Project Name	: Land off Camp Road, Upper Heyford
Job No	: 22-192
Note Title	: Flood Risk Assessment and Drainage Strategy Addendum 1
Author	: HM
Checked	: GG
Approved	: GG
Date	: September 2023

1.0 INTRODUCTION

1.1 Background

1.1.1 Odyssey was commissioned by David Wilson Homes Southern to undertake a Flood Risk Assessment (FRA), incorporating a surface water and foul drainage strategy, to be submitted in association with a residential planning application at Land off Camp Road in Upper Heyford, Oxfordshire.

1.1.2 The proposed drainage strategy was submitted to Cherwell District Council in October 2022 as part of planning application 22/03063/F.

1.1.3 Following the submission of the drainage proposals, comments were received from Oxfordshire County Council (OCC) in its capacity as Lead Local Flood Authority (LLFA) in November 2022. A copy of the OCC comments is provided in **Appendix A**.

1.1.4 This addendum, which should be read in conjunction with the submitted FRA and drainage strategy report (reference 22-192-01A), provides a response to the OCC comments and takes into account the changes to the site layout since the initial submission.

2.0 RESPONSE TO OXFORDSHIRE COUNTY COUNCIL COMMENTS

2.1.1 OCC provided the following comments (***in bold italics***) in November 2022. Odyssey's response directly follows each comment.

"As part of a full application drawings are expected to be detailed. Provide invert and cover levels of all SuDS/drainage infrastructure. Include pipe gradients and pipe numbering which should read in line with the calculations."

2.1.2 The detailed drainage strategy drawing along with the preliminary site levels strategy are presented in **Appendix B**, alongside the associated detailed network calculations.

"Infiltration has been conducted mainly in the northern part of the site, infiltration should be conducted to cover the extent of the site. In areas where infiltration is feasible, infiltration techniques has not been used."

2.1.3 Infiltration testing was undertaken across both the northern and southern parts of the site. Infiltration testing was carried out in the northern part of the site by Omnia in December 2021. Of the four trial pits, two tests were unsuccessful. Soakage rates within the remaining two trial pits were recorded at 1.30 x 10^{-5} metres per second (m/s) within the west of the site, and 3.62 x 10^{-6}m/s towards the east of the site. Groundwater was recorded at 1.60 metres below ground level (m bgl) and 1.80m bgl within the soakage testing trial pits, and levels were also recorded at 0.90m bgl further to the east of the site.

2.1.4 Infiltration testing was carried out in the southern part of the site by T&P Regeneration in January 2019. The soakage rates recorded varied between 2.41 x 10^{-4}m/s towards the east of the site, and 2.84 x 10^{-6}m/s towards the centre of the site. Groundwater was encountered between 1.40m bgl and 1.80m bgl, with levels found to rise by 0.20m during the investigations.

2.1.5 To achieve the 1m required clearance between the base of a soakaway and the highest recorded groundwater level, the infiltrating SuDS features would need to be shallow. It is proposed to incorporate infiltrating permeable paving within driveways located to the north-west of the site. The depth of the granular subbase would be 0.2m to ensure the 1m clearance is achieved. The permeable paving would only drain the individual driveway areas. The poorest infiltration rate within the west of the site (1.30 x 10^{-5}m/s) has been used within the drainage calculations. Infiltration would not be feasible towards the east of the site owing to the shallower groundwater levels.

2.1.6 Extracts from the Omnia and T&P Regeneration site investigations are provided in **Appendix C**.

"Provide ownership details and permission to discharge surface water at the existing ditch/watercourse."

2.1.7 The proposed point of connection into the existing ditch/watercourse is located within the public highway. The works would be undertaken under a S278 agreement with the highway authority.

"Provide surface water catchment plan, demonstrating the extent of the impermeable area and stating the area. Also state the area with 10% urban creep."

2.1.8 A catchment plan drawing is presented in **Appendix D**, which sets out the impermeable areas as well as the incorporation of urban creep.

"Provide surface water flood exceedance plan, demonstrating with flood arrows and proposed levels that all surface water will be kept away from structures and within the site boundary."

2.1.9 The exceedance flow route drawing indicates surface water would be routed within the proposed highways, and away from the new dwellings. The exceedance flow route drawing is presented in **Appendix E**. The finished floor levels (FFLs) of dwellings would be a minimum of 150 millimetres (mm) above the surrounding ground levels.

"SuDS construction details drawing to be provided."

2.1.10 A drawing showing the standard SuDS details is presented in **Appendix F**.

APPENDIX A

Oxfordshire County Council Comments

OXFORDSHIRE COUNTY COUNCIL'S RESPONSE TO CONSULTATION ON THE FOLLOWING DEVELOPMENT PROPOSAL

District: Cherwell
Application no: 22/03063/F
Proposal: Erection of 126 dwellings with access from Camp Road, provision of public open space and associated infrastructure
Location: Land East Of Larsen Road, Heyford Park

Response Date: 23rd November 2022

This report sets out the officer views of Oxfordshire County Council (OCC) on the above proposal. These are set out by individual service area/technical discipline and include details of any planning conditions or Informatives that should be attached in the event that permission is granted and any obligations to be secured by way of a S106 agreement. Where considered appropriate, an overarching strategic commentary is also included. If the local County Council member has provided comments on the application these are provided as a separate attachment.

Assessment Criteria
Proposal overview and mix /population generation

OCC's response is based on a development as set out in the table below. The development is taken from the application form.

Residential	
1-bed dwellings	10
2-bed dwellings	25
3-bed dwellings	54
4-bed & larger dwellings	37

Based on the completion and occupation of the development as stated above it is estimated that the proposal will generate the population stated below:

Average Population	332.78
Nursery children (number of 2- and 3-year olds entitled to funded places)	9.03
Primary pupils	41.41
Secondary pupils including Sixth Form pupils	32.75
Special School pupils	0.84
65+ year olds	34.41

Application no: 22/03063/F
Location: Land East Of Larsen Road, Heyford Park

General Information and Advice

Recommendations for approval contrary to OCC objection:
If within this response an OCC officer has raised an objection but the Local Planning Authority are still minded to recommend approval, OCC would be grateful for notification (via planningconsultations@oxfordshire.gov.uk) as to why material consideration outweigh OCC's objections, and to be given an opportunity to make further representations.

Outline applications and contributions
The anticipated number and type of dwellings and/or the floor space may be set by the developer at the time of application which is used to assess necessary mitigation. If not stated in the application, a policy compliant mix will be used. The number and type of dwellings used when assessing S106 planning obligations is set out on the first page of this response.

In the case of outline applications, once the unit mix/floor space is confirmed by reserved matters approval/discharge of condition a matrix (if appropriate) will be applied to establish any increase in contributions payable. A further increase in contributions may result if there is a reserved matters approval changing the unit mix/floor space.

Where a S106/Planning Obligation is required:

- **Index Linked** – in order to maintain the real value of S106 contributions, contributions will be index linked. Base values and the index to be applied are set out in the Schedules to this response.

- **Administration and Monitoring Fee - TBC**
  This is an estimate of the amount required to cover the monitoring and administration associated with the S106 agreement. The final amount will be based on the OCC's scale of fees and will adjusted to take account of the number of obligations and the complexity of the S106 agreement.

- **OCC Legal Fees** The applicant will be required to pay OCC's legal fees in relation to legal agreements. Please note the fees apply whether a S106 agreement is completed or not.

Security of payment for deferred contributions - Applicants should be aware that an approved bond will be required to secure a payment where a S106 contribution is to be paid post implementation and

- the contribution amounts to 25% or more (including anticipated indexation) of the cost of the project it is towards and that project cost £7.5m or more
- the developer is direct delivering an item of infrastructure costing £7.5m or more
- where aggregate contributions towards bus services exceeds £1m (including anticipated indexation).

A bond will also be required where a developer is direct delivering an item of infrastructure.

The County Infrastructure Funding Team can provide the full policy and advice, on request.

Application no: 22/03063/F
Location: Land East Of Larsen Road, Heyford Park

Lead Local Flood Authority

Recommendation:

Objection

Key issues:

- Detailed drainage drawing required.
- Extensive infiltration testing required.
- Provide ownership details of existing ditch/watercourse.
- Surface water catchment plan to be provided.
- Surface water flood exceedance plan to be provided.
- SuDS construction details drawing to be provided.

Detailed comments:

As part of a full application drawings are expected to be detailed. Provide invert and cover levels of all SuDS/drainage infrastructure. Include pipe gradients and pipe numbering which should read in line with the calculations.

Infiltration has been conducted mainly in the northern part of the site, infiltration should be conducted to cover the extent of the site. In areas where infiltration is feasible, infiltration techniques has not been used.

Provide ownership details and permission to discharge surface water at the existing ditch/watercourse.

Provide surface water catchment plan, demonstrating the extent of the impermeable area and stating the area. Also state the area with 10% urban creep.

Provide surface water flood exceedance plan, demonstrating with flood arrows and proposed levels that all surface water will be kept away from structures and within the site boundary.

SuDS construction details drawing to be provided.

Officer's Name: Kabier Salam
Officer's Title: LLFA Engineer
Date: 14/11/2022

Application no: 22/03063/F
Location: Land East Of Larsen Road, Heyford Park

Education Schedule

Recommendation:

No objection subject to:

- **S106 Contributions** as summarised in the tables below and justified in this Schedule.

