

APPENDIX D
Remedial Guidance Values

COMBINED RE-USE CRITERIA FOR CAPPING & BULK FILL MATERIALS

Determinants	Human Health Capping Material	Leachate Standard for all placed material	
	Public Open Space (POS) Residential (mg/kg)	Solid standard protective of controlled waters (mg/kg)	Leachate standard protective of controlled waters (mg/l)
Arsenic	79	260	21.8
Boron	21000	16	2
Cadmium	120	75	0.3
Chromium (Hexavalent)	7.7	4600	82
Chromium (total)	1500		
Copper	12000	8200	28
Lead (C4SL Criteria)	630	16700	245
Inorganic Mercury	120	6	0.013
Nickel	230	1800	31
Selenium	1100	2200	1.45
Vanadium	2000	900	6.3
Zinc	81000	8500	135
Sulphate	-	n/a	1660
Asbestos	<0.001%	-	-
Cyanide Free (AtRisk)	34	N/A	<LOD
Aliphatic (5-6)	570000	>1e6	>1e6
Aliphatic (6-8)	600000	>1e6	>1e6
Aliphatic (8-10)	13000	>1e6	>1e6
Aliphatic (10-12)	13000	>1e6	>1e6
Aliphatic (12-16)	13000	>1e6	>1e6
Aromatic (5-7 benzene)*	72(56000)	3.13	1.82
Aromatic (7-8 toluene)	56000	1360	264
Aromatic (8-10)	5000	>1e6	>1e6
Aromatic (10-12)	5000	>1e6	1.84e5
Aromatic (12-16)	5100	>1e6	>1e6
Aromatic (16-21)	3800	>1e6	>1e6
Naphthalene	4900	478	72.9
Acenaphthene	15000	>1e6	>1e6
Anthracene	74000	>1e6	>1e6
Fluoranthene	3100	>1e6	>1e6
Chrysene	57	>1e6	>1e6
Benzo(b)fluoranthene	7.1	>1e6	>1e6
Benzo(k)fluoranthene	190	>1e6	>1e6
Benzo(ghi)perylene	640	>1e6	>1e6
Benzo(a)pyrene	5.7	>1e6	>1e6
Dibenzo(ah)anthracene	0.57	>1e6	>1e6
Indeno(123-cd)pyrene	82	>1e6	>1e6

All human health values in mg/kg unless stated otherwise.

References (unless stated otherwise)

LQM/CIEH Suitable 2 Use Levels (S4UL) for Human Health Assessment – Land Quality Management Limited (LQM) and Chartered Institute of Environmental Health (CIEH) Land Quality Press (2015)

SP1010: Development of Category 4 Screening Levels (C4SL) for Assessment of Land Affected by Contamination - Department for Environment, Food and Rural Affairs (2014)

Atkins AtRISK soil guidance values.

Descriptions of Public Open Space (POS): Section 1.4.2 of The LQM S4UL for Human Health Assessment

POS Residential: Includes the predominantly grassed areas adjacent to high density housing, the central green area on many 1930s-1970s housing estates, and smaller areas commonly incorporated in newer developments as informal grassed areas or more formal landscaped areas with a mixture of open space and covered soil with planting. It is assumed that the close proximity to the place of residence will allow tracking back of soil to occur.

SOM – Soil Organic Matter

Soil Guidance Values for Organics are presented as the most-conservative values based on 1.0% SOM. In the event of exceedance, the actual SOM content of the sample(s) should be reviewed to determine if a higher value based on 2.5% or 6.0% can be adopted.

