

Caulmert Limited

Engineering, Environmental & Planning
Consultancy Services

Standard Landfill Site

Flintshire County Council Waste Management Services

Replacement of Groundwater Monitoring Borehole GW2

Construction Quality Assurance Report

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Client: Flintshire County Council Waste Management Services

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**REPLACEMENT OF GROUNDWATER MONITORING BOREHOLE GW2
STANDARD LANDFILL SITE
CONSTRUCTION QUALITY ASSURANCE REPORT**

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2596.CAU.XX.XX.DR.V.1801 Borehole Location Plan

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1.0 INTRODUCTION

1.1 Background

- 1.1.1 Caulmert Ltd (Caulmert) has produced this document on behalf of Flintshire County Council Waste Management Services (FCC), which covers the installation of a groundwater monitoring borehole to replace GW2 at Standard Landfill Site.
- 1.1.2 The appointment required the professional services of Caulmert for the provision of a CQA Site Inspector (CQA SI) to monitor the progress and report upon completion of the Works with regard to quality assurance and compliance with the CQA Plan for the Works. The CQA Plan and Specification for the Works was submitted to, and accepted by, Natural Resources Wales (NRW) in August 2016.
- 1.1.3 In accordance with their appointment Caulmert has produced and submitted this CQA Validation Report on behalf of FCC.

1.2 Site Location and Surrounding Land Use

- 1.2.1 Standard Landfill Site is located approximately 1 km north-east of Buckley town centre, Flintshire, North Wales (NGR SJ 290 650) and is shown in Figure 1 below. The site is accessed via the B5127 (Liverpool Road).
- 1.2.2 The site is bounded to the east by Burntwood Road where several residential properties have boundaries within 50 m of the eastern extreme of the site. To the west of the site lies agricultural land, separated from the landfill boundary by a water course. The Spencer Industrial Estate, which comprises several small industrial units, is situated beyond the southern site boundary. The A55 dual carriageway runs adjacent to the northern boundary.

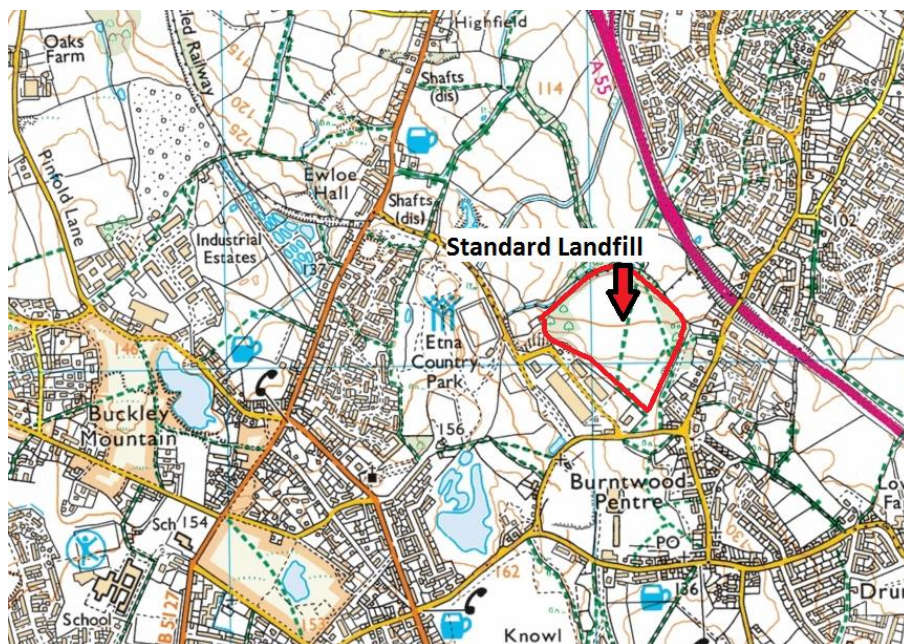


Figure 1: Site Location Plan

- 1.2.3 A Site of Special Scientific Interest (SSSI), namely The Buckley Claypits and Commons, is located close to the Site. Standard Landfill is also surrounded by the Deeside and Buckley Newt Site Special Area of Conservation.

