



**Construction Quality Assurance
Plan for the Installation of
Ground Water Monitoring
Boreholes**

Wakerley Inert Landfill Site

**Mick George Limited
June 2020**



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for the Installation of Ground Water
Monitoring Boreholes**

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June 2020

Reference: A117760/MH/June 2020/CQA Plan for the Installation of GW Boreholes.			
Issue		Prepared by:	Verified by:
V1	June 2020	Marc Holzer	Michael Jones

File Ref: A117760/QP01

WYG, Geneva Building, Lake View Drive, Sherwood Business Park, Annesley, Nottingham, NG15 0ED.

Environmental Consultancy

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APPENDICES

Appendix A - Typical CQA Proforma

DRAWINGS

A117760-GA-01 - Borehole Location Plan
A117760-CD-01 - Borehole Conceptual Design

1.0 General

This document has been prepared to consolidate the details of the Construction Quality Assurance (CQA) procedures that shall be adopted during the Installation of ground water monitoring boreholes at the Wakerley Inert Landfill site.

The Wakerley Inert Landfill site is located at approximate National Grid Reference SP 943 977, 1.5km south west of the village of Wakerley, and 7km east of Uppingham in Northamptonshire.

The project team will comprise of:

CQA Project Manager	-	M Holzer
CQA Engineer	-	TBC
Client Contact	-	S Richardson
Contractor	-	TBC

The CQA Project Manager will have overall responsibility for the project, together with the review and approval of the Construction Quality Assurance procedures.

The CQA Project Engineer will also produce certification through the third party CQA Report, a copy of which is to be forwarded to the Environment Agency.

The CQA Engineer will be responsible for the onsite supervision of the works, including drill logging, and recording the details of the installation, and ensuring that the works are carried out in accordance with the requirements of the CQA Plan.

The Contractor for the borehole installation works at the Wakerley Landfill site shall be appointed by Mick George Limited. Any party undertaking the work will be appropriately qualified to carry out the works.

1.1 Outline of The Works

The works to be covered by this document will comprise the drilling and installation of two ground water monitoring boreholes at the approximate location as shown on drawing NO. A117760-GA-01.

The exact locations will be determined on site and will meet the following requirements.

- The boreholes will be situated within 10m of each other, and,
- The boreholes shall be located no closer that 50m to any existing or historical boreholes.

1.2 Installations

The works shall comprise the installation of one shallow borehole to access the Lincolnshire Limestone Series deposits, and one deeper borehole to access the Northampton Sands Series deposits. Each installation shall extend to the lower limit of its target strata.

The design of the deeper installation shall be such that the two water bearing strata remain isolated from each other.

1.3 Drilling Depths

Due to the faulted nature of the local geology it is difficult to determine the target depths for the two boreholes, however, the anticipated depths are,

- Borehole A Approximately 30m
- Borehole B Approximately 20m

The general approach will be to drill the deeper borehole first, and from the resulting borehole log, identify the horizon at which the shallower borehole is to terminate.

1.4 Installation Design

The borehole installation will broadly follow the conceptual design presented on Drawing No. A117760-CD-01 and will be as follows.

- Each installation shall comprise a 125mm diameter borehole drilled to the target depth.
- Each borehole will be installed with a 50mm (OD) SDR11 HDPE casing extending from the base of the hole to ≈300mm above the ground surface.
- The bottom of the casing shall be fitted with an end cap.
- All joints between sections of pipe will be screw fit.
- The casing will be slotted between the bottom end cap and the top of the target strata as determined from the drilling logs.
- The slotted section of the casing will be fitted with a filter screen.
- The casing will comprise plain pipe between the top of the target strata and the top of the casing.
- The top of the casing will be fitted with a bung and gas tap.
- The annulus between the borehole and the casing will be backfilled with 10mm gravel from the base of the borehole to the top of the slotted pipe work.
- A minimum 1m thick bentonite seal will be installed on top of the gravel.

- The annulus above the bentonite seal will be backfilled with 10mm gravel / granular drilling arisings to within 1m of the ground surface.
- An additional 1m bentonite seal will be installed between the top of the gravel and the ground surface.
- A lockable steel enclosure will be installed over the upstand and cemented in place.

