REPORT SDL3556
AUGUST 2018

COMPLETION REPORT FOR THE TREATMENT OF MINEWORKINGS

at
CROSLAND ROAD, LINDLEY, HUDDERSFIELD

prepared for
PERSIMMON HOMES (WEST YORKSHIRE) LIMITED

REPORT NUMBER:	SDL3556	**REPORT STATUS:**	FINAL
REPORT TYPE:	COMPLETION REPORT FOR TREATMENT OF MINEWORKINGS		
REPORT DATE:	AUGUST 2018		
SITE:	CROSLAND ROAD, LINDLEY		
PREPARED FOR:	PERSIMMON HOMES (WEST YORKSHIRE) LTD		
PREPARED BY:	Sirius Drilling Ltd 4245 Park Approach Thorpe Park Leeds LS15 8GB		

COMPLETION REPORT FOR THE DRILLING AND GROUTING TREATMENT OF MINE WORKINGS at CROSLAND ROAD, LINDLEY, HUDDERSFIELD

Prepared for

PERSIMMON HOMES (WEST YORKSHIRE) LIMITED

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1. INTRODUCTION

It is understood that Persimmon Homes Limited (Persimmon) are in the process of developing land at Crosland Road, Lindley for residential housing with private gardens and associated infrastructure. A site location plan and the proposed development layout are included within Appendix A as drawings SDL3556/CS/01 and SDL3556/CS/02 respectively.

Intrusive site investigation works by Lithos Consulting (Lithos) in April 2017 proved that across the majority of the development site, including all the residential development area, there was no risk of shallow mineworkings. However, evidence of shallow mineworkings within the Middle Band Coal and Soft Bed Coal was encountered below the spur of land at the southern extent of the site below the footprint of the proposed Carlow tank (surface water attenuation tank).

SDL were commissioned by Persimmon as specialist contractors to stabilise the mine workings exhibiting inadequate competent cover that were identified within the probe drilling, A Permit to undertake the pressure grouting of the shallow mine workings within the treatment area was obtained from the Coal Authority (CA) prior to commencement, a copy of the Permit is included with Appendix B

This Completion Report includes the following information:

- A summary of the works undertaken and presentation of the findings.
- Confirmation that the works have been carried out in accordance with the current guidelines.

The principal parties to the contract are:

- Persimmon Homes (West Yorkshire) Limited – Developer.
- Sirius Drilling Ltd (SDL) –Specialist Sub-Contractor for the drilling and grouting.

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2. SITE DETAILS AND DESCRIPTION

2.1 Site Location

The site is located off Crosland Road, Lindley, Huddersfield at an approximate National Grid Reference of 410874, 418661. A site location plan is included as Drawing SDL3556/CS/01 in Appendix A.

2.2 Site Description

The broader Persimmon development site is roughly rectangular in shape, with approximate dimensions of 150m by 180m, covering an area of approximately 2.8 hectares with the Carlow tank occupying a spur of land in the south east of the site. The site is bounded by residential developments to the south and east, Crosland Road to the west and agricultural farm land to the north.

2.3 Geology

A summary of available published geological information is provided in Table 2.1.

Table 2.1 Geological Summary

Sources of Information	BGS 1:10,000 scale geological map (Sheet SE11NW) The Coal Authority Interactive Viewer.
Made Ground	No made ground is recorded on the BGS map within the site boundary.
Drift Geology	No superficial soils recorded on the BGS map.
Solid Geology	The site is underlain by the Carboniferous Lower Coal Measures strata which typically comprises undifferentiated mudstone, siltstone, sandstone and coal seams with associated seatearths and marine bands. The Soft Bed seam is conjectured as outcropping to the north of the treatment area within the broader site.
Mining and Quarrying	The south eastern portion of the site is within an area of probable shallow coal mining and is a CA designated Development High Risk Area. There are no recorded mine entries on, or within 20m of, the site.

2.4 Previous Investigations

The broader site has been subject to a number of previous appraisals and investigations. These works were informed by the most recent of these, a letter report prepared by Lithos Consulting (Report Ref. 021/1823/GLM/REG) which comprises a review of an earlier investigation as well as the results of supplementary intrusive investigations including a mining investigation which incorporates a programme of rotary probe drilling.

A summary of the salient information from the Lithos Report is included below.

Summary of Relevant Findings

"*In the far south of Persimmon's site, two seams of coal were encountered:*

• *The Middle Band Coal (0.5m to 0.8m thick) beneath the north of the southern spur.*

• *The Soft Bed Coal (0.9m to 1.1m thick) at depths of <20m only beneath the southern spur.*

Examination of the proposed layout shows that only a surface water attenuation structure (Carlow tank) is proposed in the southern spur which is underlain by very shallow Middle Band coal, and possible workings in the deeper Soft Bed coal. No plots are shown in this area.

It is understood that the Carlow tank will have an invert level of 242.5m AoD. The top of the Soft Bed coal and associated workings lie at around 228m AoD beneath the north of the tank, and 231m AoD beneath the south of the tank. Rockhead is typically 1m to 2m bgl, so there is between 9m and 14m of competent rock cover between the base of the tank and possible mineworkings.

Excavation required for the northern half of the Carlow tank is likely to result in complete removal of the shallow Middle Band coal, but the excavation should be deepened if necessary through this seam if any residual coal is exposed at formation level."

3. DRILLING AND GROUTING WORKS

3.1 The Works

The previous site investigation works informed the basis of the treatment works undertaken at the site. All works were carried out in general accordance with CIRIA SP 32.

Within the areas of the site affected by shallow workings, the intention of the works was to stabilise the footprint of the proposed Carlow tank, extending up to 3m beyond. Treatment boreholes were drilled on a nominal 3m x 3m grid across the defined treatment area.

The stabilisation works were undertaken by injecting a 12:1 mix of PFA / cement grout into the boreholes.

3.2 Programme

The programme of drill and grout treatment work was carried out as a continuous operation from the 13th to the 19th June 2018.

3.3 Drilling Procedure

Boreholes were drilled using open hole rotary percussive drilling rigs utilising water and air mist flush.

Each hole was extended to the base of the coal seam, or the base of the workings if apparent, to a minimum of 1.0m thickness of solid strata to prove competent rock. Sacrificial plastic casing was used at the top of each borehole to maintain integrity prior to grouting.

Throughout the treatment area, boreholes/ grout injection points were drilled in accordance with the layout as shown on Drawing No SDL3556/CS/03 within Appendix A.

The ground conditions encountered in each borehole are tabulated in a summary table and detailed within daily drill log sheets, included within Appendix C of this report.

3.4 Ground Conditions Encountered

A total of 80 boreholes were drilled amounting to a total of 1328.20m of drilling. The layout of boreholes / grout injection points, together with ground conditions encountered are shown on Drawing No. SDL3556/CS/03 presented within Appendix A.

Within the Soft Bed Coal seam the rotary boreholes encountered intact coal or evidence of mineworkings at depths ranging between 12.80m and 16.80m bgl; with a seam thickness ranging between 0.40m and 1.00m.

- Solid coal was encountered in 50 boreholes (approx. 63%) ranging in thickness from 0.40m to 1.00m.
- Broken ground was encountered in 2 boreholes (approx. 2%) with a thickness of 0.80m.
- Soft ground was encountered in 1 boreholes (approx. 1%) with a thickness of 0.80m.
- No coal or mine workings were encountered in 27 boreholes (approx. 34%) – conjectured to be as a result of a geological fault

The shallow Middle Band Coal was encountered in 10 boreholes as intact coal with a maximum thickness of 0.6m, at a depth just below the superficials.

3.5 Grouting Procedure

Boreholes were injected with grout comprising a 12:1 ratio mixture of Pulverised Fuel Ash (PFA) and Ordinary Portland Cement (OPC) respectively with 40 to 45% water.

Grout was injected into all boreholes utilising a tremie pipe. Grout was injected under static head until grout appeared at the surface.

A total of 17.18 tonnes of grout was injected into these boreholes with grout acceptance varying between 0.13 tonnes and 3.90 tonnes with an arithmetical average of 0.21 tonnes per hole.

4. VALIDATION

Validation of the stabilisation works was undertaken utilising a test boreholes drilled in selected locations within the treatment area. The locations of the test boreholes are shown on Drawing No. SDL3556/CS/03 within Appendix A.