2.0 DESCRIPTION AND TIMING OF WORKS

2.1 Description

- 2.1.1 FCC appointed Dragon Drilling Ltd as the Contractor for the Works. The Works included the drilling and installation of a replacement groundwater monitoring borehole adjacent to the existing borehole GW2.

2.2 Timing

- 2.2.1 The works were undertaken between the 10th and 12th of October 2016.

2.3 CQA Inspector's Daily Reports

- 2.3.1 The daily records completed by the CQA Site Inspector, detailing the progress of the Works, are presented in Appendix 1.

3.0 DRILLING WORKS

3.1 Procedure and Equipment

- 3.1.1 The drilling works were undertaken in accordance with the CQA Plan. A Comacchio C450P Rotary Drilling Rig was utilised for the Works. The drilling rig was operated by a lead driller with an assistant.
- 3.1.2 The drilling diameter was 200 mm with casing being extended from ground level to approximately 10 mBGL to prevent borehole collapse.
- 3.1.3 Upon completion of the borehole to the approval of the CQA Site Inspector, a dip level was recorded prior to the installation of the well liner and the depth recorded relative to the ground level adjacent to the hole.
- 3.1.4 All casing was removed following completion of the borehole drilling and installation.
- 3.1.5 A location plan for the installed borehole is enclosed, 2596.CAU.XX.XX.DR.V.1801.

4.0 SITE OBSERVATIONS

- 4.1.1 The borehole was successfully installed in virgin ground to a total depth of 59.5 mBGL. A water strike was encountered at 47.5 mBGL.

5.0 INSTALLATION WORKS

- 5.1.1 In accordance with the CQA Plan and Specification a replacement groundwater monitoring borehole was installed with a geowrapped well casing (with an end cap) manufactured from 100 mm internal diameter slotted High Density Polyethylene (HDPE) pipes. The slotted HDPE pipe extended from the base of the well up to 2.0 mBGL. The solid HDPE pipe was installed from 0.5 mAGL to 2.0 mBGL, screw fitted to the slotted sections below.
- 5.1.2 Fines free gravel was delivered to the annulus around the well screen from the base of the borehole to 0.5 m above the top of the slotted section of pipe at 1.5 mBGL. During the installation the CQA Site Inspection checked the following:
- The installation of the well casing with the end cap
 - The installations of the gravel filler materials to ensure no voids were left due to bridging.
 - The gravel filler material was installed in such a way as not to adversely affect the verticality and integrity of the well casing.
 - The gravel filler material was installed to the top of the slotted section of the well casing.
- 5.1.3 The well casing was fitted with a push fit end cap on the bottom and a push fit top with an integral gas tap.
- 5.1.4 The borehole installation was completed with a bentonite seal from the top of the filler material to ground level and a lockable steel cover which extended not less than 0.5m above ground level.

6.0 SUMMARY

- 6.1.1 One replacement groundwater monitoring borehole was successfully installed in virgin ground during the Works.
- 6.1.2 From the observations made by the CQA Site Inspector, we can confirm that the drilling and installation works were completed to a satisfactory standard and in accordance with the CQA Plan and Specification approved by NRW.
- 6.1.3 A borehole location drawing and a borehole log are included in this report. A photographic log of the works is included in the CQA Site Inspector's Daily Records, in Appendix 1.