1.5 Methodology

- Prior to the commencement of any drilling, a service search will be conducted by the client, by consulting any pre-existing service plans and using a CAT scanner (and Genny if deemed necessary) at the borehole location if appropriate.
- Prior to the start of drilling a 1.2m hand dug pit will be dug to start the borehole. A permit to dig must be obtained prior to commencement of excavation if required by site rules.
- The boreholes will be drilled using a rotary drilling rig and a compressor to clear the arisings.
- Where the ground being drilled is such that there is a risk of collapse the driller will install temporary casing to keep the borehole open.
- The depth of each borehole will be continually monitored using a water depth meter/plumb line dropped into the borehole each time the auger is removed to clear the arisings, or each time the nature of the arisings changes.
- Both the drill rig operator and the CQA Engineer will independently identify and log the arisings and the depths from which they originate.
- Once the target depth has been reached the individual components of the permanent casing will be assembled and installed in the borehole.
- Where temporary casing has been installed during the drilling process it will be withdrawn incrementally one section at a time after the permanent casing has been installed. As each section is removed the gravel/bentonite backfill will be installed into the cleared section of the borehole.
- During the installation of backfill to the annulus between the permanent casing and the borehole care will be taken to ensure that bridging of the backfill media does not occur.

2.0 Construction Quality Assurance (CQA)

2.1 Supervision

The works will be subject to full time supervision by an independent CQA Engineer. The CQA Engineer will monitor and record all drilling and installation works in accordance with the requirements of the CQA Plan.

2.2 CQA Report

A CQA report shall be prepared on the completion of the works. The CQA report shall incorporate the following elements: -

- Confirmation of the borehole locations, target drilling depths, and achieved drilling depths.
- Confirmation that the construction method and CQA procedures set out in the CQA Plan were followed.
- Confirmation that the specification of the materials used in the installations was in accordance with the requirements set out in the CQA Plan, and that all materials were in a suitable condition to be included in the installations.
- Dates and times of all drilling and installation works.
- Drilling borehole logs.
- The lengths of both slotted and plain casing in each installation.
- A photographic record of the works.

2.3 Certification

The CQA Report shall also include a certificate signed by the CQA Project Engineer detailing the extent of the works which comply with the Environmental Permit and the CQA Plan details.

A copy of the CQA Report shall be presented to the Environment Agency for approval.

APPENDICES

Appendix A - Typical CQA Proforma

APPENDIX A
TYPICAL CQA PROFORMA

CQA ENGINEER DAILY RECORD

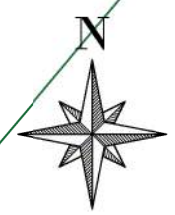
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Date:		Weather:			
Start:		Finish:			
Activities Undertaken (Tick Box)					
Cable Percussion Drilling	<input type="checkbox"/>				
Rotary Drilling	<input type="checkbox"/>				
Borehole Installation	<input type="checkbox"/>				
Have Works Complied with Relevant Method Statements		Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Do All Works Comply With the Specification:		Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
General Details / Comments / Problems Encountered / Deviation from Method Statements and Specification					
Samples Taken:					
Plant Working:					
Photographs Taken (Description / Frame):					

Signed:**(CQA Engineer)****Dated:**

RECORD OF COMMUNICATION	
CONTRACT NUMBER	DATE
CQA PROJECT ENGINEER	TIME
OTHER PARTY	
SUMMARY DISCUSSION	
AGREEMENT/CONCLUSION	
FURTHER ACTION REQUIRED	
SIGNED	DATE

Drawings

A117760-GA-01	-	Borehole Location Plan
A117760-CD-01	-	Borehole Conceptual Design

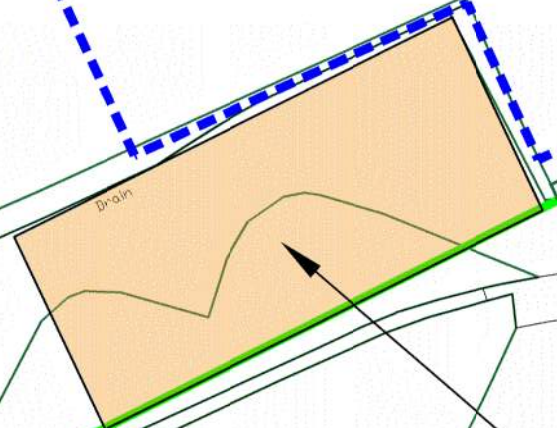


DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND REPORT ANY OMISSIONS OR ERRORS

-  Permit Boundary
-  Planning Permission Boundary
-  Landfilling Phases
-  Future Mineral Extraction Phases

Phase C

Phase B



Approximate Location
of New Ground Water
Monitoring Boreholes

Drain

Drain

NB: Base data taken from Mick George Limited Drawings with Crown Copyright 2016, Licence Number 100048891