The location of the test borehole was selected by the supervising engineer with the emphasis on localised high grout takes within the treated area.

The test borehole encountered solid strata with either grout returns. The efficacy of the treatment works was assessed using a grout injection test in the test hole under a constant pressure of up to a maximum of 200kN/m^2. This pressure was maintained for a period of 5 minutes, after which the recorded drop in pressure was found to be less than 10%. On this basis the treatment was considered satisfactory, with substantial filling of workings.

Bleed tests and flow tests on the grout were carried out regularly during the grouting works. Bleed tests were undertaken over a 6 hour test period, with bleed capacities recorded as being below the maximum 5%, as detailed within CIRIA SP32. Flow tests, carried out at a minimum frequency of two per week, recorded grout flowability readings between 450mm and 500mm, using a 'Colcrete' type flow meter, in accordance with guidance contained within CIRIA SP32. The results of these tests are presented within Appendix E of this report.

In order to determine the compressive strength of the grout, test cubes were formed on site at a frequency of two sets of test cubes of grout from 1 batch of grout per week, and subject to testing by Environmental Scientifics Group Ltd, based in Warrington, a UKAS accredited laboratory.

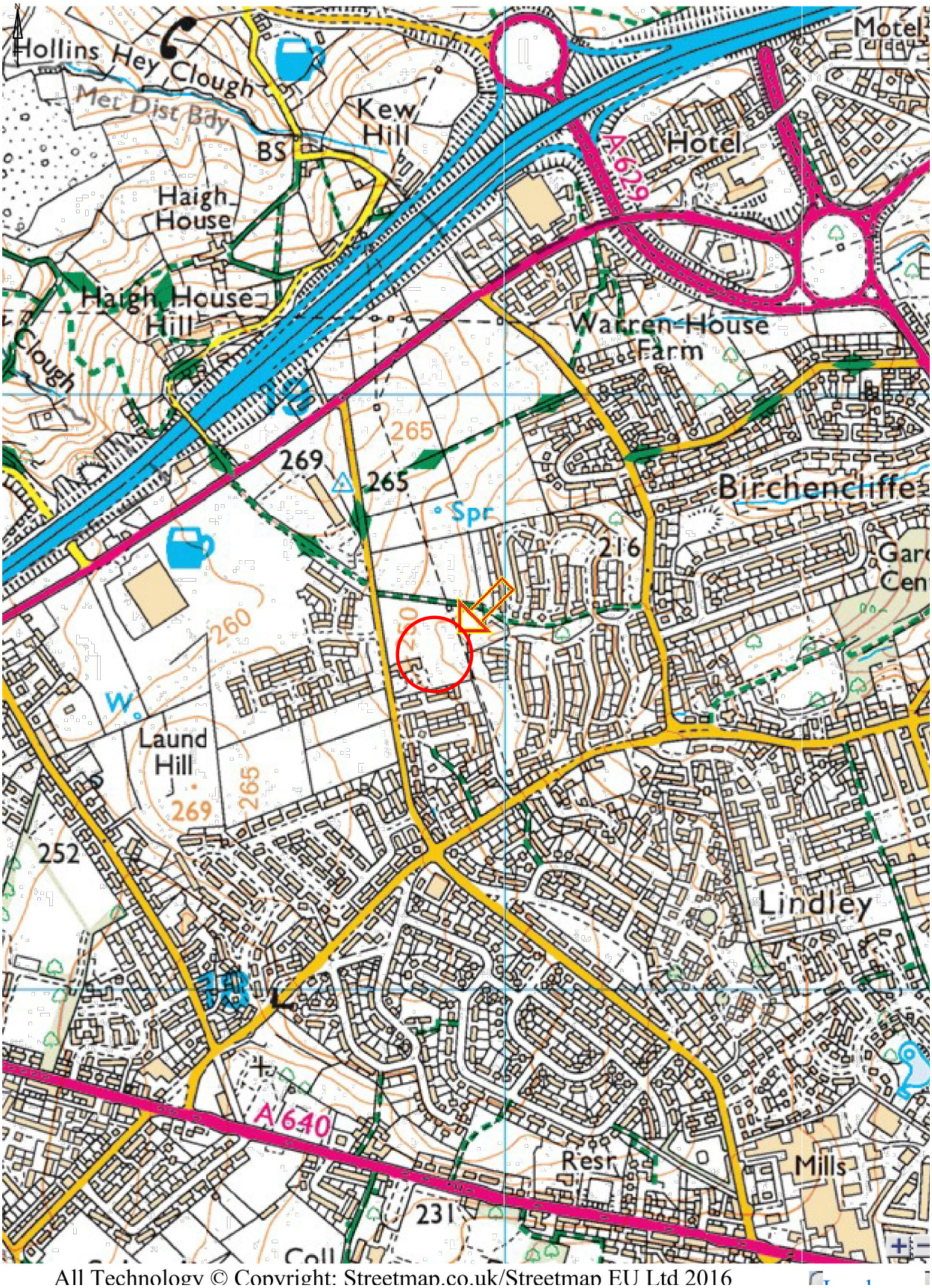
Grout cubes were scheduled to be crushed at 7-day and 28-day intervals in accordance with BS 1881. The results of testing are presented within Appendix D of this report. After 28 days the result was 3.1 MN/m^2, significantly above the industry standard required 1.0 MN/m^2.

5. CONCLUSIONS

The site observations, drilling and grouting records, and test boreholes indicate that the drilling and grouting works have been carried out to a satisfactory standard in general accordance with the established methodologies set out within CIRIA SP 32.

APPENDIX A

DRAWINGS



NOTES

Site

REVISION

0	>>
A	>>
B	>>
C	>>
D	>>

SIRIUS DRILLING LTD
4245 Park Approach,
Thorpe Park,
Leeds
LS15 8GB
www.thesiriusgroup.com
TEL: 0113 264 9960
FAX: 0113 264 9962