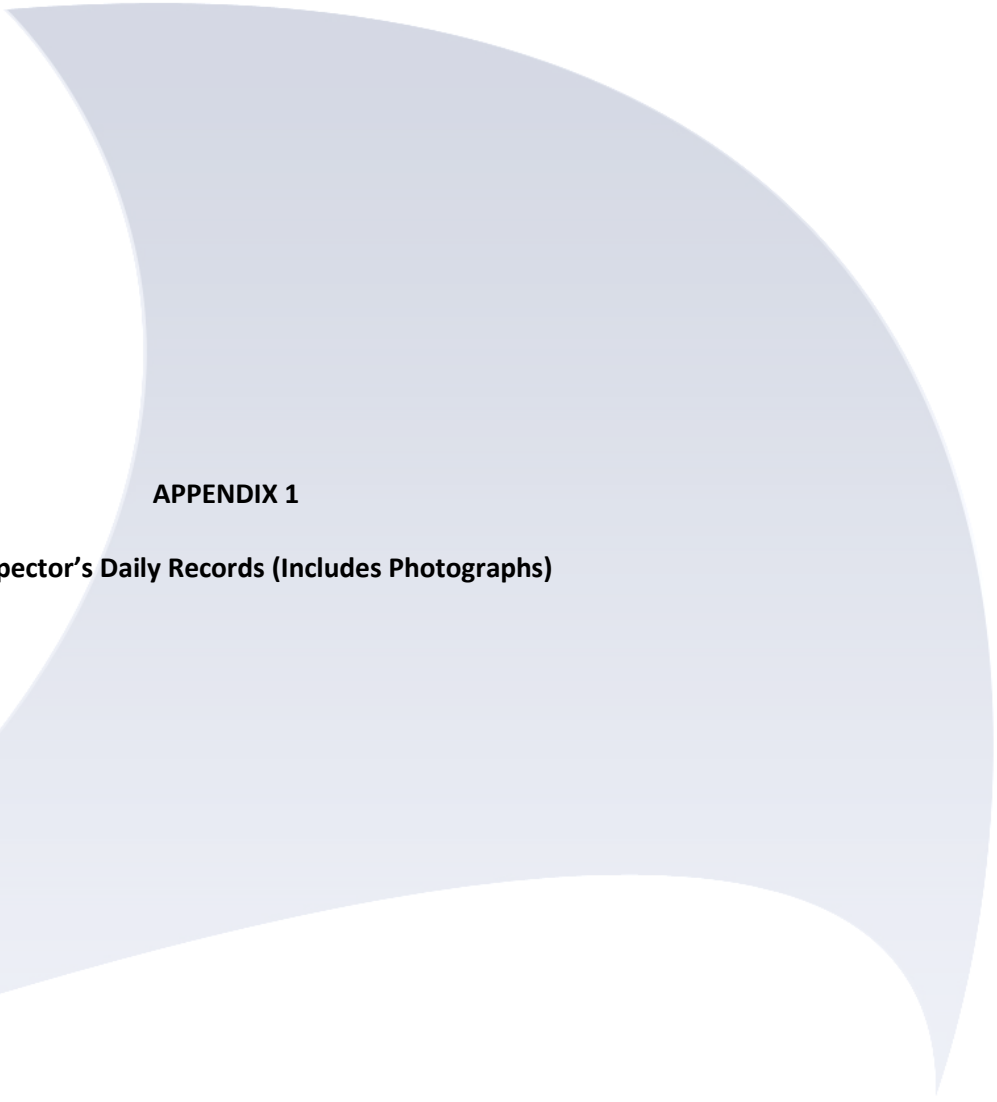
DRAWING

2596.CAU.XX.XX.DR.V.1801 Borehole Location Plan

1. DO NOT SCALE FROM THIS DRAWING, WORK FROM FIGURED DIMENSIONS ONLY. ALL DIMENSIONS ARE IN MILLIMETRES AND ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM U.N.O.
2. NO DEVIATION FROM THE DETAILS SHOWN ON THIS DRAWING WILL BE ALLOWED WITHOUT THE PRIOR PERMISSION IN WRITING.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS AND SPECIALIST DRAWINGS AND SPECIFICATIONS.
4. GW2 LOCATION TO BE REPLACED TO THE NEW PROPOSED GW2 LOCATION SHOWN ON DRAWING

PRELIMINARY DRAWING
FOR INFORMATION
PURPOSES ONLY

REV	MODIFICATIONS	BY	CH	AP DATE
FLINTSHIRE COUNTY COUNCIL				
PROJECT: INSTALLATION OF REPLACEMENT MONITORING BOREHOLES				
TITLE: CQA REPORT GW2				
DRAWN BY CF		DATE 17.10.2016		
REVIEWED BY SO		SCALE @ A3 NTS	JOB REF: 2596	
AUTHORISED BY JM		ISSUE -	REVISION -	
DRAWING NUMBER 2596.CAU.XX.XX.DR.V.1801				
				