Contribution	Amount £	Price base	Index	Towards (details)
Primary and nursery education	**£968,750**	**327**	BCIS All-In TPI	Primary education capacity serving the development
Primary School Land Contribution	**£90,967**	**Nov-20**	RPIX	Contribution towards primary school land
Secondary education	**£447,660**	**327**	BCIS All-In TPI	Secondary education capacity serving the development
SEN	**£71,793**	**327**	BCIS All-In TPI	SEN capacity serving the development
Total	**£ 1,579,170**			

The total development proposed and underway within the Heyford Park masterplan area, including the developments outside this application, have been assessed to estimate the total pupil generation which is expected for each age range.

Part of this provision is already delivered through the existing Heyford Park School and, for early years education, the Old Station Nursery. The balance of provision required has been calculated and the cost equalised across the different developments on a pro rata basis.

S106 obligations and their compliance with Regulation 122(2) Community Infrastructure Levy Regulations 2010 (as amended):

£968,750 Primary and Nursery School Contribution indexed from TPI = 327
Justification:

Comparing current nursery and primary capacity at Heyford Park with the total generation expected from all masterplan parcels shows a deficit of provision equating to 103 nursery places and 300 primary places.

This scale of provision requires a new school. A new 1.5 form entry primary school will provide 75 nursery places and 315 primary places.

The cost has been calculated pro-rata, taking into account the current surplus places at Heyford Park School.

Calculation:

Estimated cost of a new 1.5 form entry primary school = £9,668,000 (TPI = 327)

Total pupil generation expected from new/future applications: 499 (some of whom will benefit from surplus places previously provided at the existing school)

Cost per pupil (based on 499 pupils) = £9,668,000 / 499 = £19,375

Number of primary and nursery pupils expected to be generated	50
Estimated cost of a new 1.5 form entry primary school	£19,375
Pupils * cost =	**£ 968,750**

£90,967 Primary School Land Cost Contribution

This development should contribute in a fair and proportionate manner to the land required for the primary school.

Oxfordshire County Council's standard land requirement for a 1.5 FE primary school is 2.22 ha, and standard education land value per ha = £409,761 (Nov-20). The total school land value is £909,669 (£409,761 x 2.22).

This application is expected to generate 50 nursery and primary pupils. This equates to 10% of the expected pupil generation from current and expected future applications.

10% of £909,669 is £90,967.

£447,660 Secondary School Contribution indexed from TPI = 327

Justification:

Comparing current secondary and sixth form capacity at Heyford Park with the total generation expected from all parcels shows a deficit of provision equating to 192

secondary places. There is no deficit in sixth form places, and therefore no sixth form contribution is required.

The cost has been calculated pro-rata across all proposed developments, taking into account the current surplus places at Heyford Park School.

Calculation:

Cost per place of expanding a secondary school: £25,992 (TPI=327)

Additional number of places required to meet the needs of all parcels of Heyford Park: 192

Total cost of expansion for 192 places = 192 * £25,992 = £4,990,485

Total pupil generation expected from new/future applications: 301 (some of whom will benefit from surplus places previously provided at the existing school)

Cost per pupil (based on 301 pupils) = £4,990,485/ 301 = £16,580

Secondary pupil generation from this development: 27

Secondary contribution required from this development = 27 * £16,580 = £447,660

£71,793 Special School Contribution indexed from TPI = 327

Justification:

Government guidance is that local authorities should secure developer contributions for expansion to special education provision commensurate with the need arising from the development.

Approximately half of pupils with Education Needs & Disabilities (SEND) are educated in mainstream schools, in some cases supported by specialist resource bases, and approximately half attend special schools, some of which are run by the local authority and some of which are independent. Based on current pupil data, approximately 0.9% of primary pupil attend special school, 2.1% of secondary pupils and 1.5% of sixth form pupils. These percentages are deducted from the mainstream pupil contributions referred to above, and generate the number of pupils expected to require education at a special school.

The county council's Special Educational Needs & Disability Sufficiency of Places Strategy is available at https://www.oxfordshire.gov.uk/residents/schools/our-work-schools/planning-enough-school-places and sets out how Oxfordshire already needs more special school places.

This is being achieved through a mixture of new schools and expansions of existing schools.

The proposed development is expected to further increase demand for places at SEN schools in the area, and a contribution towards expansion of SEN school capacity is therefore sought based on the percentage of the pupil generation who would be expected to require places at a special school, based on pupil census data.

Calculation:

Number of pupils requiring education at a special school expected to be generated	0.8
Estimated per pupil cost of special school expansion, as advised by Government guidance	£89,741
Pupils * cost =	**£71,793**

The above contributions are based on a policy compliant unit mix of:

10 x 1 bed dwellings
25 x 2 bed dwellings
54 x 3 bed dwellings
37x 4 bed dwellings

It is noted that the application is outline and therefore the above level of contributions would be subject to amendment, should the final unit mix result in an increase in pupil generation.

Officer's Name: Louise Heavey
Officer's Title: Access to Learning Information Analyst
Date: 11/11/2022

Application no: 22/03063/F
Location: Land East Of Larsen Road, Heyford Park

Infrastructure Funding

Recommendation:

No objection subject to S106 contributions

Legal agreement required to secure:

No objection subject to:

- S106 Contributions as summarised in the tables below and justified in this Schedule.

Contribution	Amount	Price base	Index	Towards (details)
Library	**£14,669**	327	BCIS All-In TPI	Funding of Bicester library

S106 obligations and their compliance with Regulation 122(2) Community Infrastructure Levy Regulations 2010 (as amended):

£14,669 Library Contribution to be indexed linked from TPI – 327 using the BCIS index

Towards: Repaying the cost of forward funding the new Bicester library

Justification: A new library has been provided in the Franklins Yard development in Bicester. Part of the cost of the project was forward funded in advance of contributions being received from development. A contribution is required from this development toward repaying the cost of forward funding the delivery of Bicester library.

Calculation:

There is £487,205 still to be secured from the total £1.2 M capital cost of the project at a BCIS TPI -327 price base.

Population forecasts show a population increase of 20,257 to 2026 for the Bicester Library Service catchment area.

Current contribution requirement is £487,205 ÷ by 20,257 = £24.05

The development proposal would also generate the need to increase the core book stock held by the local library by 2 volumes per additional resident. The price per volume is £10.00 = £20 per person.

The full requirement for the provision of library infrastructure and supplementary core book stock in respect of this application is: £ 44.05 x 333 (the forecast number of new residents) **= £14,669**

Officer's Name: Richard Oliver
Officer's Title: Infrastructure Funding Negotiator
Date: 11/11/2022

Application no: 22/03063/F
Location: Land East Of Larsen Road, Heyford Park

Archaeology

Recommendation:

An archaeological evaluation has been undertaken on this site, to ground truth the results of a geophysical survey. The results of these investigations have been submitted with this application, and show that no archaeological remains survive on this site, and therefore there are no archaeological constraints to this development.

Key issues:

Legal agreement required to secure:

Conditions:

Informatives:

Detailed comments:

Officer's Name: Victoria Green
Officer's Title: Planning Archaeologist
Date: 04/11/2022

Application no: 22/03063/F
Location: Land East Of Larsen Road, Heyford Park

Minerals & Waste

Recommendation:

No Objection

Key issues:

Legal agreement required to secure:

Conditions:

Informatives:

Detailed comments:

Thank you for consulting the Minerals and Waste Policy Team on the above application.

The application site falls within the Mineral Consultation Area for a Mineral Safeguarding Area, therefore Policy M8 of the Oxfordshire Minerals and Waste Local Plan Part 1: Core Strategy should be considered.

Policy M8 states that development that would prevent of otherwise hinder the possible future working of the mineral would not be permitted unless it can be shown that:

- The site has been allocated for development in an adopted local plan or neighbourhood plan; or
- The need for the development outweighs the economic and sustainability considerations relating to the mineral resource; or
- The mineral will be extracted prior to the development taking place.

However, the application site does not actually fall within the Crushed Rock Safeguarding Area which lies to the east of the site.

In addition, the application site lies within an area of land between the already developed area at Upper Heyford Airfield (to the north and west) and Camp Road (to the south). As a result, it is not considered that the development would cause any additional sterilisation of the mineral safeguarding area to the east of the application site. It is therefore considered that the proposed site would not be contrary to Policy M8, and no objection is raised to this planning application on Mineral Policy grounds.

Officer's Name: Charlotte Simms
Officer's Title: Minerals and Waste Local Plan Principal Officer
Date: 14/11/2022

Application no: 22/03063/F
Location: Land East Of Larsen Road, Heyford Park

Waste Management

Recommendation:

No objection subject to S106 contributions

Legal agreement required to secure:

No objection subject to:

- S106 Contributions as summarised in the tables below and justified in this Schedule.

Contribution	Amount	Price base	Index	Towards (details)
Household Waste Recycling Centres	**£11,839**	327	BCIS All-In TPI	Expansion and efficiency of Household Waste Recycling Centres (HWRC)

S106 obligations and their compliance with Regulation 122(2) Community Infrastructure Levy Regulations 2010 (as amended):

£11,839 Household Waste Recycling Centre Contribution indexed from Index Value 327 using BCIS All-in Tender Price Index

Towards:

The expansion and efficiency of Household Waste Recycling Centre (HWRC) capacity.

Justification:

1. Oxfordshire County Council, as a Waste Disposal Authority, is required under the Environmental Protection Act 1990 (Section 51) to arrange:

   "for places to be provided at which persons resident in its area may deposit their household waste and for the disposal of waste so deposited";

   and that

"(a) each place is situated either within the area of the authority or so as to be reasonably accessible to persons resident in its area;

(b) each place is available for the deposit of waste at all reasonable times (including at least one period on the Saturday or following day of each week except a week in which the Saturday is 25th December or 1st January);

(c) each place is available for the deposit of waste free of charge by persons resident in the area;".