REV	DESCRIPTION	BY	CHK	APP	DATE
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MICK GEORGE

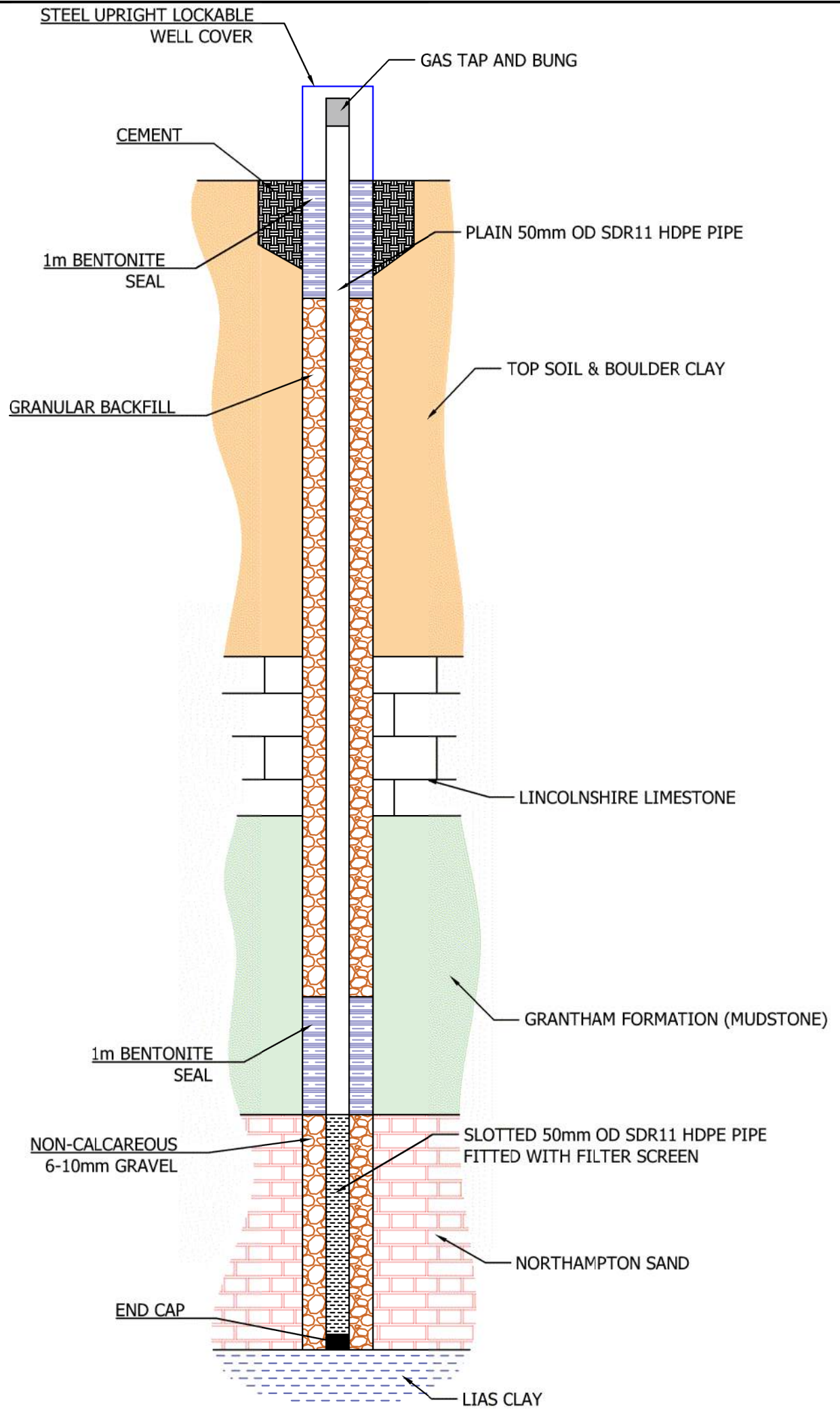
GENEVA BUILDING
LAKE VIEW DRIVE
SHERWOOD BUSINESS PARK
ANNESLEY, NOTTINGHAM
NG15 0ED
TEL: +44 (0)1523 684 550
FAX: +44 (0)1523 684 545
www.wyg.com