CLIENT

PERSIMMON HOMES (WEST YORKSHIRE) LIMITED

SITE

CROSLAND ROAD, LINDLEY - CARLOW TANK TREATMENT

DRAWING TITLE

SITE LOCATION PLAN

DRAWING NO. SDL3556-SP-01	REVISION NO. 0
DRAWN BY NJI	APPROVED BY JCC
DATE AUGUST 2018	SCALE 1:25,000
PAPER SIZE A4	

NOTES

REVISION

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A	>>
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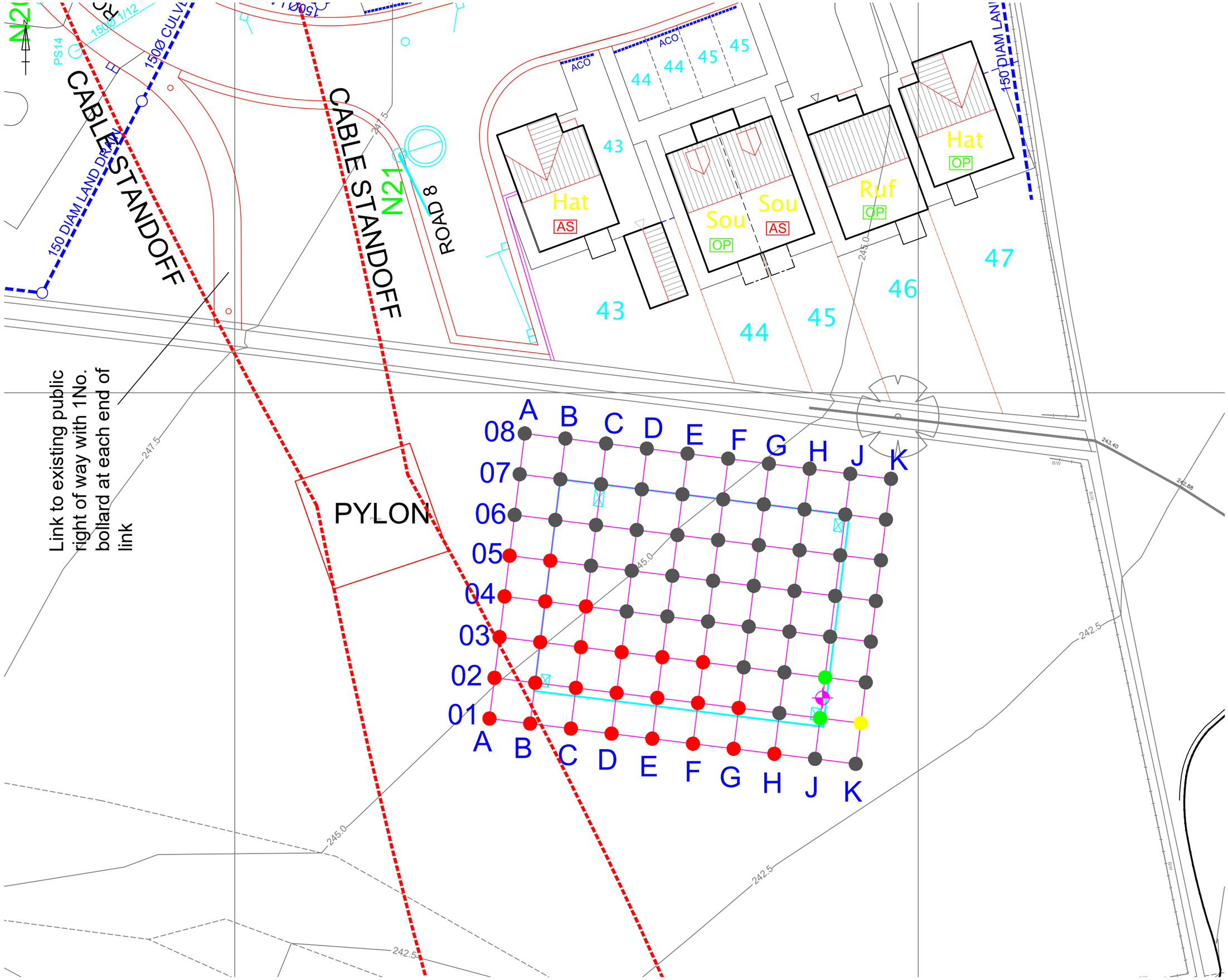
SITE

CROSLAND ROAD, LINDLEY - CARLOW TANK TREATMENT

DRAWING TITLE

SITE LAYOUT PLAN

DRAWING NO.	REVISION NO.
SDL3556/CS/02	0
DRAWN BY: NJI	APPROVED BY: JCC
DATE: AUGUST 2018	SCALE: 1:1,000
PAPER SIZE: A3	



NOTES

DRILLING RETURNS

- COAL
- NO COAL/WORKINGS
- SOFT GROUND
- BROKEN GROUND
- TEST BOREHOLE

REVISION	
0	>>
A	>>
B	>>
C	>>
D	>>

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CLIENT

PERSIMMON HOMES (WEST YORKSHIRE) LIMITED

SITE

CROSLAND ROAD, LINDLEY - CARLOW TANK TREATMENT

DRAWING TITLE

AS-BUILT DRILL & GROUT TREATMENT PLAN

DRAWING NO.	REVISION NO.
SDL3556/CS/02	0

DRAWN BY	APPROVED BY
NJI	JCC

DATE	SCALE	PAPER SIZE
AUGUST 2018	1:250	A3

APPENDIX B

COAL AUTHORITY PERMIT

The Coal Authority

Permit to Enter or Disturb Coal Authority Mining Interests

Permit Reference Number 16249

Name and Address of Permit Holder:

Persimmon Homes (West Yorks) Ltd
3 Hepton Court
York Road
Leeds
LS9 6PW

Site Location:

Crosland Road
Lindley
Huddersfield
HD3 3TD

This certificate hereby grants the above named Permit Holder a Permit to carry out:-

Treatment of shallow mine workings on 3m grid

within the Authority's mining interests at the identified site location for the period of 12 months from the granted date shown below. The granting of this Permit does not constitute advice given by the Authority in relation to the proposed operations. It is the Applicant's responsibility to obtain appropriate health, safety, environmental, technical and legal advice.

Signed: ..... Granted Date: ***21.6.18***

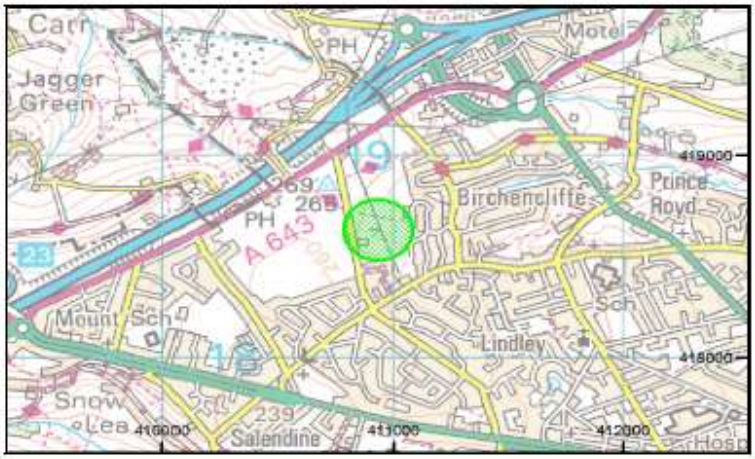
For and on behalf of The Coal Authority

Nominated Representative: Helen Bennett, Permitting Manager;
The Coal Authority, Permitting Office, 200 Lichfield Lane, Mansfield, Notts, NG18 4RG
Tel: 01623 637263; E-Mail: permissions@coal.gov.uk