2. Such places are known as Household Waste Recycling Centres (HWRCs) and Oxfordshire County Council provides seven HWRCs throughout the County. This network of sites is no longer fit for purpose and is over capacity.

3. Site capacity is assessed by comparing the number of visitors on site at any one time (as measured by traffic monitoring) to the available space. This analysis shows that all sites are currently 'over capacity' (meaning residents need to queue before they are able to deposit materials) at peak times, and many sites are nearing capacity during off peak times. The proposed development will provide 126 dwellings. If each household makes four trips per annum the development would impact on the already over capacity HWRCs by an additional 504 HWRC visits per year.

4. Congestion on site can reduce recycling as residents who have already queued to enter are less willing to take the time necessary to sort materials into the correct bin. Reduced recycling leads to higher costs and an adverse impact on the environment. As all sites are currently over capacity, population growth linked to new housing developments will increase the pressure on the sites.

5. The Waste Regulations (England and Wales) 2011 require that waste is dealt with according to the waste hierarchy. The County Council provides a large number of appropriate containers and storage areas at HWRCs to maximise the amount of waste reused or recycled that is delivered by local residents. However, to manage the waste appropriately this requires more space and infrastructure meaning the pressures of new developments are increasingly felt. Combined with the complex and varied nature of materials delivered to site it will become increasingly difficult over time to comply with the EU Waste Framework Directive 2008, enacted through the Waste Regulations (England and Wales) 2011 (as amended), maintain performance and a good level of service especially at busy and peak times.

Calculation:

Space at HWRC required per dwelling (m^2)	0.18	Current land available 41,000m^2, needs to increase by 28% to cope with current capacity issues. Space for reuse requires an additional 7%. Therefore, total land required for current dwellings (300,090) is 55,350 m^2, or 0.18m^2 per dwelling
Infrastructure cost per m^2	£275	Kidlington build cost/m^2 indexed to 327 BCIS
Land cost per m^2	£247	Senior Estates Surveyor valuation
Total land and infrastructure cost /m^2	**£522**	
Cost/dwelling	£93.96	
No of dwellings in the development	**126**	
Total contributions requested	**£11,839**	

Detailed comments:

Oxfordshire councils have ambitious targets to reduce the amount of waste generated and increase the amount recycled as demonstrated in our Joint Municipal Waste Management Strategy 2018-2023. Enabling residents of new dwellings to fully participate in district council waste and recycling collections is vital to allow Oxfordshire's high recycling rates to be maintained and reduce the amount of non-recyclable waste generated.

Given the pressing urgency of climate change and the need to embed the principles of the circular economy into all areas of our society, we encourage the applicant to consider including community spaces that help reduce waste and build community cohesion through assets such as community fridges, space for the sharing economy (library of things), refill stations, space for local food growing etc.

The bin storage areas must be able to accommodate the correct number of mixed recycling, refuse and food recycling bins; be safe and easy to use for residents and waste collection crews and the proposed bin collection points must meet the requirements of the waste collection authority. A number of the proposed bin collection points appear to be within the footprint of allocated parking spaces rather than as a dedicated bin collection point.

The development will increase domestic waste arisings and the demand for all waste management services including Household Waste Recycling Centres (HWRCs).

Conditions:

In the event that permission is to be given, the following conditions should be attached:

N/A

Officer's Name: Mark Watson
Officer's Title: Waste Strategy Projects Officer
Date: 4 November 2022

APPENDIX B

Drainage Strategy Drawing, Levels Strategy and Calculations

NOTES

1. ALL DIMENSIONS SHOWN ON THIS DRAWING ARE IN METRES.
2. TOPOGRAPHICAL SURVEY IS BASED ON A DRAWING BY PYE HOMES. DATED JUNE 2019.
3. SITE LAYOUT HAS BEEN PROVIDED BY FOCUS DP, DRAWING REF. 0778-102. DATED 14.09.2023.
4. TOTAL DISCHARGE RATE FROM THE SITE IS 9.4l/s.

LEGEND

- PROPOSED SITE BOUNDARY
- PROPOSED DRY SWALE (EFFECTIVE DEPTH OF GRANULAR SUB-BASE 0.4m-0.8m)
- PROPOSED SURFACE WATER PIPEWORK AND MANHOLE
- PROPOSED FOUL WATER PIPEWORK AND MANHOLE
- PROPOSED PERMEABLE PAVING (EFFECTIVE DEPTH OF GRANULAR SUB-BASE 0.7m-0.9m)
- PROPOSED DIFFUSER UNIT
- PROPOSED FLOW CONTROL
- PROPOSED ATTENUATION TANK
- PROPOSED INFILTRATING PERMEABLE PAVING (EFFECTIVE DEPTH OF GRANULAR SUB-BASE 0.2m)
- PROPOSED FOUL WATER PUMPING STATION
- 15m BUFFER FROM PROPOSED PUMPING STATION WET WELL
- PROPOSED FOUL WATER RISING MAIN
- EXISTING SURFACE WATER SEWER PIPE
- EXISTING SURFACE WATER SEWER HEADWALL
- EXISTING FOUL WATER PIPE AND MANHOLE

480m² x 1.6m DEEP

220m² x 1.6m DEEP

131m² x 1.2m DEEP

128m² x 0.4m DEEP

85m² x 1.2m DEEP

PUMPING STATION

13.5

15

10.4

EXISTING 900mm Ø CULVERT (TBC)

INTERPOLATED CULVERT CONNECTION INVERT 'SOFFIT TO SOFFIT' 114.479m AOD (TBC)

SEE INSET A FOR FOUL CONNECTION POINT LOCATED APPROX. 1.8km FROM THE SITE BOUNDARY

TRENCHARD CIRCLE

El Sub Sta

LARSEN ROAD

Track

Sewage Works

ETL

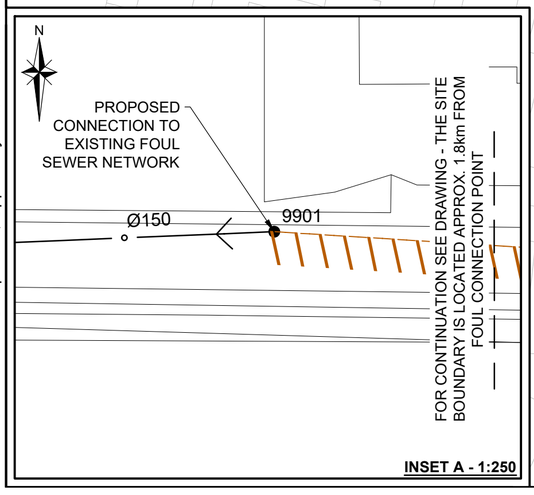
ETL

LEAP

LAP

115.8m

INSET A - 1:250



FOR PLANNING PURPOSES ONLY

Scale 1 : 500

0 5 10 15 20 25 30 35 40 45 50m

Rev	Amendments	Drn	Chk	App	Date
C	UPDATED TO SUIT LATEST SITE LAYOUT	HM	GG	GG	15.09.23
B	FOUL COVER AND INVERT LEVELS ADDED	NA	NA	GG	29.08.23
A	UPDATED TO SUIT REVISED SITE LAYOUT	HM	NA	GG	16.08.23

ODYSSEY

Tuscany House
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Basingstoke
Hampshire RG21 4AF

Telephone: 01256 331144
Fax: 01256 331134
E: info@odysseyconsult.co.uk
W: www.odysseyconsult.co.uk

Job Title
LAND OFF CAMP ROAD, UPPER HEYFORD

Drawing Title
PRELIMINARY DRAINAGE STRATEGY

Client
DAVID WILSON HOMES SOUTHERN

Scale	Date	Designed
1:500 @A1	JUL 23	NA
Drawn	Checked	Approved
HM	NA	GG
Job No	Drawing No	Rev
22-192	22-192-100	C

P:\22-192 - Land off Camp Road, Upper Heyford\Tech\Acad\Drawings\100 Series\22-192-100 Preliminary Drainage Strategy.dwg

N

NOTES

1. ALL DIMENSIONS SHOWN ON THIS DRAWING ARE IN METRES.
2. TOPOGRAPHICAL SURVEY IS BASED ON A DRAWING BY PYE HOMES. DATED JUNE 2019.
3. SITE LAYOUT HAS BEEN PROVIDED BY FOCUS DP, DRAWING REF. 0778-102. DATED 14.09.23.
4. RETAINING WALL HEIGHT BASED ON A MAXIMUM GARDEN GRADIENT OF 1:20.

