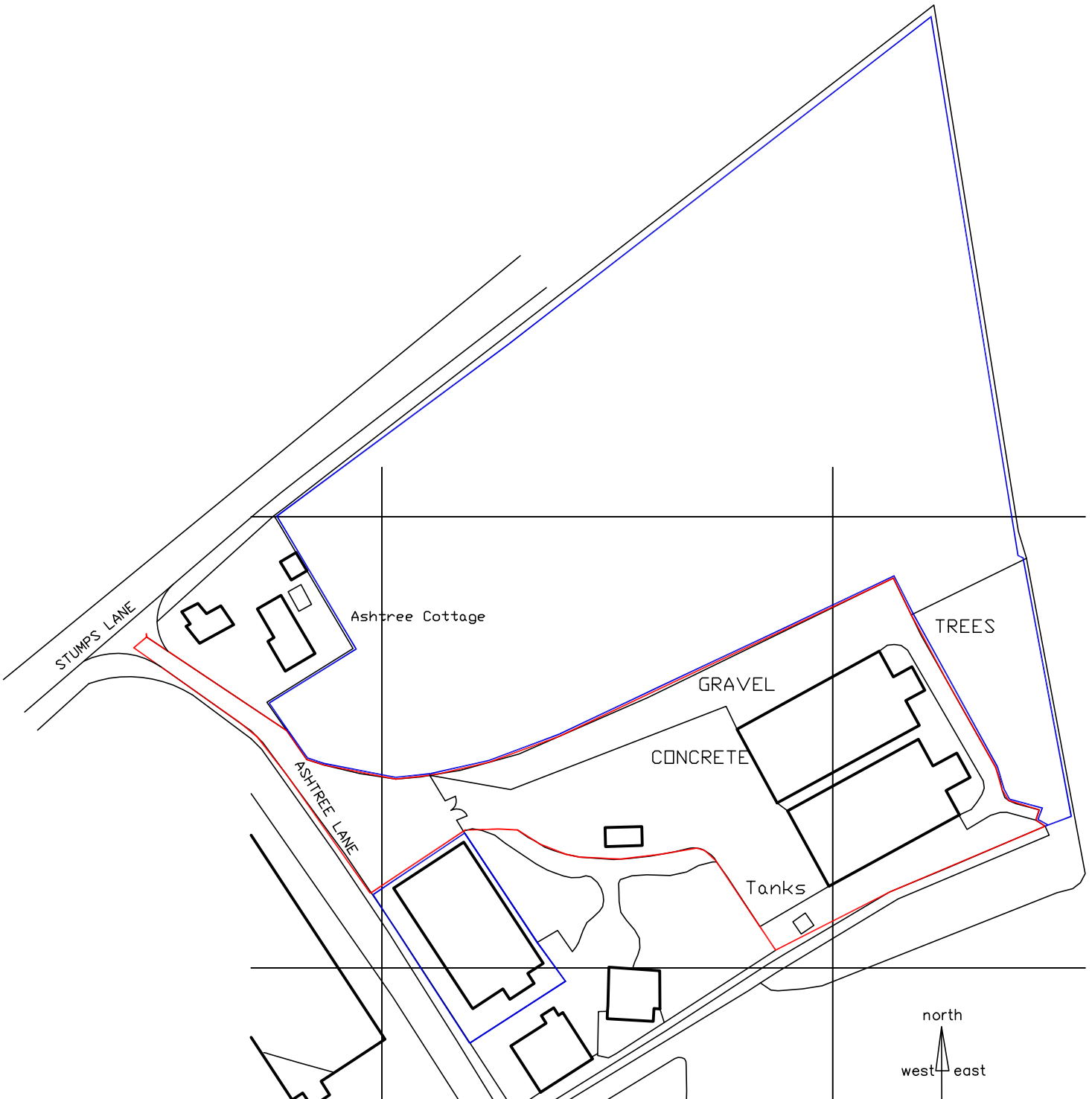
- Runoff from the impermeable areas that enters the drainage system is discharged to the site to the south of the development site.