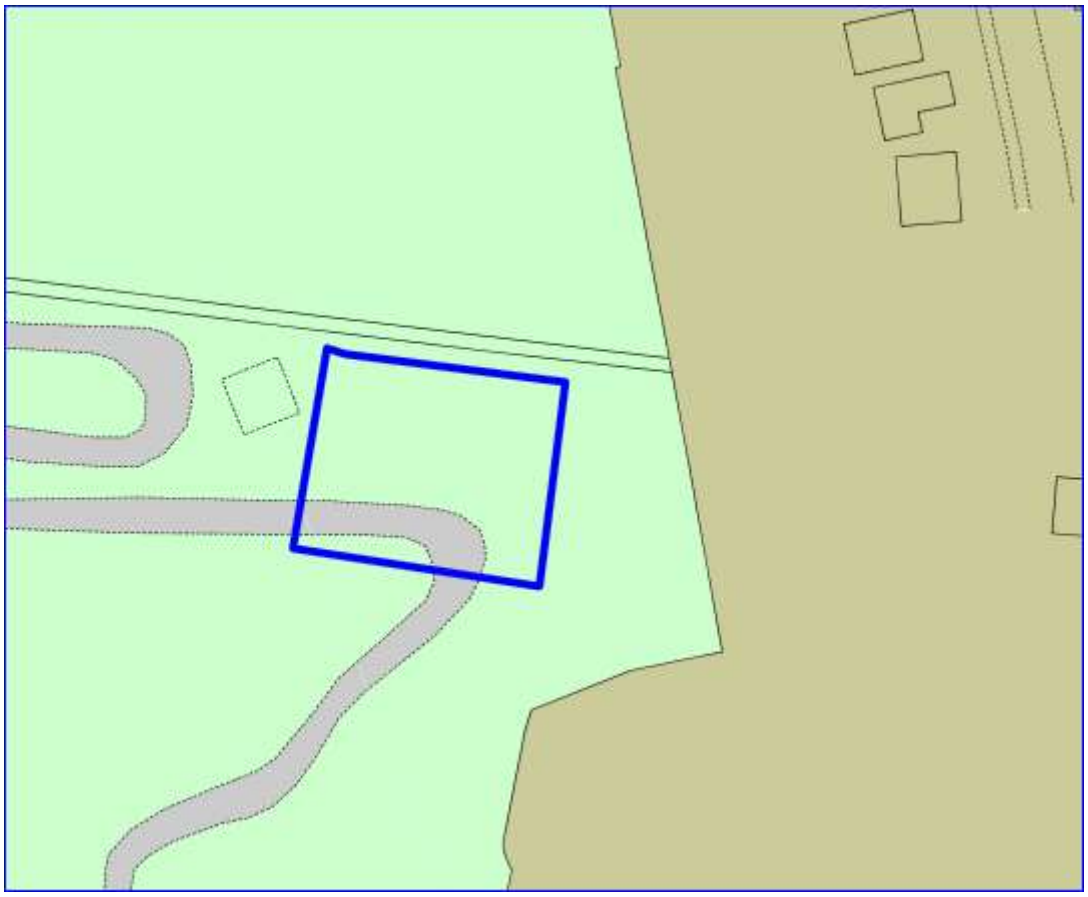
The Coal Authority

Site Location **Permit Ref: 16249**

Overview map



Permit Boundary



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APPENDIX C

DRILL LOGS, GROUT LOGS & SUMMARY TABLE

Borehole ID	Drilled by	Date Drillled	Angle	Superficials (m bgl)	Strata	From (m bgl)	To (m bgl)	Thickness (m)	Strata	From (m bgl)	To (m bgl)	Thickness (m)	BH Depth (m bgl)	Grout Take (T)	Comments
A01	M. THOMAS	16/06/2018		1.50					NC				16.00	0.13	
A02	M. THOMAS	16/06/2018	20	1.50					NC				16.00	0.13	
A03	M. THOMAS	15/06/2018	10	1.70					NC				16.00	0.13	
A04	M. THOMAS	15/06/2018	10	1.60					NC				16.00	0.13	
A05	M. THOMAS	14/06/2018		1.50					NC				16.00	0.13	
A06	M. THOMAS	14/06/2018		1.50					C	15.30	15.80	0.50	16.80	0.13	
A07	M. THOMAS	14/06/2018		1.60					C	15.20	16.00	0.80	17.00	0.13	
A08	M. THOMAS	13/06/2018		1.60					C	15.60	16.40	0.80	17.40	0.13	
B01	M. THOMAS	16/06/2018		1.50					NC				16.00	0.13	
B02	M. THOMAS	16/06/2018	10	1.50					NC				16.00	0.13	
B03	M. THOMAS	15/06/2018		1.50					NC				16.00	0.13	
B04	M. THOMAS	15/06/2018		1.60					NC				16.00	0.13	
B05	M. THOMAS	14/06/2018		1.50					NC				21.00	0.13	
B06	M. THOMAS	14/06/2018		1.60					C	15.50	16.00	0.50	17.00	0.13	
B07	M. THOMAS	16/06/2018		1.50					C	15.30	16.10	0.80	17.10	0.13	
B08	M. THOMAS	13/06/2018		1.60					C	15.80	16.60	0.80	17.60	0.13	
C01	M. THOMAS	16/06/2018		1.50					NC				16.00	0.13	
C02	M. THOMAS	16/06/2018		1.50					NC				16.00	0.13	
C03	M. THOMAS	15/06/2018		1.50					NC				16.00	0.13	
C04	M. THOMAS	15/06/2018		1.60					NC				16.00	0.13	
C05	M. THOMAS	14/06/2018		0.60	C	0.60	1.00	0.40	NC				16.00	0.13	
C06	M. THOMAS	16/06/2018		1.60					C	15.40	15.90	0.50	16.90	0.13	
C07	M. THOMAS	13/06/2018		1.40					C	15.40	16.20	0.80	17.20	0.13	
C08	M. THOMAS	13/06/2018		1.60					C	15.90	16.70	0.80	17.70	0.13	
D01	M. THOMAS	16/06/2018		1.50					NC				16.00	0.13	
D02	M. THOMAS	16/06/2018		1.50					NC				16.00	0.13	
D03	M. THOMAS	15/06/2018		1.50					NC				16.00	0.13	
D04	M. THOMAS	15/06/2018		1.60					C	13.90	14.30	0.40	15.30	0.13	
D05	M. THOMAS	14/06/2018		1.00	C	1.00	1.40	0.40	C	14.50	15.00	0.50	16.00	0.13	
D06	M. THOMAS	14/06/2018		1.80					C	15.50	16.00	0.50	17.00	0.13	
D07	M. THOMAS	13/06/2018		1.50					C	15.50	16.30	0.80	17.30	0.13	
D08	M. THOMAS	13/06/2018		1.60					C	16.10	17.10	1.00	18.10	0.13	
E01	M. THOMAS	16/06/2018		1.50					NC				16.00	0.13	
E02	M. THOMAS	16/06/2018		1.50					NC				16.00	0.13	
E03	M. THOMAS	15/06/2018		1.50					NC				16.00	0.13	
E04	M. THOMAS	15/06/2018		1.70					C	14.10	14.50	0.40	15.50	0.13	
E05	M. THOMAS	14/06/2018		1.00					C	14.60	15.10	0.50	16.10	0.13	
E06	M. THOMAS	14/06/2018		2.00	C	2.00	2.40	0.40	C	15.70	16.20	0.50	17.20	0.13	
E07	M. THOMAS	13/06/2018		1.60					C	15.60	16.40	0.80	17.40	0.13	
E08	M. THOMAS	13/06/2018		1.40					C	16.30	17.10	0.80	18.10	0.13	
F01	M. THOMAS	16/06/2018		1.50					NC				16.00	0.13	
F02	M. THOMAS	16/06/2018		1.50					NC				16.00	0.13	
F03	M. THOMAS	15/06/2018		1.50					NC				16.00	0.13	
F04	M. THOMAS	15/06/2018		1.50					C	14.30	14.70	0.40	15.70	0.13	
F05	M. THOMAS	14/06/2018		1.50					C	14.80	15.30	0.50	16.30	0.13	
F06	M. THOMAS	14/06/2018		2.00	C	2.00	2.30	0.30	C	16.00	16.40	0.40	17.40	0.13	
F07	M. THOMAS	13/06/2018		1.60					C	15.80	16.60	0.80	17.60	0.13	
F08	M. THOMAS	13/06/2018		1.40					C	16.40	17.20	0.80	18.20	0.13	
G01	M. THOMAS	16/06/2018		1.50					NC				16.00	0.13	
G02	M. THOMAS	16/06/2018		1.50					NC				16.00	0.13	

Borehole ID	Drilled by	Date Drillled	Angle	Superficials (m bgl)	Strata	From (m bgl)	To (m bgl)	Thickness (m)	Strata	From (m bgl)	To (m bgl)	Thickness (m)	BH Depth (m bgl)	Grout Take (T)	Comments
G03	M. THOMAS	15/06/2018		1.50					C	13.20	14.00	0.80	15.00	0.13	
G04	M. THOMAS	15/06/2018		1.50					C	14.50	14.90	0.40	15.90	0.13	
G05	M. THOMAS	14/06/2018		1.50					C	15.00	15.50	0.50	16.50	0.13	
G06	M. THOMAS	14/06/2018		1.30	C	1.30	1.90	0.60	C	16.00	16.60	0.60	17.60	0.13	
G07	M. THOMAS	13/06/2018		1.50					C	16.00	16.80	0.80	17.80	0.13	
G08	M. THOMAS	13/06/2018		1.50					C	16.50	17.30	0.80	18.30	0.13	
H01	M. THOMAS	16/06/2018		1.50					NC				16.00	0.13	
H02	M. THOMAS	16/06/2018		1.50					C	12.80	13.50	0.70	14.50	0.13	
H03	M. THOMAS	15/06/2018		1.50					C	13.50	14.30	0.80	15.30	0.13	
H04	M. THOMAS	15/06/2018		1.40					C	14.60	14.90	0.30	15.90	0.13	
H05	M. THOMAS	14/06/2018		1.50	C	2.00	2.20	0.20	C	15.10	15.60	0.50	16.60	0.13	
H06	M. THOMAS	14/06/2018		1.00	C	1.00	1.50	0.50	C	16.30	16.80	0.50	17.80	0.13	
H07	M. THOMAS	13/06/2018		1.50					C	16.20	16.90	0.70	17.90	0.13	
H08	M. THOMAS	13/06/2018		1.50					C	16.60	17.40	0.80	18.40	0.13	
J01	M. THOMAS	16/06/2018		1.50					C	12.80	13.40	0.60	14.40	0.13	
J02	M. THOMAS	15/06/2018		1.50					BG	13.00	13.80	0.80	14.80	3.90	
J03	M. THOMAS	15/06/2018		1.60					BG	13.50	14.30	0.80	15.30	2.60	
J04	M. THOMAS	15/06/2018		1.50					C	14.80	15.20	0.40	16.20	0.13	
J05	M. THOMAS	14/06/2018		1.50	C	2.00	2.30	0.30	C	15.30	15.80	0.50	16.80	0.13	
J06	M. THOMAS	14/06/2018		0.60	C	0.60	1.10	0.50	C	16.50	17.00	0.50	18.00	0.13	
J07	M. THOMAS	13/06/2018		1.50					C	16.40	17.20	0.80	18.20	0.13	
J08	M. THOMAS	13/06/2018		1.60					C	16.70	17.50	0.80	18.50	0.13	
K01	M. THOMAS	16/06/2018		1.50					C	13.00	13.60	0.60	14.60	0.13	
K02	M. THOMAS	15/06/2018		1.50					S	13.20	14.00	0.80	15.00	1.30	
K03	M. THOMAS	15/06/2018		1.60					C	14.00	14.60	0.60	15.60	0.13	
K04	M. THOMAS	15/06/2018		1.50					C	15.00	15.40	0.40	16.40	0.13	
K05	M. THOMAS	14/06/2018		1.50					C	15.40	15.80	0.40	16.80	0.13	
K06	M. THOMAS	14/06/2018		0.30	C	0.30	0.80	0.50	C	16.40	17.20	0.80	18.20	0.13	
K07	M. THOMAS	13/06/2018	10	1.50					C	16.50	17.30	0.80	18.30	0.13	
K08	M. THOMAS	13/06/2018	10	1.60					C	16.80	17.70	0.90	18.70	0.13	
TEST BOREHOLE								0.00				0.00		0.00	