LEGEND

- PROPOSED SITE BOUNDARY
- FFL 118.40 — PROPOSED FINISHED FLOOR LEVELS
- PROPOSED HIGHWAY CONTOURS
- PROPOSED RETAINING WALL 0.5m-1.0m HIGH

FOR PLANNING PURPOSES ONLY

Rev	Amendments	Drn	Chk	App	Date
C	SITE LAYOUT UPDATED	HM	GG	GG	15.09.23
B	INDICATIVE RETAINING WALLS ADDED	NA	NA	GG	31.08.23
A	UPDATED TO SUIT REVISED SITE LAYOUT	HM	NA	GG	16.08.23

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Job Title
LAND OFF CAMP ROAD, UPPER HEYFORD

Drawing Title
PRELIMINARY LEVELS STRATGEY

Client
DAVID WILSON HOMES SOUTHERN

Scale	Date	Designed
1:500 @A1	AUG 23	NA
Drawn	Checked	Approved
HM	NA	GG
Job No	Drawing No	Rev
22-192	22-192-106	C

Scale 1 : 500
0 5 10 15 20 25 30 35 40 45 50m

P:\22-192 - Land off Camp Road, Upper Heyford\Tech\Acad\Drawings\100 Series\22-192-106 Preliminary Levels Strategy.dwg

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 53 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	119.654	0.154	0.2	0.7	O K
30 min Summer	119.673	0.173	0.2	0.9	O K
60 min Summer	119.683	0.183	0.2	1.1	O K
120 min Summer	119.685	0.185	0.3	1.1	O K
180 min Summer	119.681	0.181	0.2	1.0	O K
240 min Summer	119.676	0.176	0.2	1.0	O K
360 min Summer	119.664	0.164	0.2	0.8	O K
480 min Summer	119.652	0.152	0.2	0.7	O K
600 min Summer	119.642	0.142	0.2	0.6	O K
720 min Summer	119.632	0.132	0.2	0.6	O K
960 min Summer	119.617	0.117	0.2	0.4	O K
1440 min Summer	119.594	0.094	0.1	0.3	O K
2160 min Summer	119.572	0.072	0.1	0.2	O K
2880 min Summer	119.559	0.059	0.1	0.1	O K
4320 min Summer	119.547	0.047	0.1	0.1	O K
5760 min Summer	119.542	0.042	0.0	0.1	O K
7200 min Summer	119.538	0.038	0.0	0.0	O K
8640 min Summer	119.535	0.035	0.0	0.0	O K
10080 min Summer	119.534	0.034	0.0	0.0	O K
15 min Winter	119.666	0.166	0.2	0.9	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	141.063	0.0	17
30 min Summer	92.024	0.0	30
60 min Summer	57.070	0.0	48
120 min Summer	34.241	0.0	82
180 min Summer	25.301	0.0	116
240 min Summer	20.346	0.0	148
360 min Summer	14.859	0.0	214
480 min Summer	11.812	0.0	276
600 min Summer	9.853	0.0	338
720 min Summer	8.478	0.0	398
960 min Summer	6.664	0.0	520
1440 min Summer	4.717	0.0	754
2160 min Summer	3.329	0.0	1108
2880 min Summer	2.605	0.0	1468
4320 min Summer	1.857	0.0	2180
5760 min Summer	1.472	0.0	2920
7200 min Summer	1.239	0.0	3648
8640 min Summer	1.082	0.0	4400
10080 min Summer	0.969	0.0	5120
15 min Winter	141.063	0.0	17

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	119.686	0.186	0.3	1.1	O K
60 min Winter	119.696	0.196	0.3	1.2	O K
120 min Winter	119.696	0.196	0.3	1.2	O K
180 min Winter	119.688	0.188	0.3	1.1	O K
240 min Winter	119.680	0.180	0.2	1.0	O K
360 min Winter	119.663	0.163	0.2	0.8	O K
480 min Winter	119.647	0.147	0.2	0.7	O K
600 min Winter	119.633	0.133	0.2	0.6	O K
720 min Winter	119.621	0.121	0.2	0.5	O K
960 min Winter	119.602	0.102	0.1	0.3	O K
1440 min Winter	119.577	0.077	0.1	0.2	O K
2160 min Winter	119.556	0.056	0.1	0.1	O K
2880 min Winter	119.547	0.047	0.1	0.1	O K
4320 min Winter	119.540	0.040	0.0	0.0	O K
5760 min Winter	119.535	0.035	0.0	0.0	O K
7200 min Winter	119.532	0.032	0.0	0.0	O K
8640 min Winter	119.530	0.030	0.0	0.0	O K
10080 min Winter	119.528	0.028	0.0	0.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
30 min Winter	92.024	0.0	30
60 min Winter	57.070	0.0	50
120 min Winter	34.241	0.0	88
180 min Winter	25.301	0.0	124
240 min Winter	20.346	0.0	158
360 min Winter	14.859	0.0	226
480 min Winter	11.812	0.0	290
600 min Winter	9.853	0.0	352
720 min Winter	8.478	0.0	412
960 min Winter	6.664	0.0	530
1440 min Winter	4.717	0.0	766
2160 min Winter	3.329	0.0	1120
2880 min Winter	2.605	0.0	1472
4320 min Winter	1.857	0.0	2204
5760 min Winter	1.472	0.0	2904
7200 min Winter	1.239	0.0	3576
8640 min Winter	1.082	0.0	4400
10080 min Winter	0.969	0.0	5088

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 451902 225728 SP 51902 25728
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.004

Time (mins) From:	To:	Area (ha)
0	4	0.004

Model Details

Storage is Online Cover Level (m) 120.000

Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.04680	Width (m)	3.0
Membrane Percolation (mm/hr)	1000	Length (m)	13.0
Max Percolation (l/s)	10.8	Slope (1:X)	70.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	119.500	Membrane Depth (m)	0

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 451902 225728 SP 51902 25728
Data Type	Point
Maximum Rainfall (mm/hr)	50
Maximum Time of Concentration (mins)	30
Foul Sewage (l/s/ha)	0.000
Volumetric Runoff Coeff.	0.750
PIMP (%)	100
Add Flow / Climate Change (%)	0
Minimum Backdrop Height (m)	0.200
Maximum Backdrop Height (m)	1.500
Min Design Depth for Optimisation (m)	1.200
Min Vel for Auto Design only (m/s)	1.00
Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm at outfall S (pipe S1.003)

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.077	4-8	0.042

Total Area Contributing (ha) = 0.119

Total Pipe Volume (m³) = 8.207

Time Area Diagram at outfall S (pipe S3.029)

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.318	4-8	1.122	8-12	0.478	12-16	0.005

Total Area Contributing (ha) = 1.923

Total Pipe Volume (m³) = 99.493

Network Design Table for Storm

« - Indicates pipe capacity < flow

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	16.998	0.500	34.0	0.066	5.00	0.0	0.600	o	150	Pipe/Conduit	
S1.001	9.914	0.466	21.3	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S2.000	28.491	0.696	40.9	0.021	5.00	0.0	0.600	o	225	Pipe/Conduit	
S1.002	9.446	0.013	726.6	0.026	0.00	0.0	0.600	o	750	Pipe/Conduit	
S1.003	55.502	0.602	92.2	0.006	0.00	0.0	0.600	o	225	Pipe/Conduit	
S3.000	40.179	0.297	135.3	0.027	5.00	0.0	0.600	o	225	Pipe/Conduit	
S3.001	5.329	0.067	79.5	0.091	0.00	0.0	0.600	o	375	Pipe/Conduit	
S4.000	10.606	0.390	27.2	0.037	5.00	0.0	0.600	o	150	Pipe/Conduit	
S3.002	7.031	0.141	49.9	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.003	57.049	0.997	57.2	0.009	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.004	10.068	0.101	99.7	0.184	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.005	7.824	0.049	159.7	0.022	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.006	20.495	0.098	209.1	0.054	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.007	26.034	0.083	313.7	0.063	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.008	17.298	0.127	136.2	0.032	0.00	0.0	0.600	o	375	Pipe/Conduit	
S5.000	51.878	1.410	36.8	0.032	5.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	5.16	116.960	0.066	0.0	0.0	0.0	1.73	30.6	8.9
S1.001	50.00	5.22	116.385	0.066	0.0	0.0	0.0	2.85	113.3	8.9
S2.000	50.00	5.23	116.615	0.021	0.0	0.0	0.0	2.05	81.5	2.8
S1.002	50.00	5.38	115.394	0.113	0.0	0.0	0.0	1.03	455.2	15.3
S1.003	50.00	6.06	115.381	0.119	0.0	0.0	0.0	1.36	54.2	16.1
S3.000	50.00	5.60	118.624	0.027	0.0	0.0	0.0	1.12	44.6	3.7
S3.001	50.00	5.64	118.177	0.118	0.0	0.0	0.0	2.03	224.6	16.0
S4.000	50.00	5.09	118.800	0.037	0.0	0.0	0.0	1.94	34.3	5.0
S3.002	50.00	5.69	118.110	0.155	0.0	0.0	0.0	2.57	284.0	21.0
S3.003	50.00	6.08	117.969	0.164	0.0	0.0	0.0	2.40	265.0	22.2
S3.004	50.00	6.17	116.972	0.348	0.0	0.0	0.0	1.81	200.4	47.1
S3.005	50.00	6.27	116.871	0.370	0.0	0.0	0.0	1.43	158.1	50.1
S3.006	50.00	6.54	116.822	0.424	0.0	0.0	0.0	1.25	138.0	57.4
S3.007	50.00	6.97	116.724	0.487	0.0	0.0	0.0	1.02	112.4	65.9
S3.008	50.00	7.15	116.641	0.519	0.0	0.0	0.0	1.55	171.3	70.3
S5.000	50.00	5.40	118.150	0.032	0.0	0.0	0.0	2.16	86.0	4.3