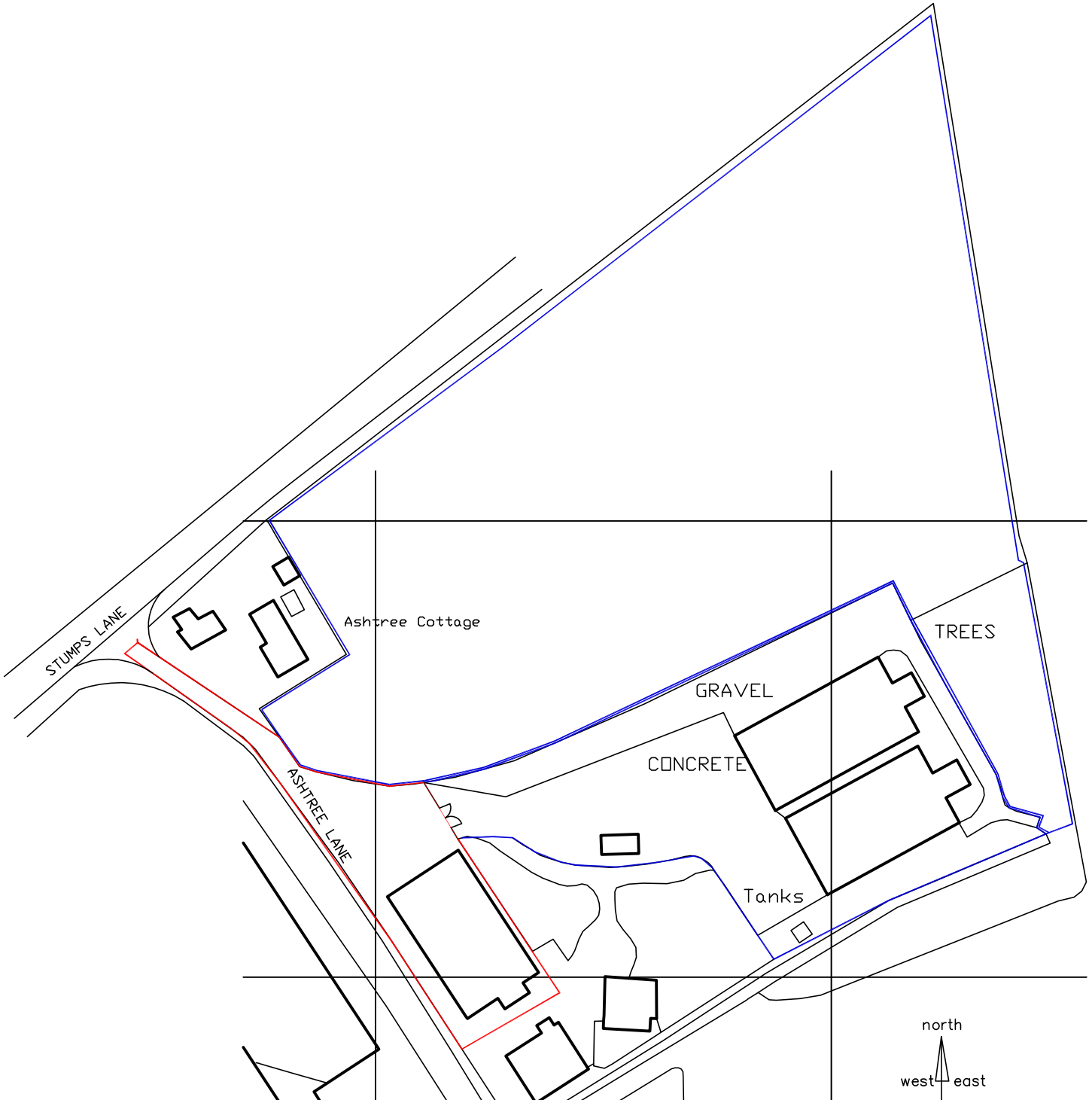
- The drainage system has had a low level of maintenance that reduces its effectiveness.

It is recommended that the existing drainage system is repaired and maintained. The activities undertaken to achieve this could comprise the cleaning of the gated gullies and the repair of gutters and their connection to downpipes. It is also recommended that consideration is given to where materials are stored on site so that they do not impede the drainage system.

ATTACHMENT 1

SITE LOCATION PLAN UNITS 1 & 2 (Dwg 350SK01)
SITE LOCATION PLAN UNIT 3 (Dwg 350SK03)


STUMPS LANE
Ashtree Cottage
TREES
GRAVEL
CONCRETE
ASHTREE LANE
Tanks
north
west
east


STUMPS LANE
Ashtree Cottage
ASHTREE LANE
TREES
GRAVEL
CONCRETE
Tanks
north
west
east

ATTACHMENT 2

SITE PHOTOGRAPHS



Photo 1 – 1.2m dia Pipe Discharging to Stormwater Lagoon



Photo 2 – Grated Drainage Gully in Eastern Site

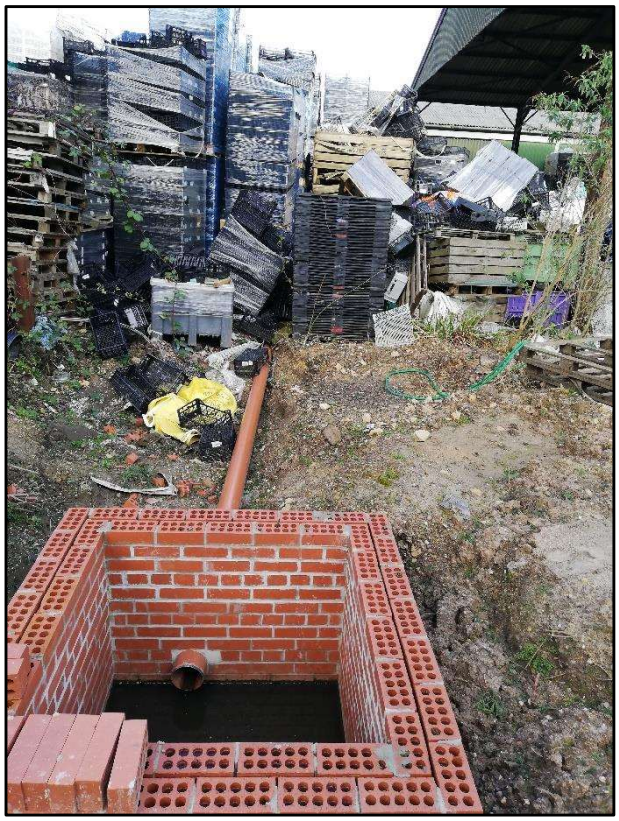


Photo 3 – Grated Drainage Gully Outlet to Brick Manhole



Photo 4 – Grated Drainage Gully in Western Site



Photo 5 – Open Chamber Collecting Surface Water from Western Site



Photo 6 – Gutters and Downpipes



Photo 7 – Inspection Covers on Drainage Pipe taking Roof Drainage



Photo 8 – Inspection Chamber on Drainage Pipe taking Roof Drainage