Borehole ID	Drilled by	Date Drillled	Angle	Superficials (m bgl)	Strata	From (m bgl)	To (m bgl)	Thickness (m)	BH Depth (m bgl)	Grout Take (T)	Comments
TH01 (J02/J03)	M. THOMAS	18/06/2018		1.50	G	12.80	13.80	1.00	14.80	0.13	

KEY

C	COAL
NC	NO COAL
BG	BROKEN GROUND
S	SOFT PUSH
G	GROUT

OPENHOLE DRILL LOG

Sirius Group

Job No. SDL 3556
Contract Name: Lindley
Working Day: Wednesday

Date: 13/6/18
Client: Persimmon Homes
Sheet: 1 of 2

Hole No.	From	To	Flush (W/A/M)	Casing T/S (m)	Strata Description
K08	0.00	1.60			overburden
10° Angle	1.60	16.80			Black / Grey Mudstone
	16.80	17.70			coal intact
	17.70	18.70			Light grey Mudstone
J08	0.00	1.60			overburden
	1.60	16.70			Black / Grey Mudstone
	16.70	17.50			coal intact
	17.50	18.50			Light grey Mudstone
H08	0.00	1.50			overburden
	1.50	16.60			Black / Grey Mudstone
	16.60	17.40			coal intact
	17.40	18.40			Light grey Mudstone
G08	0.00	1.50			overburden
	1.50	16.50			Black / Grey Mudstone
	16.50	17.30			coal intact
	17.30	18.30			Light grey Mudstone
F08	0.00	1.40			overburden
	1.40	16.40			Black / Grey Mudstone
	16.40	17.20			coal intact
	17.20	18.20			Light Grey Mudstone
E08	0.00	1.40			overburden
	1.40	16.30			Black / Grey Mudstone
	16.30	17.10			coal intact
	17.10	18.10			Light Grey Mudstone
D08	0.00	1.60			overburden
	1.60	16.10			Black / Grey Mudstone
	16.10	17.10			coal intact
	17.10	18.10			Light Grey Mudstone
C08	0.00	1.60			overburden
	1.60	15.90			Black / Grey Mudstone
	15.90	16.70			coal intact
	16.70	17.70			Light Grey Mudstone
B08	0.00	1.60			overburden
	1.60	15.80			Black / Grey Mudstone
	15.80	16.60			coal intact
	16.60	17.60			Light Grey Mudstone
A08	0.00	1.60			overburden
	1.60	15.60			Black / Grey Mudstone
	15.60	16.40			coal intact
	16.40	17.40			Light Grey Mudstone

Rig Type: CSXP

Crew Details:

Remarks:

Gas Monitoring

%	O_2	CO_2	CH_4	CO
Start	20.7	0	0	0
Mid	20.7	0	0	0
End	20.7	0	0	0

Weather Conditions: AM Sun / PM overcast

Boreholes Total

Today	
Previous	
To Date	

Drilled Total

Today	
Previous	
To Date	

Casing Total

Today	
Previous	
To Date	

Signed by Sirius Drilling Ltd:

Sign

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OPENHOLE DRILL LOG

Job No. SDL 3556 | Date: 13-6-18
Contract Name: Lindley | Client: Persimmon Homes
Working Day: Wednesday | Sheet: 2 of 2

Hole No.	From	To	Flush (W/A/M)	Casing T/S (m)	Strata Description
K07	0.00	1.50			overburden
10° Angle	1.50	16.50			Black / Grey Mudstone
	16.50	17.30			coal intact
	17.30	18.30			Light Grey Mudstone
J07	0.00	1.50			overburden
	1.50	16.40			Black / Grey Mudstone
	16.40	17.20			coal intact
	17.20	18.20			Light Grey Mudstone
H07	0.00	1.50			overburden
	1.50	16.20			Black / Grey Mudstone
	16.20	16.90			coal intact
	16.90	17.90			Light Grey Mudstone
G07	0.00	1.50			overburden
	1.50	16.00			Black / Grey Mudstone
	16.00	16.80			coal intact
	16.80	17.80			Light Grey Mudstone
F07	0.00	1.60			overburden
	1.60	15.80			Black / Grey Mudstone
	15.80	1660			coal intact
	16.60	17.60			Light Grey Mudstone
E07	0.00	1.60			overburden
	1.60	15.60			Black / Grey Mudstone
	15.60	16.40			coal intact
	16.40	17.40			Light Grey Mudstone
D07	0.00	1.50			overburden
	1.50	15.50			Black Grey Mudstone
	15.50	16.30			coal intact
	16.30	17.30			Light Grey Mudstone
C07	0.00	1.40			overburden
	1.40	15.40			Black/Grey Mudstone
	15.40	16.20			coal intact
	16.20	17.20			Light Grey Mudstone

Rig Type: CSXP

Remarks:

Gas Monitoring

%	O_2	CO_2	CH_4	CO
Start	20.7	0	0	0
Mid	20.7	0	0	0
End	20.7	0	0	0

Weather Conditions: AM Sun / PM overcast

Boreholes Total	
Today	18
Previous	
To Date	

Drilled Total	
Today	322.7
Previous	
To Date	

Casing Total	
Today	
Previous	
To Date	

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OPENHOLE DRILL LOG

Job No. SDL 3556 | Date: 14/6/18
Contract Name: Lindley | Client: Persimmon Homes
Working Day: Thursday | Sheet: 1 of 3

Hole No.	From	To	Flush (W/A/M)	Casing T/S (m)	Strata Description
A07	0·00	1·60			overburden
	1·60	15·20			Black/Grey Mudstone
	15·20	16·00			coal intact
	16·00	17·00			Mudstone
K06	0·00	0·30			overburden
10°	0·30	0·80			coal
	0·80	16·40			Mudstone
	16·40	17·20			coal intact
	17·20	18·20			Mudstone
J06	0·00	0·60			overburden
	0·60	1·10			coal
	1·10	16·50			Mudstone
	16·50	17·00			coal intact
	17·00	18·00			Mudstone
H06	0·00	1·00			overburden
	1·00	1·50			coal
	1·50	16·30			Mudstone
	16·30	16·80			coal intact
	16·80	17·80			Mudstone
G06	0·00	1·30			overburden
	1·30	1·90			coal
	1·90	16·00			Mudstone
	16·00	16·60			coal intact
	16·60	17·60			Mudstone
F06	0·00	2·00			overburden
	2·00	2·30			coal
	2·30	16·00			Mudstone
	16·00	16·40			coal intact
	16·40	17·40			Mudstone
E06	0·00	2·00			overburden
	2·00	2·40			coal
	2·40	3·00			fine grain Sandstone
	3·00	15·70			Mudstone
	15·70	16·20			coal
	16·20	17·20			Mudstone
D06	0·00	1·80			overburden
	1·80	15·50			Mudstone
	15·50	16·00			coal intact
	16·00	17·00			Mudstone

