ABINGTON
CONSULTING ENGINEERS
CHARTERED CIVIL ENGINEERS

CONTAMINATED FIRE WATER STORAGE STRATEGY

FOR PROPOSED

WASTE RECYCLING FACILITY

AT

CROWN HOUSE

CORBY

NORTHAMPTONSHIRE

24th July 2018
First Issue

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Contents

Revisions

Rev.	Date	Description
-	24/7/18	First Issue.

1.0 Introduction

1.1 Abington Consulting Engineers have been appointed to produce a Contaminated Fire Water Storage Strategy for the Materials Recycling Facility at Crown House, Corby.

2.0 Regulations Requirements

2.1 Fire Prevention Plan guidance was first published by the Government in 2016. This requires containment of fire water run-off in order to prevent pollution of the environment.

2.2 To comply with the guidance, 2000 litres of water per minute is required for a minimum of 3 hours for a 300m^3 pile of combustible material.

2.3 The largest stockpile of waste on the Crown House site will be 750m^3 and therefore the fire water storage requirement will be:

V = (750/300) x (2000/1000) x 60 x 3 = 900m^3

2.4 Containment of the fire water should be provided by one or a combination of the following:

- impermeable bunds
- storage lagoons
- shut-off valves
- isolation tanks
- modified areas of your site such as a car park
- pollution control equipment such as fire water booms and drain mats to block drains or divert fire water

3.0 Existing Drainage System

3.1 The original building recently burned down, but the below ground drainage that collected roof drainage remains. The remaining concrete floor slab discharges run-off onto the adjacent yard areas.

3.2 The yard areas and access road drain into the drainage system via gullies and drainage channels.

3.3 Surface water is collected at a pumping station via a network of pipes and is then pumped into nearby Gretton Brook. The drainage network is shown on the drawing presented in Appendix 1.

4.0 Proposed Fire Water Storage

4.1 It is proposed that fire water will be prevented from leaving the site by shutting down the pumping system. The pumps will be deactivated when the fire alarm is triggered.

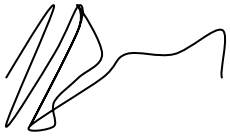
4.2 Fire water will collect in the existing drainage system and above ground within the confines of the site. With the pump deactivated, no pollution will occur off site.

4.3 Following a fire, the fire water will be pumped into tankers and disposed of at a suitably licenced facility.

4.4 In order to assess the capacity of the site to accommodate the 900m^3 fire water storage requirement, a topographical survey of the site has been carried out and the maximum water level established before surface water would overtop the site and discharge onto third party land. This level has been established as 113.70m AOD (refer to drawing presented in Appendix 1) at the site entrance.

4.5 As a conservative estimate, the fire water storage area of the site lost to waste storage has been estimated as 30% of the site area. This assumes that stockpiles of waste are impermeable, but in fact the majority of the waste streams have a large void ratio and are highly permeable.

4.6 Calculations presented in Appendix 2 demonstrate that the site has the capacity to accommodate 3079m^3 of fire water based on a top water level of 113.70m AOD. The calculations also show that to accommodate the requisite 900m^3, the top water level would be between 113.3m and 113.4m AOD. Therefore, there is plenty of spare capacity to accommodate additional fire water over and above the required standard on site.



…….. 24th July 2018

Ian Brazier BEng (Hons) CEng MICE
On Behalf of Abington Consulting Engineers

APPENDIX 1 – Drawings

GRETTON BROOK ROAD

A123M

pumping station power cut-off to be linked to fire alarm

300ø rising main

S6 CL113.75 IL111.91

S7 CL113.73 IL111.83

S8 CL113.84 IL112.92

S9 CL113.75 IL112.75

S10 CL113.24 IL111.66

S11 CL113.79 IL111.74

S12 CL113.41 IL111.31

S1 CL113.52 IL112.25

pumping station

interceptor

F1 CL113.84 IL113.32

F2 CL113.83 IL113.13

pumping station power cut-off to be linked to fire alarm

area shown dotted used for contaminated fire water storage

exact route of rising main between F2 and F3 uncertain

S5 CL113.57 IL112.12

S4 CL113.23 IL112.58

area shown dotted used for contaminated fire water storage

drainage channel

80ø rising main

S15 CL112.80 IL111.90

create channel with invert 113.35m AOD to link fire water storage catchments

S3 CL113.56 IL112.60

S13 CL113.50 IL112.60

S14 CL113.60 IL111.93

CL113.60 IL112.14

IL112.15

F3 CL113.37 IL113.57

attenuation pond volume 284m3 20m x 14m x 1.2m deep

80ø rising main

KEY – Existing Drainage

- Foul water sewer and manhole
- Foul water pumping station and rising main
- Surface water sewer and manhole
- Surface water pumping station and rising main
- Surface water sewer and gully
- rwp — Rain water pipe (now redundant)

KEY – Existing Ground Contours

- 113.70m AOD
- 113.60m AOD
- 113.50m AOD
- 113.40m AOD
- 113.30m AOD
- 113.20m AOD
- 113.10m AOD
- 113.00m AOD
- 112.90m AOD
- 112.80m AOD
- 112.70m AOD

REV.	BY	REVISION DETAILS	DATE

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PROJECT
Crown House, Corby

TITLE
Contaminated Fire Water Storage Plan

DRAWING NO.	REVISION
18037/102	–

SCALE	1:250 @ A1		
DRAWN	EJB	CHECKED IB	DATE 24/7/18

APPENDIX 2 - Calculations

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CROWN HOUSE, CORBY – CONTAMINATED FIRE WATER STORAGE CALCULATIONS

Storage requirements

The biggest stockpile is 750m^3

This requires 5000 litres of water a minute for a minimum of 3 hours

V = (5000/1000) x 60 x 3 = **900m^3**

Storage provision

Surface water balancing pond provision = **284m^3**

Above ground provision based on 30% occupied by waste:

Level	Area (m^2)	Av. A (m^2)	Depth (m)	Volume (m^3)	70% (m^3)	Cumalative volume including pond (m^3)
112.70	9					
		120	0.1	12.0	8.4	292.4
112.80	232					
		278	0.1	27.8	19.5	311.9
112.90	324					
		365	0.1	36.5	25.6	337.5
113.00	406					
		441	0.1	44.1	30.9	368.4
113.10	477					
		738	0.1	73.8	51.7	420.1
113.20	1000					
		1645	0.1	164.5	115.2	535.3
113.30	2290					
		3727	0.1	372.7	796.2	1331.5
113.40	5165					
		6448	0.1	644.8	451.4	1782.9
113.50	7731					
		8566	0.1	856.6	599.6	2382.5
113.60	9401					
		9956	0.1	995.6	696.9	3079.4
113.70	10511					

Total volume **3079m^3**

Storage volume requirement of 900m^3 would be reached at a level between 113.3m AOD and 113.4m AOD.