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S3.009	4.368	0.014	312.0	0.123	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.010	25.993	0.083	313.2	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.011	21.658	0.068	318.5	0.044	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.012	14.873	0.048	313.0	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.013	6.648	0.021	316.6	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.014	11.727	0.037	316.9	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.015	6.866	0.022	312.1	0.034	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.016	7.552	0.024	313.0	0.006	0.00	0.0	0.600	o	375	Pipe/Conduit	
S3.017	31.153	0.241	129.3	0.027	0.00	0.0	0.600	o	375	Pipe/Conduit	
S6.000	34.892	0.872	40.0	0.036	5.00	0.0	0.600	o	225	Pipe/Conduit	
S6.001	9.387	0.276	34.0	0.049	0.00	0.0	0.600	o	225	Pipe/Conduit	
S7.000	17.745	1.124	15.8	0.089	5.00	0.0	0.600	o	150	Pipe/Conduit	
S6.002	16.261	0.465	35.0	0.008	0.00	0.0	0.600	o	225	Pipe/Conduit	
S6.003	9.596	0.830	11.6	0.013	0.00	0.0	0.600	o	225	Pipe/Conduit	
S3.018	34.331	0.089	385.7	0.006	0.00	0.0	0.600	o	450	Pipe/Conduit	
S3.019	27.417	0.079	347.1	0.050	0.00	0.0	0.600	o	450	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S3.009	50.00	7.22	116.514	0.674	0.0	0.0	0.0	1.02	112.7	91.3
S3.010	50.00	7.65	116.500	0.674	0.0	0.0	0.0	1.02	112.5	91.3
S3.011	50.00	8.01	116.417	0.718	0.0	0.0	0.0	1.01	111.5	97.2
S3.012	50.00	8.25	116.349	0.718	0.0	0.0	0.0	1.02	112.5	97.2
S3.013	50.00	8.36	116.301	0.718	0.0	0.0	0.0	1.01	111.9	97.2
S3.014	50.00	8.55	116.280	0.718	0.0	0.0	0.0	1.01	111.8	97.2
S3.015	50.00	8.66	116.243	0.752	0.0	0.0	0.0	1.02	112.7	101.8
S3.016	50.00	8.79	116.221	0.758	0.0	0.0	0.0	1.02	112.5	102.6
S3.017	50.00	9.11	116.197	0.785	0.0	0.0	0.0	1.59	175.8	106.3
S6.000	50.00	5.28	118.549	0.036	0.0	0.0	0.0	2.07	82.5	4.9
S6.001	50.00	5.35	117.677	0.085	0.0	0.0	0.0	2.25	89.5	11.5
S7.000	50.00	5.12	118.600	0.089	0.0	0.0	0.0	2.55	45.0	12.1
S6.002	50.00	5.47	117.401	0.182	0.0	0.0	0.0	2.22	88.3	24.6
S6.003	50.00	5.51	116.936	0.195	0.0	0.0	0.0	3.87	153.8	26.4
S3.018	50.00	9.67	115.881	0.986	0.0	0.0	0.0	1.03	163.7	133.5
S3.019	50.00	10.09	115.792	1.036	0.0	0.0	0.0	1.09	172.7	140.3

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S8.000	31.722	0.277	114.5	0.159	5.00	0.0	0.600	o	225	Pipe/Conduit	
S8.001	5.773	1.345	4.3	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S3.020	17.071	0.021	812.9	0.025	0.00	0.0	0.600	o	525	Pipe/Conduit	
S3.021	12.012	0.009	1334.7	0.025	0.00	0.0	0.600	o	525	Pipe/Conduit	
S3.022	12.364	0.009	1373.8	0.045	0.00	0.0	0.600	o	525	Pipe/Conduit	
S3.023	7.957	0.038	209.4	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
S9.000	8.027	0.189	42.5	0.078	5.00	0.0	0.600	o	525	Pipe/Conduit	
S3.024	37.343	0.171	218.4	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
S10.000	5.048	0.010	504.8	0.097	5.00	0.0	0.600	o	525	Pipe/Conduit	
S3.025	6.940	0.042	165.2	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S3.026	7.134	0.043	165.9	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S11.000	18.145	0.368	49.3	0.071	5.00	0.0	0.600	o	150	Pipe/Conduit	
S11.001	17.016	0.197	86.4	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S11.002	12.358	0.157	78.7	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S11.003	67.621	0.203	333.1	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S8.000	50.00	5.43	117.560	0.159	0.0	0.0	0.0	1.22	48.5	21.5
S8.001	50.00	5.45	117.283	0.159	0.0	0.0	0.0	6.36	252.8	21.5
S3.020	50.00	10.46	115.638	1.220	0.0	0.0	0.0	0.78	168.3	165.2
S3.021	50.00	10.79	115.617	1.245	0.0	0.0	0.0	0.60	130.8«	168.6
S3.022	50.00	11.13	115.608	1.290	0.0	0.0	0.0	0.60	128.9«	174.7
S3.023	50.00	11.22	115.599	1.290	0.0	0.0	0.0	1.54	334.3	174.7
S9.000	50.00	5.04	115.750	0.078	0.0	0.0	0.0	3.44	745.6	10.6
S3.024	50.00	11.63	115.561	1.368	0.0	0.0	0.0	1.51	327.2	185.2
S10.000	50.00	5.08	115.400	0.097	0.0	0.0	0.0	0.99	214.3	13.1
S3.025	50.00	11.74	115.390	1.465	0.0	0.0	0.0	1.01	40.3«	198.4
S3.026	50.00	11.86	115.348	1.465	0.0	0.0	0.0	1.01	40.2«	198.4
S11.000	50.00	5.21	116.440	0.071	0.0	0.0	0.0	1.44	25.4	9.6
S11.001	50.00	5.41	115.997	0.071	0.0	0.0	0.0	1.41	56.0	9.6
S11.002	50.00	5.55	115.800	0.071	0.0	0.0	0.0	1.48	58.7	9.6
S11.003	50.00	7.14	115.643	0.071	0.0	0.0	0.0	0.71	28.3	9.6

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S12.000	30.023	0.882	34.0	0.031	5.00	0.0	0.600	o	150	Pipe/Conduit	
S11.004	23.693	0.142	167.0	0.144	0.00	0.0	0.600	o	225	Pipe/Conduit	
S11.005	49.341	0.187	263.9	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S13.000	21.771	0.040	544.3	0.148	5.00	0.0	0.600	o	225	Pipe/Conduit	
S13.001	21.248	0.099	214.6	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S11.006	17.090	0.072	237.4	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S11.007	29.735	0.125	237.9	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.027	47.617	0.105	453.5	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
S3.028	7.284	0.150	48.6	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	
S14.000	15.369	0.102	150.7	0.064	5.00	0.0	0.600	o	150	Pipe/Conduit	
S14.001	2.671	0.018	150.0	0.000	0.00	0.0	0.600	o	150	Pipe/Conduit	
S3.029	7.205	0.105	68.6	0.000	0.00	0.0	0.600	o	525	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S12.000	50.00	5.29	116.397	0.031	0.0	0.0	0.0	1.73	30.6	4.2
S11.004	50.00	7.53	115.440	0.246	0.0	0.0	0.0	1.01	40.1	33.3
S11.005	50.00	8.38	115.223	0.246	0.0	0.0	0.0	0.96	68.1	33.3
S13.000	50.00	5.66	115.250	0.148	0.0	0.0	0.0	0.55	22.0	20.0
S13.001	50.00	6.05	115.210	0.148	0.0	0.0	0.0	0.89	35.3	20.0
S11.006	50.00	8.66	115.036	0.394	0.0	0.0	0.0	1.02	71.8	53.4
S11.007	50.00	9.15	114.964	0.394	0.0	0.0	0.0	1.02	71.7	53.4
S3.027	50.00	12.62	114.764	1.859	0.0	0.0	0.0	1.05	226.3«	251.7
S3.028	50.00	12.66	114.659	1.859	0.0	0.0	0.0	3.22	697.1	251.7
S14.000	50.00	5.31	115.079	0.064	0.0	0.0	0.0	0.82	14.4	8.7
S14.001	50.00	5.37	114.977	0.064	0.0	0.0	0.0	0.82	14.5	8.7
S3.029	50.00	12.70	114.584	1.923	0.0	0.0	0.0	2.71	586.0	260.4