Rig Type: CSXD

Remarks:

Gas Monitoring

%	O_2	CO_2	CH_4	CO
Start	20·1	0	0	0
Mid	20·1	0	0	0
End	20·1	0	0	0

Weather Conditions: Am Overcast / Pm Sun

Boreholes Total	
Today	
Previous	
To Date	

Drilled Total	
Today	
Previous	
To Date	

Casing Total	
Today	
Previous	
To Date	

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OPENHOLE DRILL LOG

Job No. SDH 3556 | Date: 14-6-18
Contract Name: Lindley | Client: Persimmon Homes
Working Day: Thursday | Sheet: 2 of 3

Hole No.	From	To	Flush (W/A/M)	Casing T/S (m)	Strata Description
BoG	0.00	1.60			overburden
	1.60	15.50			Mudstone
	15.50	16.00			coal intact
	16.00	17.00			Mudstone
AoG	0.00	1.50			overburden
	1.50	15.30			Mudstone
	15.30	15.80			coal intact
	15.80	16.80			Mudstone
KoS 10°	0.00	1.50			overburden
	1.50	15.40			Mudstone
	15.40	15.80			coal intact
	15.80	16.80			Mudstone
JoS	0.00	1.50			overburden
	1.50	2.00			Mudstone
	2.00	2.30			coal
	2.30	2.60			Hard Sandstone
	2.60	15.30			Mudstone
	15.30	15.80			coal intact
	15.80	16.80			Mudstone
HoS	0.00	1.50			overburden
	1.50	2.00			Mudstone
	2.00	2.20			coal
	2.20	15.10			Mudstone
	15.10	15.60			coal intact
	15.60	16.60			Mudstone
GoS	0.00	1.50			overburden
	1.50	15.00			Mudstone
	15.00	15.50			coal intact
	15.50	16.50			Mudstone
FoS	0.00	1.50			overburden
	1.50	2.00			coal
	2.00	14.80			Mudstone
	14.80	15.30			coal intact
	15.30	16.30			Mudstone
EoS	0.00	1.00			overburden
	1.00	1.50			coal
	1.50	14.60			Mudstone
	14.60	15.10			coal intact
	15.10	16.10			Mudstone

Rig Type: SXP

Remarks:

Gas Monitoring

%	O_2	CO_2	CH_4	CO
Start	20.7	0	0	0
Mid	20.7	0	0	0
End	20.7	0	0	0

Weather Conditions: am overcast / pm Sun

Boreholes Total	
Today	
Previous	
To Date	

Drilled Total	
Today	
Previous	
To Date	

Casing Total	
Today	
Previous	
To Date	

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OPENHOLE DRILL LOG

Job No. SDL 3556 | Date: 14-6-18
Contract Name: Lindsey | Client: Persimmon Homes
Working Day: Thursday | Sheet: 3 of 3

Hole No.	From	To	Flush (W/A/M)	Casing T/S (m)	Strata Description
D05	0.00	1.00			overburden
	1.00	1.40			coal intact
	1.40	14.50			mudstone
	14.50	15.00			coal intact
	15.00	16.00			mudstone
C05	0.00	0.60			overburden
	0.60	1.00			coal intact
	1.00	16.00			mudstone
B05	0.00	1.50			overburden
	1.50	21.00			mudstone
A05	0.00	1.50			overburden
	1.50	16.00			mudstone

Rig Type: CSXP

Gas Monitoring

%	O_2	CO_2	CH_4	CO
Start	20.7	0	0	0
Mid	20.7	0	0	0
End	20.7	0	0	0

Weather Conditions: Am overcast / Pm sun

Boreholes Total

Today	20
Previous	20
To Date	40

Drilled Total

Today	342.1
Previous	
To Date	

Casing Total

Today	
Previous	
To Date	

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OPENHOLE DRILL LOG

Job No. SDL 3556 Date: 15/6/18

Contract Name: Lindsey Client: Persimmon Homes

Working Day: Friday Sheet: 1 of 2

Hole No.	From	To	Flush (W/A/M)	Casing T/S (m)	Strata Description
R04	0.00	1.50			overburden
	1.50	15.00			Mudstone
	15.00	15.40			coal intact
	15.40	16.40			Mudstone
J04	0.00	1.50			overburden
	1.50	14.80			Mudstone
	14.80	15.20			coal intact
	15.20	16.20			Mudstone
H04	0.00	1.40			overburden
	1.40	14.60			Mudstone
	14.60	14.90			coal intact
	14.90	15.90			Mudstone
G04	0.00	1.50			overburden
	1.50	14.50			Mudstone
	14.50	14.90			coal intact
	14.90	15.90			Mudstone
F04	0.00	1.50			overburden
	1.50	14.30			Mudstone
	14.30	14.70			coal intact
	14.70	15.70			Mudstone
E04	0.00	1.70			overburden
	1.70	14.10			Mudstone
	14.10	14.50			coal intact
	14.50	15.50			Mudstone
D04	0.00	1.60			overburden
	1.60	13.90			Mudstone
	13.90	14.30			coal intact
	14.30	15.30			Mudstone
C04	0.00	1.60			overburden
	1.60	16.00			Mudstone
B04	0.00	1.60			overburden
	1.60	16.00			Mudstone
A04	0.00	1.60			overburden
Angle 10°	1.60	16.00			Mudstone

Rig Type: CS XP

Crew Details: 1 1

Remarks:

Gas Monitoring

%	O_2	CO_2	CH_4	CO
Start				
Mid				
End				

Weather Conditions: AM overcast / PM Sun

Boreholes Total

Today	1
Previous	
To Date	

Drilled Total

Today	
Previous	
To Date	

Casing Total

Today	
Previous	
To Date	

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OPENHOLE DRILL LOG

Job No. SDL 3556 | Date: 15/6/18
Contract Name: Lindley | Client: Persimmon Homes
Working Day: Friday | Sheet: 2 of 2

Hole No.	From	To	Flush (W/A/M)	Casing T/S (m)	Strata Description
K03	0·00	1·60			overburden
	1·60	14·00			Mudstone
	14·00	14·60			coal intact
	14·60	15·60			Mudstone
J03	0·00	1·60			overburden
	1·60	13·50			Mudstone
	13·50	14·30			Broken ground
	14·30	15·30			Hard strata
H03	0·00	1·50			overburden
	1·50	13·50			Mudstone
	13·50	14·30			coal intact
	14·30	15·30			Mudstone
G03	0·00	1·50			overburden
	1·50	13·20			Mudstone
	13·20	14·00			coal intact
	14·00	15·00			Mudstone
F03	0·00	1·50			overburden
	1·50	16·00			Mudstone
E03	0·00	1·50			overburden
	1·50	16·00			Mudstone
D03	0·00	1·50			overburden
	1·50	16·00			Mudstone
C03	0·00	1·50			overburden
	1·50	16·00			Mudstone
B03	0·00	1·50			overburden
	1·50	16·00			Mudstone
A03	0·00	1·70			overburden
10° Angle	1·70	16·00			Mudstone
K02	0·00	1·50			overburden
	1·50	13·20			Mudstone
	13·20	14·00			Soft Ground
	14·00	15·00			Mudstone
J02	0·00	1·50			overburden
	1·50	13·00			Mudstone
	13·00	13·80			Broken ground
	13·80	14·80			Hard Strata

Rig Type: CSXP

Crew Details:

Gas Monitoring

%	O_2	CO_2	CH_4	CO
Start				
Mid				
End				

Weather Conditions: overcast

Boreholes Total	
Today	22
Previous	38
To Date	60

Drilled Total	
Today	345·9
Previous	664·8
To Date	1010·7

Casing Total	
Today	
Previous	
To Date	

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OPENHOLE DRILL LOG

Job No. SDL 3556 | Date: 16-6-18
Contract Name: Lindley | Client: Persimmon Homes
Working Day: Saturday | Sheet: 1 of 2