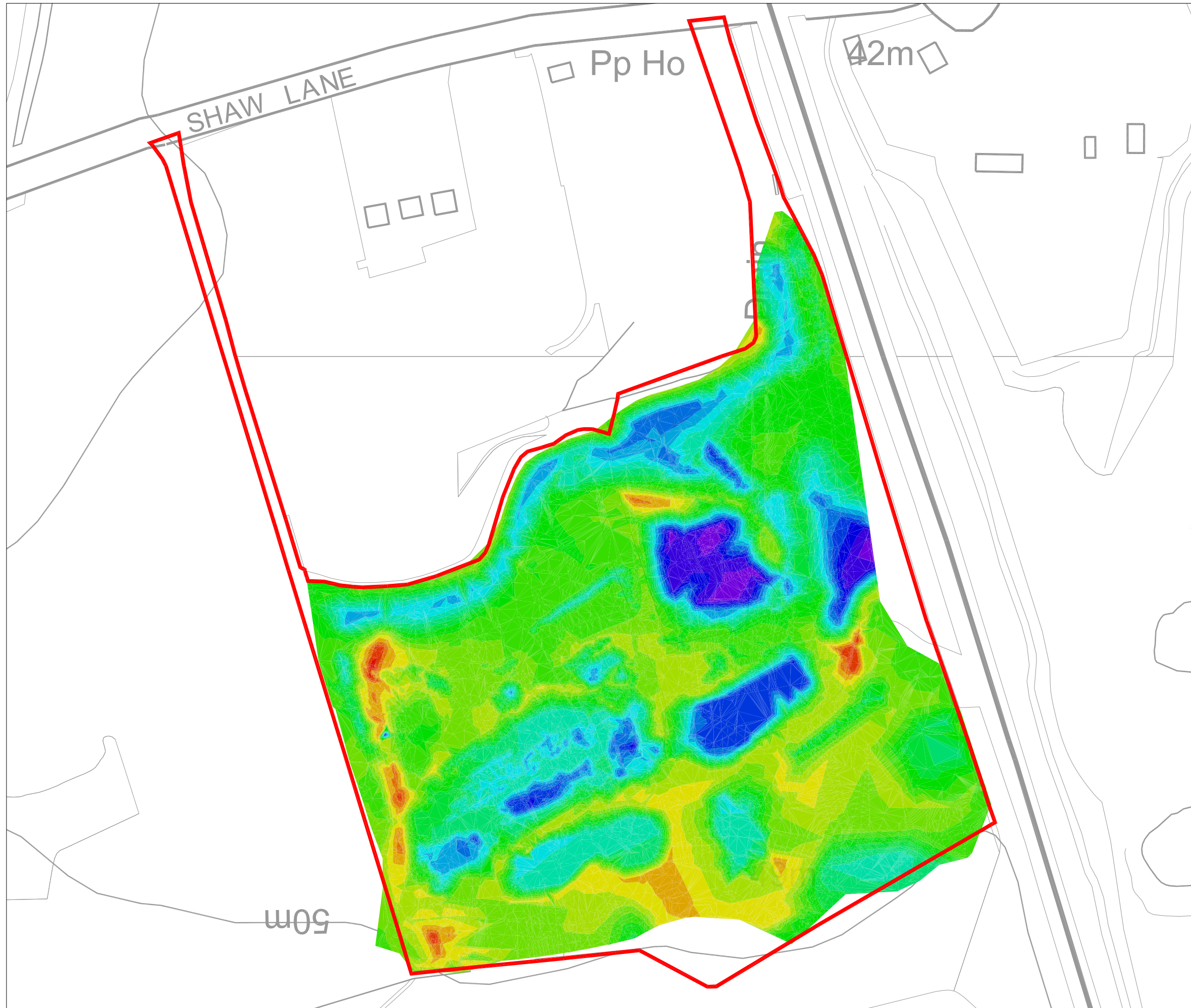
NOTES

* Benzene values to be used as a conservative screen for TPH Aromatic C5-C7 range hydrocarbons if Speciated BTEX results are not available.

** Controlled Waters Risk Assessment (CWRA) McDonnell Cole (Ref. Controlled Waters Risk Assessment, Carlton Colliery, Shaw Lane, Barnsley, 1709-01 – May 2020)

All materials must comply with standards protective of controlled waters. All materials used in clean capping in areas of soft landscaping must also comply with human health standards.

APPENDIX E
Material Management Plans



Key:

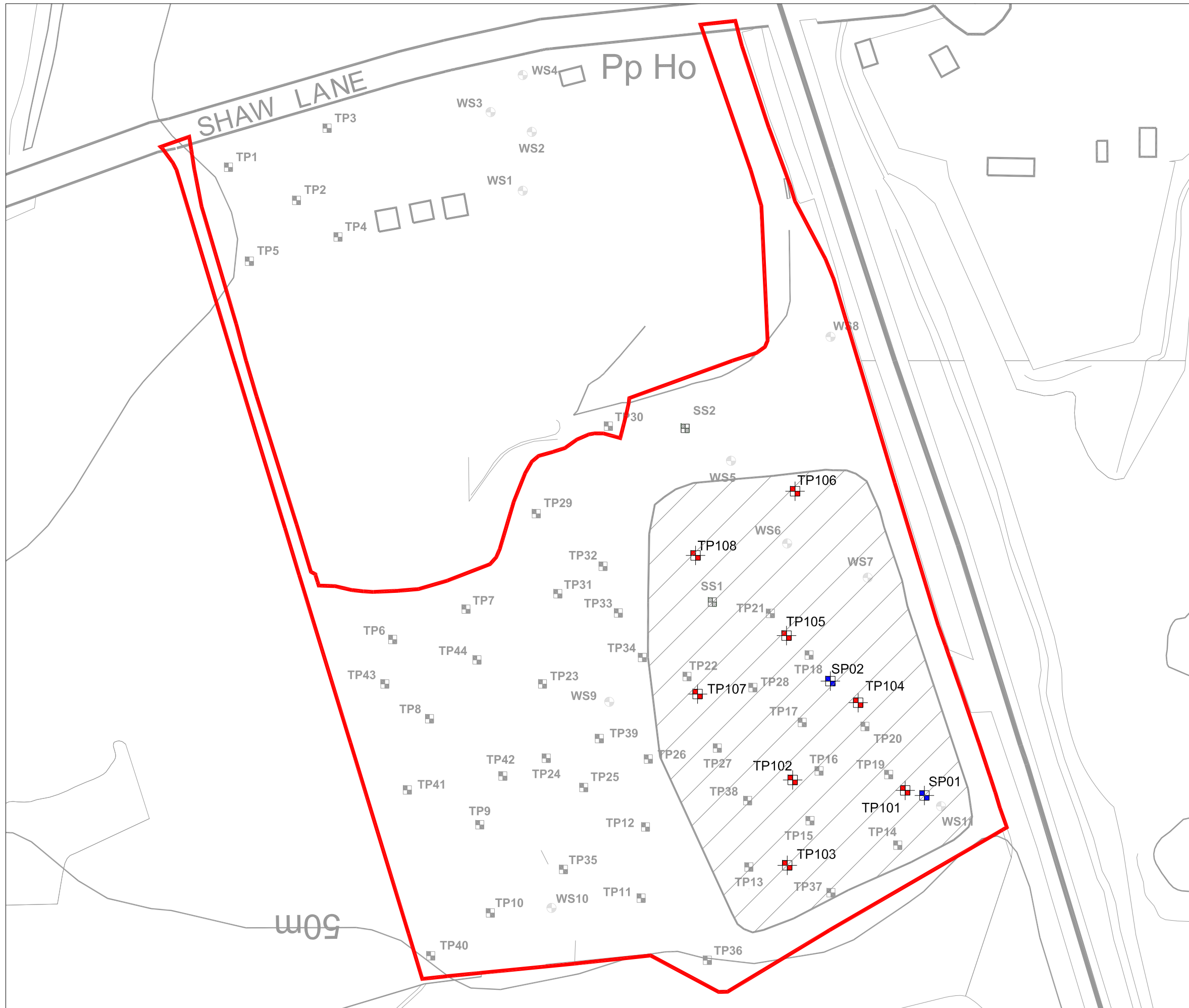
— Planning Application Boundary

Colour, Band, Area

■	-7.00	-6.40
■	-6.40	-5.80
■	-5.80	-5.20
■	-5.20	-4.60
■	-4.60	-4.00
■	-4.00	-3.40
■	-3.40	-2.80
■	-2.80	-2.20
■	-2.20	-1.60
■	-1.60	-1.00
■	-1.00	-0.40
■	-0.40	0.20
■	0.20	0.80
■	0.80	1.40
■	1.40	2.00
■	2.00	2.60
■	2.60	3.20
■	3.20	3.80
■	3.80	4.40
■	4.40	5.00

- Notes:**
1. The proposed planning area is circa 87,434 m².
 2. The proposed landform design area is circa 86,601 m².
 3. The total cut volume is 71,430 m³.
 4. The total fill volume is 47,957 m³.
 5. The balance of cut and fill volume is -23,473 m³.
 6. Topographical levels were interpreted from a survey carried out by an AA Environmental operative in April 2019 as well as previous topographical modeling.