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
SPP7	118.260	1.300	Open Manhole	1200	S1.000	116.960	150				
S2	117.810	1.425	Open Manhole	1200	S1.001	116.385	225	S1.000	116.460	150	
S3	118.040	1.425	Open Manhole	1200	S2.000	116.615	225				
S4	117.344	1.950	Open Manhole	1800	S1.002	115.394	750	S1.001	115.919	225	
								S2.000	115.919	225	
S5	117.180	1.799	Open Manhole	1800	S1.003	115.381	225	S1.002	115.381	750	
S	115.800	1.021	Open Manhole	0		OUTFALL		S1.003	114.779	225	
S6	120.124	1.500	Open Manhole	1200	S3.000	118.624	225				
S7	119.827	1.650	Open Manhole	1350	S3.001	118.177	375	S3.000	118.327	225	
SPP1	119.800	1.000	Open Manhole	1200	S4.000	118.800	150				
S9	119.772	1.662	Open Manhole	1350	S3.002	118.110	375	S3.001	118.110	375	
								S4.000	118.410	150	75
S10	119.653	1.684	Open Manhole	1350	S3.003	117.969	375	S3.002	117.969	375	
S11	118.622	1.650	Open Manhole	1350	S3.004	116.972	375	S3.003	116.972	375	
S12	118.535	1.664	Open Manhole	1350	S3.005	116.871	375	S3.004	116.871	375	
S13	118.496	1.674	Open Manhole	1350	S3.006	116.822	375	S3.005	116.822	375	
S14	118.553	1.829	Open Manhole	1350	S3.007	116.724	375	S3.006	116.724	375	
S15	118.744	2.103	Open Manhole	1350	S3.008	116.641	375	S3.007	116.641	375	
S16	119.575	1.425	Open Manhole	1200	S5.000	118.150	225				
S17	118.752	2.238	Open Manhole	1350	S3.009	116.514	375	S3.008	116.514	375	
								S5.000	116.740	225	76
S18	118.689	2.189	Open Manhole	1350	S3.010	116.500	375	S3.009	116.500	375	
S19	118.392	1.975	Open Manhole	1350	S3.011	116.417	375	S3.010	116.417	375	
SCS1	118.600	2.251	Open Manhole	1350	S3.012	116.349	375	S3.011	116.349	375	
S21	118.242	1.941	Open Manhole	1350	S3.013	116.301	375	S3.012	116.301	375	
S22	118.369	2.089	Open Manhole	1350	S3.014	116.280	375	S3.013	116.280	375	
S23	118.309	2.066	Open Manhole	1350	S3.015	116.243	375	S3.014	116.243	375	
S24	118.348	2.126	Open Manhole	1350	S3.016	116.221	375	S3.015	116.221	375	
S25	118.483	2.286	Open Manhole	1350	S3.017	116.197	375	S3.016	116.197	375	
S26	119.974	1.425	Open Manhole	1200	S6.000	118.549	225				
S27	119.625	1.948	Open Manhole	1200	S6.001	117.677	225	S6.000	117.677	225	
SPP5	119.600	1.000	Open Manhole	1200	S7.000	118.600	150				
S29	119.551	2.150	Open Manhole	1200	S6.002	117.401	225	S6.001	117.401	225	
								S7.000	117.476	150	
S30	119.361	2.425	Open Manhole	1200	S6.003	116.936	225	S6.002	116.936	225	
S31	119.165	3.284	Open Manhole	1350	S3.018	115.881	450	S3.017	115.956	375	
								S6.003	116.106	225	

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Back (m
S32	118.870	3.078	Open Manhole	1350	S3.019	115.792	450	S3.018	115.792	450	
SPP6	118.640	1.080	Open Manhole	1200	S8.000	117.560	225				
S34	118.708	1.425	Open Manhole	1200	S8.001	117.283	225	S8.000	117.283	225	
S35	118.571	2.933	Open Manhole	1500	S3.020	115.638	525	S3.019	115.713	450	
								S8.001	115.938	225	
S36	117.975	2.358	Open Manhole	1500	S3.021	115.617	525	S3.020	115.617	525	
SCS2	118.288	2.680	Open Manhole	1500	S3.022	115.608	525	S3.021	115.608	525	
S38	117.859	2.260	Open Manhole	1500	S3.023	115.599	525	S3.022	115.599	525	
SCS4	117.600	1.850	Open Manhole	1500	S9.000	115.750	525				
SFC4	117.600	2.039	Open Manhole	1500	S3.024	115.561	525	S3.023	115.561	525	
								S9.000	115.561	525	
SCS3	116.500	1.100	Open Manhole	1500	S10.000	115.400	525				
SFC	116.490	1.100	Open Manhole	1500	S3.025	115.390	225	S3.024	115.390	525	
								S10.000	115.390	525	
S39	116.200	0.852	Open Manhole	1200	S3.026	115.348	225	S3.025	115.348	225	
SPP2	117.540	1.100	Open Manhole	1200	S11.000	116.440	150				
S41	117.122	1.125	Open Manhole	1200	S11.001	115.997	225	S11.000	116.072	150	
SSWALE 1	116.900	1.100	Open Manhole	1200	S11.002	115.800	225	S11.001	115.800	225	
S43	116.900	1.257	Open Manhole	1200	S11.003	115.643	225	S11.002	115.643	225	
S44	117.747	1.350	Open Manhole	1200	S12.000	116.397	150				
SPP3	116.590	1.150	Open Manhole	1200	S11.004	115.440	225	S11.003	115.440	225	
								S12.000	115.515	150	
S46	116.550	1.327	Open Manhole	1200	S11.005	115.223	300	S11.004	115.298	225	
SCS5	117.200	1.950	Open Manhole	1200	S13.000	115.250	225				
S48	116.300	1.090	Open Manhole	1200	S13.001	115.210	225	S13.000	115.210	225	
S49	116.200	1.164	Open Manhole	1200	S11.006	115.036	300	S11.005	115.036	300	
								S13.001	115.111	225	
S50	116.100	1.136	Open Manhole	1200	S11.007	114.964	300	S11.006	114.964	300	
S51	116.200	1.436	Open Manhole	1500	S3.027	114.764	525	S3.026	115.305	225	
								S11.007	114.839	300	
S52	116.200	1.541	Open Manhole	1500	S3.028	114.659	525	S3.027	114.659	525	
SPP8	116.200	1.121	Open Manhole	1200	S14.000	115.079	150				
S54	116.200	1.223	Open Manhole	1200	S14.001	114.977	150	S14.000	114.977	150	
S55	116.200	1.691	Open Manhole	1500	S3.029	114.584	525	S3.028	114.509	525	
								S14.001	114.959	150	
S	115.800	1.321	Open Manhole	0		OUTFALL		S3.029	114.479	525	

Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SPP7	451876.206	225725.558	451876.206	225725.558	Required	
S2	451893.057	225723.328	451893.057	225723.328	Required	
S3	451907.193	225750.025	451907.193	225750.025	Required	
S4	451902.863	225721.866	451902.863	225721.866	Required	
S5	451901.887	225712.470	451901.887	225712.470	Required	
S	451956.816	225704.522			No Entry	
S6	451898.265	225913.075	451898.265	225913.075	Required	
S7	451903.496	225952.912	451903.496	225952.912	Required	
SPP1	451898.236	225965.097	451898.236	225965.097	Required	
S9	451905.836	225957.699	451905.836	225957.699	Required	
S10	451912.328	225960.397	451912.328	225960.397	Required	
S11	451969.376	225960.792	451969.376	225960.792	Required	
S12	451978.367	225956.262	451978.367	225956.262	Required	
S13	451980.623	225948.770	451980.623	225948.770	Required	
S14	451980.778	225928.276	451980.778	225928.276	Required	

Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S15	451976.566	225902.585	451976.566	225902.585	Required	
S16	451921.117	225892.629	451921.117	225892.629	Required	
S17	451972.538	225885.763	451972.538	225885.763	Required	
S18	451972.150	225881.412	451972.150	225881.412	Required	
S19	451966.984	225855.938	451966.984	225855.938	Required	
SCS1	451945.619	225859.489	451945.619	225859.489	Required	
S21	451959.565	225854.320	451959.565	225854.320	Required	
S22	451966.132	225853.287	451966.132	225853.287	Required	
S23	451964.309	225841.702	451964.309	225841.702	Required	
S24	451959.565	225836.739	451959.565	225836.739	Required	
S25	451952.013	225836.755	451952.013	225836.755	Required	
S26	451894.867	225887.233	451894.867	225887.233	Required	
S27	451890.639	225852.598	451890.639	225852.598	Required	
SPP5	451878.420	225840.199	451878.420	225840.199	Required	
S29	451895.603	225844.631	451895.603	225844.631	Required	

Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S30	451911.552	225841.462	451911.552	225841.462	Required	
S31	451921.018	225839.890	451921.018	225839.890	Required	
S32	451915.980	225805.930	451915.980	225805.930	Required	
SPP6	451874.736	225782.795	451874.736	225782.795	Required	
S34	451906.292	225779.557	451906.292	225779.557	Required	
S35	451912.015	225778.801	451912.015	225778.801	Required	
S36	451928.884	225776.181	451928.884	225776.181	Required	
SCS2	451930.791	225788.040	451930.791	225788.040	Required	
S38	451931.751	225775.713	451931.751	225775.713	Required	
SCS4	451937.896	225766.592	451937.896	225766.592	Required	
SFC4	451939.605	225774.435	451939.605	225774.435	Required	
SCS3	451977.226	225773.836	451977.226	225773.836	Required	
SFC	451976.526	225768.836	451976.526	225768.836	Required	
S39	451983.348	225767.565	451983.348	225767.565	Required	
SPP2	451995.630	225965.465	451995.630	225965.465	Required	

Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S41	452013.665	225963.458	452013.665	225963.458	Required	
SSWALE 1	452014.948	225946.491	452014.948	225946.491	Required	
S43	452025.260	225939.680	452025.260	225939.680	Required	
S44	451995.371	225877.500	451995.371	225877.500	Required	
SPP3	452024.897	225872.060	452024.897	225872.060	Required	
S46	452019.679	225848.948	452019.679	225848.948	Required	
SCS5	451987.456	225824.250	451987.456	225824.250	Required	
S48	452009.180	225822.805	452009.180	225822.805	Required	
S49	452003.559	225802.315	452003.559	225802.315	Required	
S50	451995.989	225786.993	451995.989	225786.993	Required	
S51	451982.532	225760.477	451982.532	225760.477	Required	
S52	451960.141	225718.454	451960.141	225718.454	Required	
SPP8	451940.289	225715.451	451940.289	225715.451	Required	
S54	451955.547	225713.616	451955.547	225713.616	Required	
S55	451957.410	225711.702	451957.410	225711.702	Required	

Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S	451956.816	225704.522			No Entry	