Hole No.	From	To	Flush (W/A/M)	Casing T/S (m)	Strata Description
Bo7	0·00	1·50	O		overburden
	1·50	15·30			Mudstone
	15·30	16·10			coal intact
	16·10	17·10			Mudstone
Co6	0·00	1·60			overburden
	1·60	15·40			Mudstone
	15·40	15·90			coal intact
	15·90	16·90			Mudstone
Ho2	0·00	1·50			overburden
	1·50	12·80			Mudstone
	12·80	13·50			coal intact
	13·50	14·50			Mudstone
Go2	0·00	1·50			overburden
	1·50	16·00			Mudstone
Fo2	0·00	1·50			overburden
	1·50	16·00			Mudstone
Eo2	0·00	1·50			overburden
	1·50	16·00			Mudstone
Do2	0·00	1·50			overburden
	1·50	16·00			Mudstone
Co2	0·00	1·50			overburden
	1·50	16·00			Mudstone
Bo2	0·00	1·50			overburden
10° Angle	1·50	16·00			Mudstone
Ao2	0·00	1·50			overburden
20° Angle	1·50	16·00			Mudstone
Ko1	0·00	1·50			overburden
	1·50	13·00			Mudstone
	13·00	13·60			coal intact
	13·60	14·60			Mudstone
Jo1	0·00	1·50			overburden
	1·50	12·80			Mudstone
	12·80	13·40			coal intact
	13·40	14·40			Mudstone

Rig Type: e5xp

Crew Details: 1

Remarks:

Gas Monitoring

%	O_2	CO_2	CH_4	CO
Start	20·7	0	0	0
Mid	20·7	0	0	0
End	20·7	0	0	0

Weather Conditions: overcast

Boreholes Total

Today	
Previous	
To Date	

Drilled Total

Today	
Previous	
To Date	

Casing Total

Today	
Previous	
To Date	

Signed by Client:

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OPENHOLE DRILL LOG

Job No. SDL 3556
Contract Name: Lindley
Working Day: Saturday

Date: 16-6-18
Client: Persimmon Homes
Sheet: 2 of 2

Hole No.	From	To	Flush (W/A/M)	Casing T/S (m)	Strata Description
H01	0.00	1.50			overburden
	1.50	16.00			Mudstone
G01	0.00	1.50			overburden
	1.50	16.00			Mudstone
F01	0.00	1.50			overburden
	1.50	16.00			Mudstone
E01	0.00	1.50			overburden
	1.50	16.00			Mudstone
D01	0.00	1.50			overburden
	1.50	16.00			Mudstone
C01	0.00	1.50			overburden
	1.50	16.00			Mudstone
B01	0.00	1.50			overburden
	1.50	16.00			Mudstone
A01	0.00	1.50			overburden
	1.50	16.00			Mudstone

Rig Type: ESXP

Crew Details:

Remarks:

Gas Monitoring

%	O_2	CO_2	CH_4	CO
Start	20.1	0	0	0
Mid	20.1	0	0	0
End	20.1	0	0	0

Weather Conditions: overcast

Boreholes Total

Today	20
Previous	60
To Date	80

Drilled Total

Today	286.5
Previous	1010.7
To Date	1297.2

Casing Total

Today	
Previous	
To Date	

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OPENHOLE DRILL LOG

Sirius Group

Job No. 3556
Contract Name: Lindley Moor
Working Day: Monday

Date: 18-6-18
Client: Persimmon Homes
Sheet: 1 of 1

Hole No.	From	To	Flush (W/A/M)	Casing T/S (m)	Strata Description
J2-3	0.00	1.50			overburden
	1.50	12.80			Mudstone
	12.80	13.80			Soft grout
TEST HOLE	13.80	14.80			Mudstone

Rig Type: CSXP

Remarks: Testhole J2-3

Gas Monitoring

%	O_2	CO_2	CH_4	CO
Start	20.7	0	0	0
Mid				
End				

Weather Conditions: overcast

Boreholes Total	
Today	
Previous	
To Date	

Drilled Total	
Today	
Previous	
To Date	

Casing Total	
Today	
Previous	
To Date	

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DAILY GROUTING RETURN

Job No. SDL3556 | Date: 18/06/2018

Contract Name: Lindley | Client: Persimmon Homes

Working Day: 1 | Sheet: 1 of 4

Hole No.	Depth (m)	Strata*	PFA	OPC	Sand	Gravel	Total Grout	Full	Still Taking	Top Up	Press (psi/ bar)
A08		C	0.12	0.01			0.13	X			
B08		C	0.12	0.01			0.13	X			
C08		C	0.12	0.01			0.13	X			
D08		C	0.12	0.01			0.13	X			
F08		C	0.12	0.01			0.13	X			
G08		C	0.12	0.01			0.13	X			
H08		C	0.12	0.01			0.13	X			
J08		C	0.12	0.01			0.13	X			
K08		C	0.12	0.01			0.13	X			
A07		C	0.12	0.01			0.13	X			
B07		C	0.12	0.01			0.13	X			
C07		C	0.12	0.01			0.13	X			
D07		C	0.12	0.01			0.13	X			
E07		C	0.12	0.01			0.13	X			
F07		C	0.12	0.01			0.13	X			
G07		C	0.12	0.01			0.13	X			
H07		C	0.12	0.01			0.13	X			
J07		C	0.12	0.01			0.13	X			
K07		C	0.12	0.01			0.13	X			
A06		C	0.12	0.01			0.13	X			

Crew Details

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Materials Delivered Today

Item	Quant	Ticket No.
PFA	19.62	860999
OPC	1.40	STOCK

Testing

Flow (mm)	Bleed (%)		Bleed (%)	
500	2hr	1	2hr	1
450	4hr	1	4hr	2
450	6hr	2	6hr	2

Number of Cubes Taken: 3

	PFA	OPC	Sand	Gravel
Total Used	2.40	0.20	0.00	0.00	2.60
Previous Total	0.00	0.00	0.00	0.00	0.00
Total to Date	2.40	0.20	0.00	0.00	2.60

	PFA	OPC	Sand	Gravel
Today	19.62	1.40		
Previous	0.00	0.00	0.00	0.00
Total Delivered	19.62	1.40	0.00	0.00
Total Used	2.40	0.20	0.00	0.00
Stock on Site	17.22	1.20	0.00	0.00

Signed by Sirius Drilling Ltd: | Date: 18/06/2018

Signed by Client: | Date:

* C-Coal, S-Soft, BG-Broken Ground, V-Void, N/C-No Coal/Workings

White: Office copy Pink: Site copy

DAILY GROUTING RETURN

Job No. SDL3556 | Date: 18/06/2018

Contract Name: Lindley | Client: Persimmon Homes

Working Day: 1 | Sheet: 2 of 4

Hole No.	Depth (m)	Strata*	PFA	OPC	Sand	Gravel	Total Grout	Full	Still Taking	Top Up	Press (psi/ bar)
E08		C	0.12	0.01			0.13	X			
B06		C	0.12	0.01			0.13	X			
C06		C	0.12	0.01			0.13	X			
D06		C	0.12	0.01			0.13	X			
E06		C	0.12	0.01			0.13	X			
F06		C	0.12	0.01			0.13	X			
G06		C	0.12	0.01			0.13	X			
H06		C	0.12	0.01			0.13	X			
J06		C	0.12	0.01			0.13	X			
K06		C	0.12	0.01			0.13	X			
A05		NC	0.12	0.01			0.13	X			
B05		NC	0.12	0.01			0.13	X			
C05		NC	0.12	0.01			0.13	X			
D05		C	0.12	0.01			0.13	X			
E05		C	0.12	0.01			0.13	X			
F05		C	0.12	0.01			0.13	X			
G05		C	0.12	0.01			0.13	X			
H05		C	0.12	0.01			0.13	X			
J05		C	0.12	0.01			0.13	X			
K05		C	0.12	0.01			0.13	X			

Crew Details

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Materials Delivered Today

Item	Quant	Ticket No.