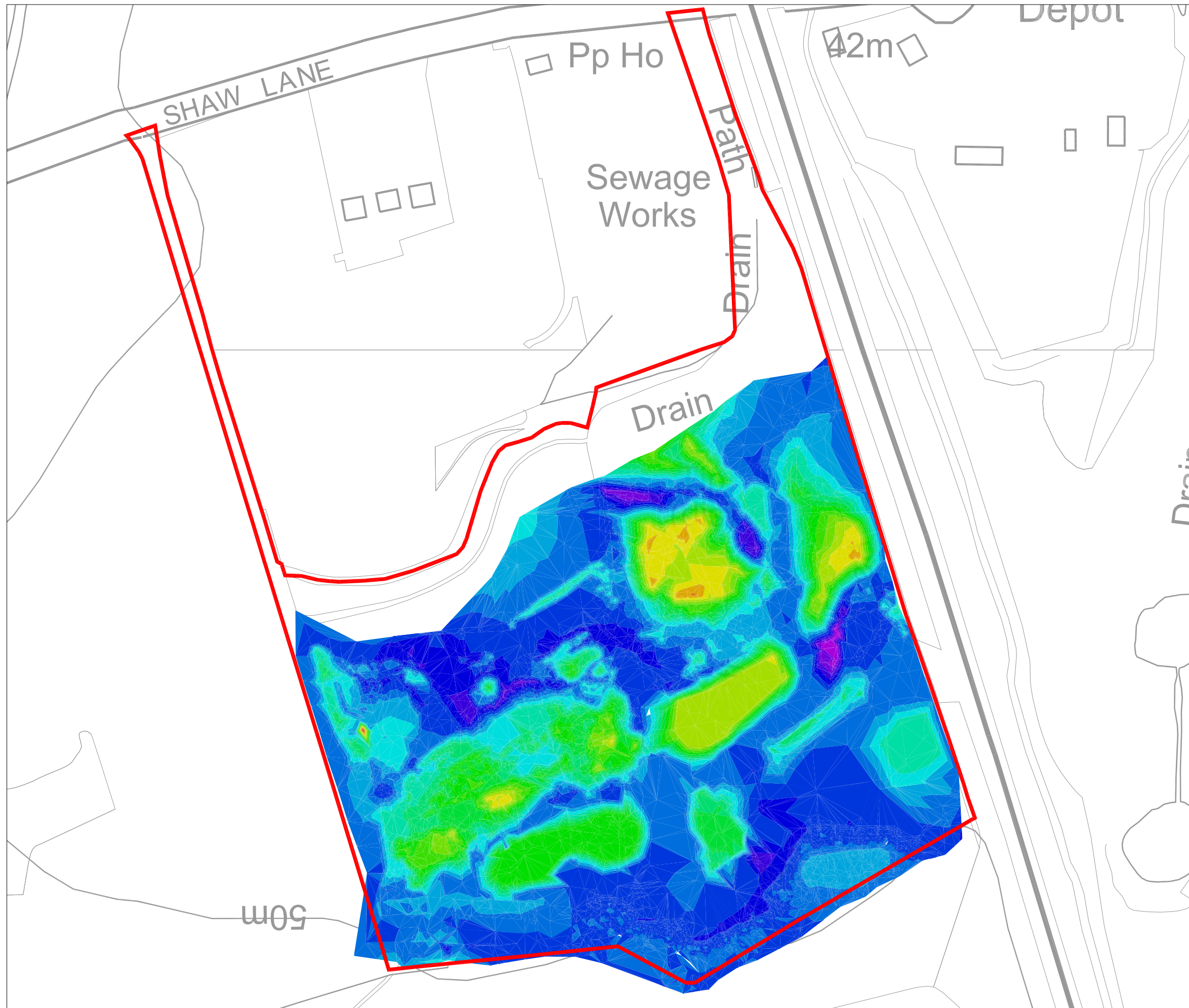
Rev.	Details	Drawn Chkd.	Date
Project 173367 Carlton Colliery Restoration Barnsley			
Title Existing to Proposed Landform Cut and Fill Volumes			
		AA Environmental Ltd Units 4-8 Cholswell Court Shippon Abingdon Oxon OX13 6HX T:(01235) 536042 F:(01235) 523849 info@aae-llp.com www.aae-llp.com	
Scale 1:2000@A3	Date Sept '19	Drawn JM	Chkd. ML
Drg. No. 173367/AppF/D/001		Rev.	