APPENDIX 1

CQA Inspector's Daily Records (Includes Photographs)

CQA Inspector's Daily Record

Client: Flintshire County Council Waste Management Services

Landfill Site: Standard Landfill Site

Project: Replacement of Groundwater Monitoring Borehole GW2

Date	10.10.2016
Hours of Works	08:00 – 16:00
Weather: Previous Night Morning Afternoon	Cold, dry Cold, some ground frost, dry Bright, dry
Contractors Plant/Resources Utilised	Dragon Drilling Ltd – Lead driller and assistant Comacchio C450P Rotary Drilling Rig & compressor JCB Telehandler TB228 Mini-digger IBC water container
Works Undertaken	Drilling contractor and CQA Supervisor walked to location to assess access route for drilling equipment. Telehandler used to add gravel to muddiest parts of access track. Drilling rig, telehandler, mini-digger and IBC water container moved to location. Compressor not brought to location due to muddy access track, but left at the top of shrub covered flank adjacent to the location. Compressor pipes connected and positioned running down flank. Drilling rig set up started. All parties left site by 16:00.
Visitors to Site	Paul Murphy – Flintshire County Council Ecologist – Flintshire County Council Ben Ellison – Dragon Drilling Ltd
Health and Safety	Nothing to report
Photographs	 Drilling rig at borehole location
Additional Information	N/A

CQA Inspector's Daily Record

Client: Flintshire County Council Waste Management Services

Landfill Site: Standard Landfill Site

Project: Replacement of Groundwater Monitoring Borehole GW2

Date	11.10.2016
Hours of Works	08:00 – 18:00
Weather: Previous Night Morning Afternoon	Cold, dry Overcast, some light rain Bright, dry
Contractors Plant/Resources Utilised	Dragon Drilling – Lead driller and assistant Comacchio C450P Rotary Drilling Rig & compressor JCB Telehandler TB228 Mini-digger IBC water container
Works Undertaken	Drilling rig preparation continued. Drilling commenced at 11:00. Water strike at 47.5 mBGL, at 16:00. Borehole depth, 59.5 mBGL, achieved at 16:45. Drilling rods removed from borehole. All parties left site by 18:00.
Visitors to Site	N/A
Health and Safety	Nothing to report
Photographs	 Drilling through mudstone
Additional Information	