Testing

Flow (mm)	Bleed (%)		Bleed (%)	
	2hr		2hr	
	4hr		4hr	
	6hr		6hr	

Number of Cubes Taken

	PFA	OPC	Sand	Gravel
Total Used	2.40	0.20	0.00	0.00	2.60
Previous Total	2.40	0.20	0.00	0.00	2.60
Total to Date	4.80	0.40	0.00	0.00	5.20

	PFA	OPC	Sand	Gravel
Today				
Previous	19.62	1.40	0.00	0.00
Total Delivered	19.62	1.40	0.00	0.00
Total Used	4.80	0.40	0.00	0.00
Stock on Site	14.82	1.00	0.00	0.00

Signed by Sirius Drilling Ltd: _____ Date: 18/06/2018

Signed by Client: _____ Date: _____

* C-Coal, S-Soft, BG-Broken Ground, V-Void, N/C-No Coal/Workings

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DAILY GROUTING RETURN

Job No. SDL3556 | Date: 18/06/2018

Contract Name: Lindley | Client: Persimmon Homes

Working Day: 1 | Sheet: 3 of 4

Hole No.	Depth (m)	Strata*	PFA	OPC	Sand	Gravel	Total Grout	Full	Still Taking	Top Up	Press (psi/ bar)
A04		NC	0.12	0.01			0.13	X			
B04		NC	0.12	0.01			0.13	X			
C04		NC	0.12	0.01			0.13	X			
D04		C	0.12	0.01			0.13	X			
E04		C	0.12	0.01			0.13	X			
F04		C	0.12	0.01			0.13	X			
G04		C	0.12	0.01			0.13	X			
H04		C	0.12	0.01			0.13	X			
J04		C	0.12	0.01			0.13	X			
K04		C	0.12	0.01			0.13	X			
A03		NC	0.12	0.01			0.13	X			
B03		NC	0.12	0.01			0.13	X			
C03		NC	0.12	0.01			0.13	X			
D03		NC	0.12	0.01			0.13	X			
E03		NC	0.12	0.01			0.13	X			
F03		NC	0.12	0.01			0.13	X			
G03		C	0.12	0.01			0.13	X			
H03		C	0.12	0.01			0.13	X			
J03		BG	2.40	0.20			2.60	X			
K03		C	0.12	0.01			0.13	X			
Total Used			4.68	0.39	0.00	0.00	5.07				
Previous Total			4.80	0.40	0.00	0.00	5.20				
Total to Date			9.48	0.79	0.00	0.00	10.27				

Crew Details

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Materials Delivered Today

Item	Quant	Ticket No.

Testing

Flow (mm)	Bleed (%)		Bleed (%)	
	2hr		2hr	
	4hr		4hr	
	6hr		6hr	

Number of Cubes Taken

	PFA	OPC	Sand	Gravel
Today				
Previous	19.62	1.40	0.00	0.00
Total Delivered	19.62	1.40	0.00	0.00
Total Used	9.48	0.79	0.00	0.00
Stock on Site	10.14	0.61	0.00	0.00

Signed by Sirius Drilling Ltd _____ Date: 18/06/2018

Signed by Client: _____ Date: _____

* C-Coal, S-Soft, BG-Broken Ground, V-Void, N/C-No Coal/Workings

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DAILY GROUTING RETURN

Job No. SDL3556 | Date: 18/06/2018

Contract Name: Lindley | Client: Persimmon Homes

Working Day: 1 | Sheet: 4 of 4

Hole No.	Depth (m)	Strata*	PFA	OPC	Sand	Gravel	Total Grout	Full	Still Taking	Top Up	Press (psi/ bar)
A02		NC	0.12	0.01			0.13	X			
B02		NC	0.12	0.01			0.13	X			
C02		NC	0.12	0.01			0.13	X			
D02		NC	0.12	0.01			0.13	X			
E02		NC	0.12	0.01			0.13	X			
F02		NC	0.12	0.01			0.13	X			
G02		NC	0.12	0.01			0.13	X			
H02		C	0.12	0.01			0.13	X			
J02		BG	3.60	0.30			3.90	X			
K02		S	1.20	0.10			1.30	X			
A01		NC	0.12	0.01			0.13	X			
B01		NC	0.12	0.01			0.13	X			
C01		NC	0.12	0.01			0.13	X			
D01		NC	0.12	0.01			0.13	X			
E01		NC	0.12	0.01			0.13	X			
F01		NC	0.12	0.01			0.13	X			
G01		NC	0.12	0.01			0.13	X			
H01		NC	0.12	0.01			0.13	X			
J01		C	0.12	0.01			0.13	X			
K01		C	0.12	0.01			0.13	X			

Crew Details

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Materials Delivered Today

Item	Quant	Ticket No.

Testing

Flow (mm)	Bleed (%)		Bleed (%)	
	2hr		2hr	
	4hr		4hr	
	6hr		6hr	

Number of Cubes Taken

Total Used	6.96	0.58	0.00	0.00	7.54
Previous Total	9.48	0.79	0.00	0.00	10.27
Total to Date	16.44	1.37	0.00	0.00	17.81

	PFA	OPC	Sand	Gravel
Today				
Previous	19.62	1.40	0.00	0.00
Total Delivered	19.62	1.40	0.00	0.00
Total Used	16.44	1.37	0.00	0.00
Stock on Site	3.18	0.03	0.00	0.00

Signed by Sirius Drilling Ltd: Date: 18/06/2018

Signed by Client: Date:

* C-Coal, S-Soft, BG-Broken Ground, V-Void, N/C-No Coal/Workings

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DAILY GROUTING RETURN

Job No. SDL3556 | Date: 19/06/2018

Contract Name: Lindley | Client: Persimmon Homes

Working Day: 2 | Sheet: 1 of 1

Hole No.	Depth (m)	Strata*	PFA	OPC	Sand	Gravel	Total Grout	Full	Still Taking	Top Up	Press (bar)
TEST BOREHOLE											
TH01		G	0.12	0.01			0.13	X			1.4

Crew Details

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Materials Delivered Today

Item	Quant	Ticket No.

Testing

Flow (mm)	Bleed (%)		Bleed (%)	
450	2hr	2	2hr	
	4hr	2	4hr	
	6hr	3	6hr	

Number of Cubes Taken

	PFA	OPC	Sand	Gravel
Total Used	0.12	0.01	0.00	0.00
Previous Total	16.44	1.37	0.00	0.00
Total to Date	16.56	1.38	0.00	0.00

	PFA	OPC	Sand	Gravel
Today				
Previous	19.62	1.40	0.00	0.00
Total Delivered	19.62	1.40	0.00	0.00
Total Used	16.56	1.38	0.00	0.00
Stock on Site	3.06	0.02	0.00	0.00

Signed by Sirius Drilling Ltd: Date: 19/06/2018

Signed by Client: Date:

* C-Coal, S-Soft, BG-Broken Ground, V-Void, N/C-No Coal/Workings

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APPENDIX D

CUBE RESULTS

29 Rufford Court
Woolston
Warrington
WA1 4RF
United Kingdom
Tel: +44(0) 1925 286220

CONCRETE TEST CUBE REPORT

(BS EN 12390-3:2009)

UKAS TESTING 0001

SOCOTEC

Date: 16/07/2018

Report no: WAB50940515_01

Client: SIRIUS REMEDIATION LTD

Scheme: SDL3556- LINDLEY

Contract no: 51043197

Request Sheet No.	Lab Ref.	Client Ref.	Date Made	Time Made	Date Received in Laboratory	Date Tested	Age days	Dimensions mm	Density kg/m³	Failure Load kN	Compressive Strength N/mm²	Specified Strength N/mm²
0149299	50940515	SDL3556	18/06/2018		04/07/2018	16/07/2018	28	100x100x100	1180	30.7	3.1	not given

Location: -
Mix details: 12:1

The following apply unless otherwise stated under Remarks.

1) Laboratory curing range 18°-22°C.
2) Cube appearance as received satisfactory.
3) Test moisture condition and density saturated.
4) Cube failure normal. Concrete appearance normal.
5) Volume determined by measurement or designated size. Any fins removed by abrasive stone.
6) Laboratory curing conditions cannot be assured during tank cleaning.
7) Certificate of sampling not received. Certificate of making and curing not received.

8) Rate of Loading 0.4 to 0.8 N/mm² per sec.

Certified that curing in the laboratory and testing carried out in accordance with BS EN 12390-2 and 12390-7 and 12390-3.

Signed aul Haddock - Laboratory Manager

for and on behalf of SOCOTEC UK Limited

Issued to: SIRIUS REMEDIATION LTD