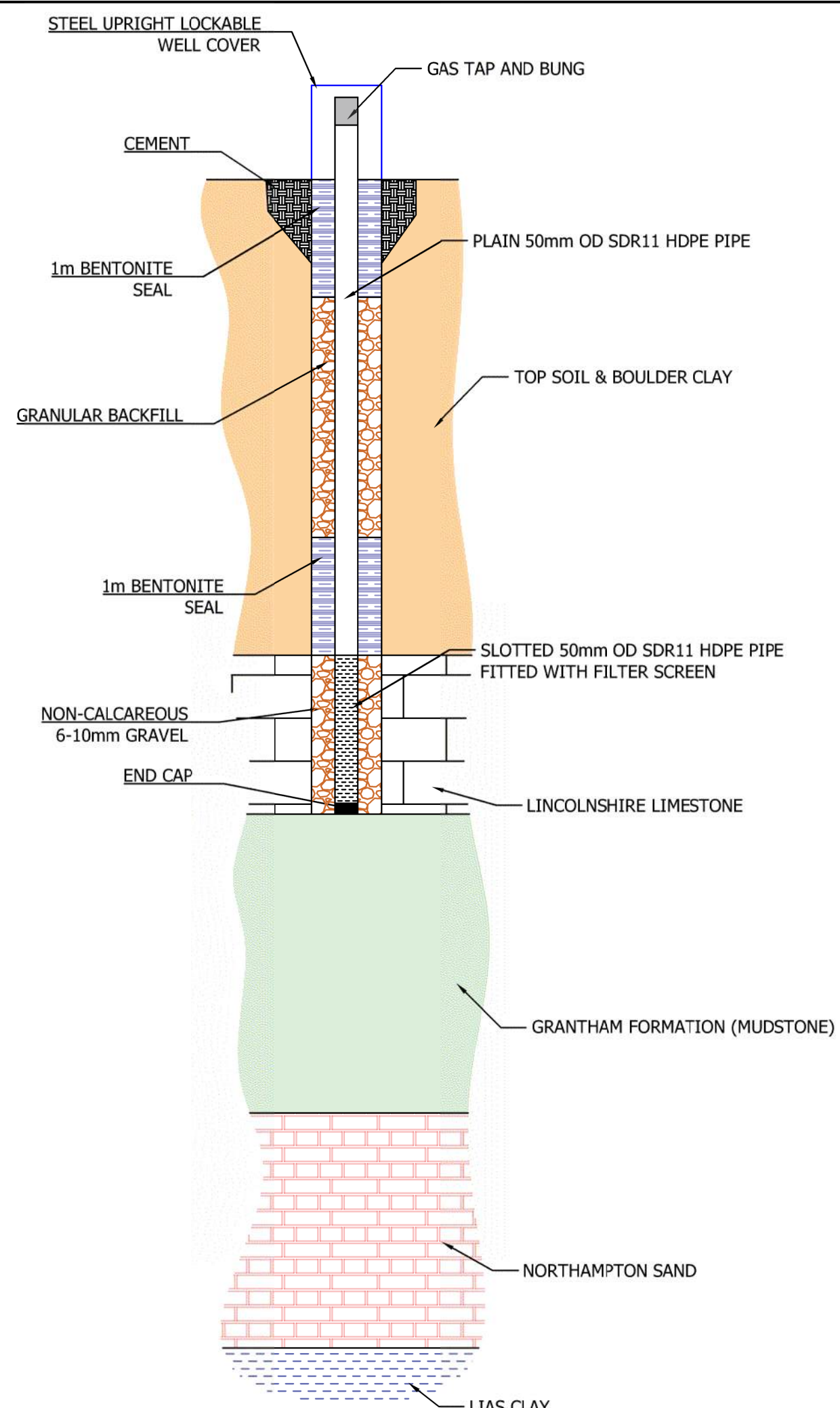
Project:
**WAKERLEY INERT LANDFILL
GW MONITORING BOREHOLES**

Drawing Title:
APPROXIMATE BOREHOLE LOCATIONS

Scale @	A3	Drawn	Date	Checked	Date	Approved	Date
1:2500		MH	JUNE 20	MJ	JUNE 20	MJ	JUNE 20
Project No.	Office	Type	Drawing No.		Revision		
A117760	8146	W&RM	A117760-GA-01				



BOREHOLE A



BOREHOLE B

REV	DESCRIPTION	BY	CHK	APP	DATE
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MICK GEORGE

GENEVA BUILDING
LAKE VIEW DRIVE
SHERWOOD BUSINESS PARK
ANNESLEY, NOTTINGHAM
NG15 0ED
TEL: +44 (0)1523 684 550
FAX: +44 (0)1523 684 545
www.wyg.com



Project: **WAKERLEY INERT LANDFILL
GW MONITORING BOREHOLES**

Drawing Title: **CONCEPTUAL INSTALLATION DESIGN**

Scale @	Drawn	Date	Checked	Date	Approved	Date
N.T.S.	MH	JUNE 20	MJ	JUNE 20	MJ	JUNE 20
Project No.	Office	Type	Drawing No.		Revision	
A117760	8146	W&RM	A117760-CD-01			