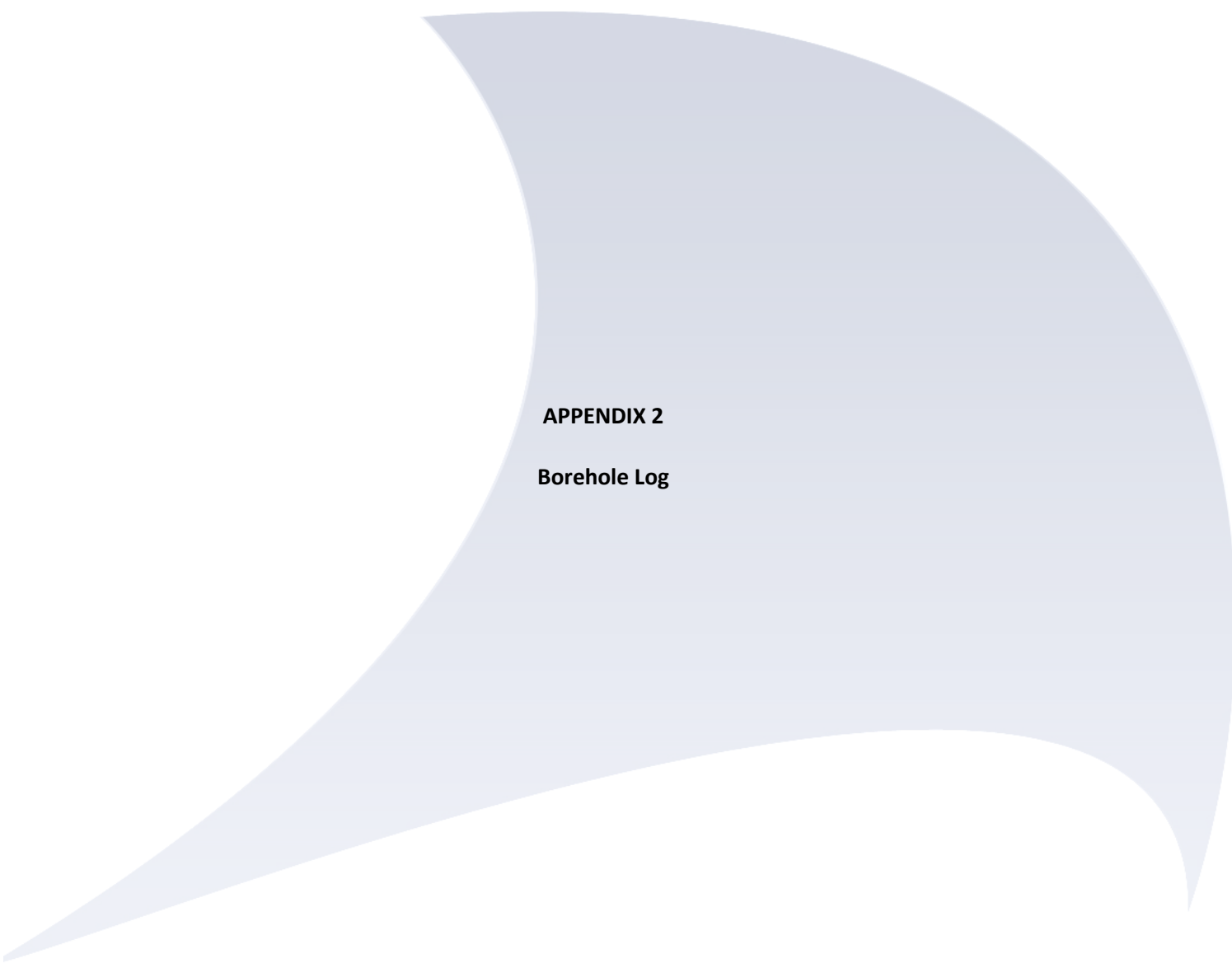
CQA Inspector's Daily Record

Client: Flintshire County Council Waste Management Services

Landfill Site: Standard Landfill Site

Project: Replacement of Groundwater Monitoring Borehole GW2

Date	12.10.2016
Hours of Works	08:00 – 15:00
Weather: Previous Night Morning Afternoon	Cold, dry Cold, some ground frost, dry Bright, dry
Contractors Plant/Resources Utilised	Dragon Drilling – Lead driller and assistant Comacchio C450P Rotary Drilling Rig & compressor JCB Telehandler TB228 Mini-digger IBC water container
Works Undertaken	Borehole installation prepared. Pipe installed by 11:00. Gravel added to borehole. Casing removed. Bentonite seal applied. Borehole cover installed. Borehole installed as per CQA Plan requirements, by 12:30. Borehole location tidied and cleared of all equipment. All parties left site by 15:00.
Visitors to Site	Ben Ellison – Dragon Drilling Ltd
Health and Safety	Nothing to report
Photographs	 Completed borehole
Additional Information	



APPENDIX 2

Borehole Log

			Project: Replacement of Groundwater Monitoring Borehole GW2 – Standard Landfill Site			Ref: GW2	
Boring date: 11/10/2016		Logged by: JM	Client: Flintshire County Council			Project ID: 2596	
Elevation			Coordinates			Hole Type	RO
Water Strikes	Depth (m)		Description				
	from	to					
	0.0	6.0	Mudstone				
	6.0	8.5	Boulder Clay				
	8.5	9.5	Coal				
47.5 ▼	9.5	59.5	Mudstone with intermittent bands of coal and sandstone				
End of borehole at 59.5m							
Notes.		Equipment: Comacchio C450P Rotary Drilling Rig					
		Borehole formed by Dragon Drilling under supervision of Caulmert Limited					
Installation			Backfill				
Depth (m)		Comments	Depth (m)		Comment		
from	to						
0.0	2.0	Plain HDPE Pipe	0.0	1.5	Bentonite seal		
2.0	59.5	Slotted HDPE Pipe with geowrap	1.5	59.5	6-10mm gravel		



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