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	o	150	SPP7	118.260	116.960	1.150	Open Manhole	1200
S1.001	o	225	S2	117.810	116.385	1.200	Open Manhole	1200
S2.000	o	225	S3	118.040	116.615	1.200	Open Manhole	1200
S1.002	o	750	S4	117.344	115.394	1.200	Open Manhole	1800
S1.003	o	225	S5	117.180	115.381	1.574	Open Manhole	1800
S3.000	o	225	S6	120.124	118.624	1.275	Open Manhole	1200
S3.001	o	375	S7	119.827	118.177	1.275	Open Manhole	1350
S4.000	o	150	SPP1	119.800	118.800	0.850	Open Manhole	1200
S3.002	o	375	S9	119.772	118.110	1.287	Open Manhole	1350
S3.003	o	375	S10	119.653	117.969	1.309	Open Manhole	1350
S3.004	o	375	S11	118.622	116.972	1.275	Open Manhole	1350
S3.005	o	375	S12	118.535	116.871	1.289	Open Manhole	1350
S3.006	o	375	S13	118.496	116.822	1.299	Open Manhole	1350
S3.007	o	375	S14	118.553	116.724	1.454	Open Manhole	1350
S3.008	o	375	S15	118.744	116.641	1.728	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	16.998	34.0	S2	117.810	116.460	1.200	Open Manhole	1200
S1.001	9.914	21.3	S4	117.344	115.919	1.200	Open Manhole	1800
S2.000	28.491	40.9	S4	117.344	115.919	1.200	Open Manhole	1800
S1.002	9.446	726.6	S5	117.180	115.381	1.049	Open Manhole	1800
S1.003	55.502	92.2	S	115.800	114.779	0.796	Open Manhole	0
S3.000	40.179	135.3	S7	119.827	118.327	1.275	Open Manhole	1350
S3.001	5.329	79.5	S9	119.772	118.110	1.287	Open Manhole	1350
S4.000	10.606	27.2	S9	119.772	118.410	1.212	Open Manhole	1350
S3.002	7.031	49.9	S10	119.653	117.969	1.309	Open Manhole	1350
S3.003	57.049	57.2	S11	118.622	116.972	1.275	Open Manhole	1350
S3.004	10.068	99.7	S12	118.535	116.871	1.289	Open Manhole	1350
S3.005	7.824	159.7	S13	118.496	116.822	1.299	Open Manhole	1350
S3.006	20.495	209.1	S14	118.553	116.724	1.454	Open Manhole	1350
S3.007	26.034	313.7	S15	118.744	116.641	1.728	Open Manhole	1350
S3.008	17.298	136.2	S17	118.752	116.514	1.863	Open Manhole	1350

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S5.000	o	225	S16	119.575	118.150	1.200	Open Manhole	1200
S3.009	o	375	S17	118.752	116.514	1.863	Open Manhole	1350
S3.010	o	375	S18	118.689	116.500	1.814	Open Manhole	1350
S3.011	o	375	S19	118.392	116.417	1.600	Open Manhole	1350
S3.012	o	375	SCS1	118.600	116.349	1.876	Open Manhole	1350
S3.013	o	375	S21	118.242	116.301	1.566	Open Manhole	1350
S3.014	o	375	S22	118.369	116.280	1.714	Open Manhole	1350
S3.015	o	375	S23	118.309	116.243	1.691	Open Manhole	1350
S3.016	o	375	S24	118.348	116.221	1.751	Open Manhole	1350
S3.017	o	375	S25	118.483	116.197	1.911	Open Manhole	1350
S6.000	o	225	S26	119.974	118.549	1.200	Open Manhole	1200
S6.001	o	225	S27	119.625	117.677	1.723	Open Manhole	1200
S7.000	o	150	SPP5	119.600	118.600	0.850	Open Manhole	1200
S6.002	o	225	S29	119.551	117.401	1.925	Open Manhole	1200
S6.003	o	225	S30	119.361	116.936	2.200	Open Manhole	1200
S3.018	o	450	S31	119.165	115.881	2.834	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S5.000	51.878	36.8	S17	118.752	116.740	1.787	Open Manhole	1350
S3.009	4.368	312.0	S18	118.689	116.500	1.814	Open Manhole	1350
S3.010	25.993	313.2	S19	118.392	116.417	1.600	Open Manhole	1350
S3.011	21.658	318.5	SCS1	118.600	116.349	1.876	Open Manhole	1350
S3.012	14.873	313.0	S21	118.242	116.301	1.566	Open Manhole	1350
S3.013	6.648	316.6	S22	118.369	116.280	1.714	Open Manhole	1350
S3.014	11.727	316.9	S23	118.309	116.243	1.691	Open Manhole	1350
S3.015	6.866	312.1	S24	118.348	116.221	1.751	Open Manhole	1350
S3.016	7.552	313.0	S25	118.483	116.197	1.911	Open Manhole	1350
S3.017	31.153	129.3	S31	119.165	115.956	2.834	Open Manhole	1350
S6.000	34.892	40.0	S27	119.625	117.677	1.723	Open Manhole	1200
S6.001	9.387	34.0	S29	119.551	117.401	1.925	Open Manhole	1200
S7.000	17.745	15.8	S29	119.551	117.476	1.925	Open Manhole	1200
S6.002	16.261	35.0	S30	119.361	116.936	2.200	Open Manhole	1200
S6.003	9.596	11.6	S31	119.165	116.106	2.834	Open Manhole	1350
S3.018	34.331	385.7	S32	118.870	115.792	2.628	Open Manhole	1350

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S3.019	o	450	S32	118.870	115.792	2.628	Open Manhole	1350
S8.000	o	225	SPP6	118.640	117.560	0.855	Open Manhole	1200
S8.001	o	225	S34	118.708	117.283	1.200	Open Manhole	1200
S3.020	o	525	S35	118.571	115.638	2.408	Open Manhole	1500
S3.021	o	525	S36	117.975	115.617	1.833	Open Manhole	1500
S3.022	o	525	SCS2	118.288	115.608	2.155	Open Manhole	1500
S3.023	o	525	S38	117.859	115.599	1.735	Open Manhole	1500
S9.000	o	525	SCS4	117.600	115.750	1.325	Open Manhole	1500
S3.024	o	525	SFC4	117.600	115.561	1.514	Open Manhole	1500
S10.000	o	525	SCS3	116.500	115.400	0.575	Open Manhole	1500
S3.025	o	225	SFC	116.490	115.390	0.875	Open Manhole	1500
S3.026	o	225	S39	116.200	115.348	0.627	Open Manhole	1200
S11.000	o	150	SPP2	117.540	116.440	0.950	Open Manhole	1200
S11.001	o	225	S41	117.122	115.997	0.900	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S3.019	27.417	347.1	S35	118.571	115.713	2.408	Open Manhole	1500
S8.000	31.722	114.5	S34	118.708	117.283	1.200	Open Manhole	1200
S8.001	5.773	4.3	S35	118.571	115.938	2.408	Open Manhole	1500
S3.020	17.071	812.9	S36	117.975	115.617	1.833	Open Manhole	1500
S3.021	12.012	1334.7	SCS2	118.288	115.608	2.155	Open Manhole	1500
S3.022	12.364	1373.8	S38	117.859	115.599	1.735	Open Manhole	1500
S3.023	7.957	209.4	SFC4	117.600	115.561	1.514	Open Manhole	1500
S9.000	8.027	42.5	SFC4	117.600	115.561	1.514	Open Manhole	1500
S3.024	37.343	218.4	SFC	116.490	115.390	0.575	Open Manhole	1500
S10.000	5.048	504.8	SFC	116.490	115.390	0.575	Open Manhole	1500
S3.025	6.940	165.2	S39	116.200	115.348	0.627	Open Manhole	1200
S3.026	7.134	165.9	S51	116.200	115.305	0.670	Open Manhole	1500
S11.000	18.145	49.3	S41	117.122	116.072	0.900	Open Manhole	1200
S11.001	17.016	86.4	SSWALE 1	116.900	115.800	0.875	Open Manhole	1200

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S11.002	o	225	SSWALE 1	116.900	115.800	0.875	Open Manhole	1200
S11.003	o	225	S43	116.900	115.643	1.032	Open Manhole	1200
S12.000	o	150	S44	117.747	116.397	1.200	Open Manhole	1200
S11.004	o	225	SPP3	116.590	115.440	0.925	Open Manhole	1200
S11.005	o	300	S46	116.550	115.223	1.027	Open Manhole	1200
S13.000	o	225	SCS5	117.200	115.250	1.725	Open Manhole	1200
S13.001	o	225	S48	116.300	115.210	0.865	Open Manhole	1200
S11.006	o	300	S49	116.200	115.036	0.864	Open Manhole	1200
S11.007	o	300	S50	116.100	114.964	0.836	Open Manhole	1200
S3.027	o	525	S51	116.200	114.764	0.911	Open Manhole	1500
S3.028	o	525	S52	116.200	114.659	1.016	Open Manhole	1500
S14.000	o	150	SPP8	116.200	115.079	0.971	Open Manhole	1200
S14.001	o	150	S54	116.200	114.977	1.073	Open Manhole	1200
S3.029	o	525	S55	116.200	114.584	1.091	Open Manhole	1500