- Key:**
- Planning Application Boundary
 - Indicative Clinker Location
 - AAe April 2019 Trial Pit Location
 - AAe April 2019 Stockpile Sample Location
 - Environ Trial Pit Location
 - Environ Window Sample Location
 - Environ Surface Sample Location

- Notes:**
1. The indicative clinker location is circa 29,992 m².
 2. During the Site Investigation in April 2019, AAe identified clinker to an average depth of 1.5 m bgl in trial pits TP101-105, TP107-108 and SP2.
 3. The volume of the stockpile of black coal ash and clinker (TP108) is circa 12,342 m³.
 4. The stockpile of mixed clinker and burnt shale (SP2) is circa 1,396 m³.
 5. The total estimated volume of clinker to be exported for off-site recovery is circa 58,725 m³.

Rev.	Details	Drawn	Date
		Chkd.	
Project 173367 Carlton Colliery Restoration Barnsley			
Title Indicative Extent of Clinker Fill Volumes			
		AA Environmental Ltd Units 4-8 Cholswell Court Shippon Abingdon Oxon OX13 6HX T: (01235) 536042 F: (01235) 523849 info@aae-llp.com www.aae-llp.com	
		Scale	Date
1:2000@A3	Sept '19	Drg. No.	Rev.
	Drawn JM	Chkd. ML	173367/AppF/D/002




Key:

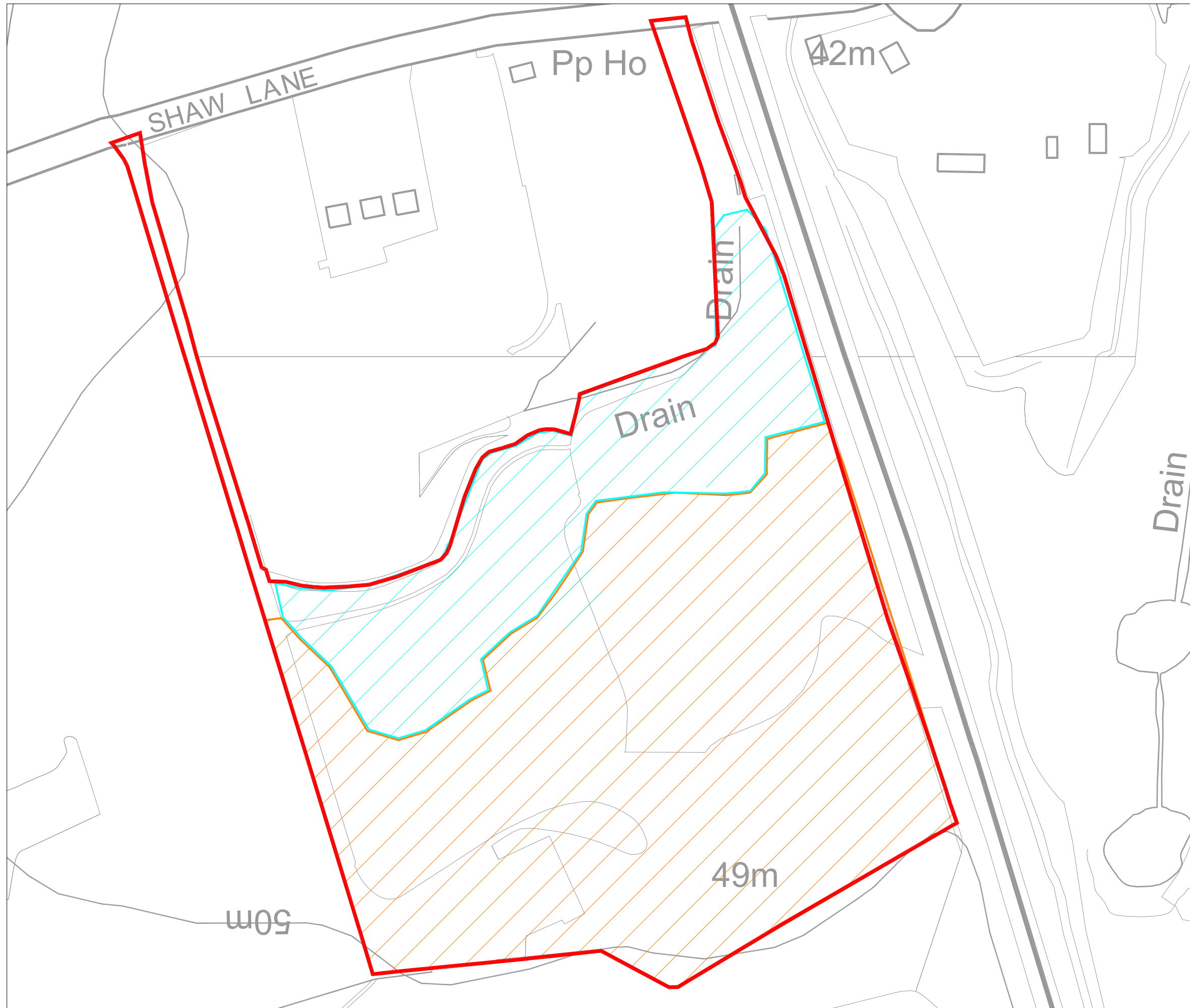
— Planning Application Boundary

Colour, Band, Area

■	-3.00	-2.40
■	-2.40	-1.80
■	-1.80	-1.20
■	-1.20	-0.60
■	-0.60	0.00
■	0.00	0.60
■	0.60	1.20
■	1.20	1.80
■	1.80	2.40
■	2.40	3.00
■	3.00	3.60
■	3.60	4.20
■	4.20	4.80
■	4.80	5.40
■	5.40	6.00
■	6.00	6.60
■	6.60	7.20
■	7.20	7.80
■	7.80	8.40
■	8.40	9.00


- Notes:**
1. The proposed planning area is circa 87,435 m².
 2. The total volume of in-situ stockpiles on site is 84,797 m³.
 3. Topographical levels were interpreted from a survey carried out by an AA Environmental operative in April 2019 as well as previous topographical data including third party data.

Rev.	Details	Drawn Chkd.	Date
Project 173367 Carlton Colliery Restoration Barnsley			
Title Existing Stockpile Elevations and Assessed Volume			
		AA Environmental Ltd Units 4-8 Cholswell Court Shippon Abingdon Oxon OX13 6HX T:(01235) 536042 F:(01235) 523849 info@aae-llp.com www.aae-llp.com	
Scale 1:2000@A3	Date Sept '19	Drg. No. 173367/AppF/D/003	Rev.
Drawn JM	Chkd. ML		



- Key:**
- Planning application boundary
 - ▨ Indicative extent of remediation prior to 2019
 - ▨ Indicative area to be remediated

- Notes:**
1. The planning area is circa 87,434 m².
 2. The proposed landform design area is circa 86,601 m².
 3. The remediation area is circa 61,133 m².
 4. The indicative extent of remediation prior to is circa 25,468 m².

Rev.	Details	Drawn Chkd.	Date
Project 173367 Carlton Colliery Restoration Barnsley			
Title Extent of Remediation Prior to 2019			
		AA Environmental Ltd Units 4-8 Cholswell Court Shippon Abingdon Oxon OX13 6HX T:(01235) 536042 F:(01235) 523849 info@aae-llp.com www.aae-llp.com	
Scale	Date	Drg. No.	Rev.
1:2000@A3	Sept '19 Drawn JM Chkd. ML	173367/AppF/D/004	



Key:

- Planning application boundary
- 1. Stockpile of brick and concrete.
- 2. Stockpile of Made Ground including brick, concrete and soil.
- 3. Stockpile of brick and concrete.
- 4. Black coal and clinker stockpile.
- 5. Stockpile of Made Ground from the remediation of the northern portion of the site prior to 2019.
- 6. Stockpile Made Ground from the remediation of the northern portion of the site prior to 2019.
- 7. Stockpile of Made Ground including brick, concrete and soil.
- 8. Stockpile of concrete and brick.
- 9. Stockpile of Made Ground including brick, concrete and soil.
- 10. Demolition Arisings.
- 11. Stockpile of Made Ground.
- 12. Demolition Arisings.
- 13. Demolition Arisings.
- 14. Demolition Arisings.
- 15. Stockpile of mixed clinker and burnt shale.
- 16. Stockpile of concrete and brick.

Rev.	Details	Drawn	Date
		Chkd.	

Project
 173367
 Carlton Colliery Restoration
 Barnsley

Title
 Stockpile Plan



AA Environmental Ltd
 Units 4-8
 Cholswell Court
 Shippon Abingdon
 Oxon OX13 6HX
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 www.aae-llp.com

Scale	Date	Sept '19	Drg. No.	Rev.
1:2000@A3	Drawn	JM	Chkd. ML	173367/AppF/D/005