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S11.002	12.358	78.7	S43	116.900	115.643	1.032	Open Manhole	1200
S11.003	67.621	333.1	SPP3	116.590	115.440	0.925	Open Manhole	1200
S12.000	30.023	34.0	SPP3	116.590	115.515	0.925	Open Manhole	1200
S11.004	23.693	167.0	S46	116.550	115.298	1.027	Open Manhole	1200
S11.005	49.341	263.9	S49	116.200	115.036	0.864	Open Manhole	1200
S13.000	21.771	544.3	S48	116.300	115.210	0.865	Open Manhole	1200
S13.001	21.248	214.6	S49	116.200	115.111	0.864	Open Manhole	1200
S11.006	17.090	237.4	S50	116.100	114.964	0.836	Open Manhole	1200
S11.007	29.735	237.9	S51	116.200	114.839	1.061	Open Manhole	1500
S3.027	47.617	453.5	S52	116.200	114.659	1.016	Open Manhole	1500
S3.028	7.284	48.6	S55	116.200	114.509	1.166	Open Manhole	1500
S14.000	15.369	150.7	S54	116.200	114.977	1.073	Open Manhole	1200
S14.001	2.671	150.0	S55	116.200	114.959	1.091	Open Manhole	1500
S3.029	7.205	68.6	S	115.800	114.479	0.796	Open Manhole	0

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.066	0.066	0.066
1.001	-	-	100	0.000	0.000	0.000
2.000	-	-	100	0.021	0.021	0.021
1.002	-	-	100	0.026	0.026	0.026
1.003	-	-	100	0.006	0.006	0.006
3.000	-	-	100	0.027	0.027	0.027
3.001	-	-	100	0.091	0.091	0.091
4.000	-	-	100	0.037	0.037	0.037
3.002	-	-	100	0.000	0.000	0.000
3.003	-	-	100	0.009	0.009	0.009
3.004	-	-	100	0.184	0.184	0.184
3.005	-	-	100	0.022	0.022	0.022
3.006	-	-	100	0.054	0.054	0.054
3.007	-	-	100	0.063	0.063	0.063
3.008	-	-	100	0.032	0.032	0.032
5.000	-	-	100	0.032	0.032	0.032
3.009	-	-	100	0.123	0.123	0.123
3.010	-	-	100	0.000	0.000	0.000
3.011	-	-	100	0.044	0.044	0.044
3.012	-	-	100	0.000	0.000	0.000
3.013	-	-	100	0.000	0.000	0.000
3.014	-	-	100	0.000	0.000	0.000
3.015	-	-	100	0.034	0.034	0.034
3.016	-	-	100	0.006	0.006	0.006
3.017	-	-	100	0.027	0.027	0.027
6.000	-	-	100	0.036	0.036	0.036
6.001	-	-	100	0.049	0.049	0.049
7.000	-	-	100	0.089	0.089	0.089
6.002	-	-	100	0.008	0.008	0.008
6.003	-	-	100	0.013	0.013	0.013
3.018	-	-	100	0.006	0.006	0.006
3.019	-	-	100	0.050	0.050	0.050
8.000	-	-	100	0.159	0.159	0.159
8.001	-	-	100	0.000	0.000	0.000
3.020	-	-	100	0.025	0.025	0.025
3.021	-	-	100	0.025	0.025	0.025
3.022	-	-	100	0.045	0.045	0.045
3.023	-	-	100	0.000	0.000	0.000
9.000	-	-	100	0.078	0.078	0.078
3.024	-	-	100	0.000	0.000	0.000
10.000	-	-	100	0.097	0.097	0.097
3.025	-	-	100	0.000	0.000	0.000
3.026	-	-	100	0.000	0.000	0.000
11.000	-	-	100	0.071	0.071	0.071
11.001	-	-	100	0.000	0.000	0.000
11.002	-	-	100	0.000	0.000	0.000
11.003	-	-	100	0.000	0.000	0.000
12.000	-	-	100	0.031	0.031	0.031
11.004	-	-	100	0.144	0.144	0.144
11.005	-	-	100	0.000	0.000	0.000
13.000	-	-	100	0.148	0.148	0.148

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
13.001	-	-	100	0.000	0.000	0.000
11.006	-	-	100	0.000	0.000	0.000
11.007	-	-	100	0.000	0.000	0.000
3.027	-	-	100	0.000	0.000	0.000
3.028	-	-	100	0.000	0.000	0.000
14.000	-	-	100	0.064	0.064	0.064
14.001	-	-	100	0.000	0.000	0.000
3.029	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				2.042	2.042	2.042

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.003	S	115.800	114.779	0.000	0	0

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S3.029	S	115.800	114.479	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	13
Number of Online Controls	14	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 451902 225728 SP 51902 25728
Data Type	Point
Summer Storms	Yes

Synthetic Rainfall Details

Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Storm Duration (mins)	30

Online Controls for Storm

Orifice Manhole: S2, DS/PN: S1.001, Volume (m³): 1.9

Diameter (m) 0.015 Discharge Coefficient 0.600 Invert Level (m) 116.385

Hydro-Brake® Optimum Manhole: S5, DS/PN: S1.003, Volume (m³): 8.0

Unit Reference	MD-SHE-0079-3000-1250-3000
Design Head (m)	1.250
Design Flow (l/s)	3.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	79
Invert Level (m)	115.381
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.250	3.0
Flush-Flo™	0.344	2.9
Kick-Flo®	0.702	2.3
Mean Flow over Head Range	-	2.6

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.2	1.200	2.9	3.000	4.5	7.000	6.7
0.200	2.7	1.400	3.2	3.500	4.8	7.500	6.9
0.300	2.9	1.600	3.4	4.000	5.1	8.000	7.1
0.400	2.9	1.800	3.5	4.500	5.4	8.500	7.3
0.500	2.8	2.000	3.7	5.000	5.7	9.000	7.5
0.600	2.6	2.200	3.9	5.500	6.0	9.500	7.7
0.800	2.4	2.400	4.1	6.000	6.2		
1.000	2.7	2.600	4.2	6.500	6.5		

Orifice Manhole: S9, DS/PN: S3.002, Volume (m³): 3.0

Diameter (m) 0.080 Discharge Coefficient 0.600 Invert Level (m) 118.110

Orifice Manhole: SCS1, DS/PN: S3.012, Volume (m³): 5.5

Diameter (m) 0.018 Discharge Coefficient 0.600 Invert Level (m) 116.349

Orifice Manhole: S29, DS/PN: S6.002, Volume (m³): 3.0

Diameter (m) 0.058 Discharge Coefficient 0.600 Invert Level (m) 117.401

Orifice Manhole: S34, DS/PN: S8.001, Volume (m³): 2.8

Diameter (m) 0.020 Discharge Coefficient 0.600 Invert Level (m) 117.283

Orifice Manhole: SCS2, DS/PN: S3.022, Volume (m³): 7.0

Diameter (m) 0.050 Discharge Coefficient 0.600 Invert Level (m) 115.608

Orifice Manhole: SFC4, DS/PN: S3.024, Volume (m³): 6.4

Diameter (m) 0.030 Discharge Coefficient 0.600 Invert Level (m) 115.561

Orifice Manhole: SFC, DS/PN: S3.025, Volume (m³): 10.5

Diameter (m) 0.060 Discharge Coefficient 0.600 Invert Level (m) 115.390

Orifice Manhole: S41, DS/PN: S11.001, Volume (m³): 1.6

Diameter (m) 0.037 Discharge Coefficient 0.600 Invert Level (m) 116.072

Orifice Manhole: SSWALE 1, DS/PN: S11.002, Volume (m³): 1.9

Diameter (m) 0.020 Discharge Coefficient 0.600 Invert Level (m) 115.800

Orifice Manhole: SPP3, DS/PN: S11.004, Volume (m³): 4.5

Diameter (m) 0.025 Discharge Coefficient 0.600 Invert Level (m) 115.440

Orifice Manhole: S48, DS/PN: S13.001, Volume (m³): 2.1

Diameter (m) 0.010 Discharge Coefficient 0.600 Invert Level (m) 115.210

Orifice Manhole: S54, DS/PN: S14.001, Volume (m³): 1.6

Diameter (m) 0.010 Discharge Coefficient 0.600 Invert Level (m) 114.977

Storage Structures for Storm

Porous Car Park Manhole: SPP7, DS/PN: S1.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	9.5
Membrane Percolation (mm/hr)	1000	Length (m)	31.5
Max Percolation (l/s)	83.1	Slope (1:X)	45.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	116.960	Cap Volume Depth (m)	0.800

Porous Car Park Manhole: SPP1, DS/PN: S4.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	10.6
Membrane Percolation (mm/hr)	1000	Length (m)	14.4
Max Percolation (l/s)	42.4	Slope (1:X)	200.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	118.800	Cap Volume Depth (m)	0.700

Cellular Storage Manhole: SCS1, DS/PN: S3.012

Invert Level (m)	116.425	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95
Infiltration Coefficient Side (m/hr)	0.00000		

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	480.0	480.0	1.601	0.0	611.5
1.600	480.0	611.5			

Porous Car Park Manhole: SPP5, DS/PN: S7.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	17.8
Membrane Percolation (mm/hr)	1000	Length (m)	15.8
Max Percolation (l/s)	78.1	Slope (1:X)	65.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	118.600	Cap Volume Depth (m)	0.700

Porous Car Park Manhole: SPP6, DS/PN: S8.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	15.7
Membrane Percolation (mm/hr)	1000	Length (m)	45.2
Max Percolation (l/s)	197.1	Slope (1:X)	82.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	117.560	Cap Volume Depth (m)	0.800

Cellular Storage Manhole: SCS2, DS/PN: S3.022

Invert Level (m) 115.608 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	220.0	220.0	1.601	0.0	309.0
1.600	220.0	309.0			

Cellular Storage Manhole: SCS4, DS/PN: S9.000

Invert Level (m) 115.750 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	85.0	0.0	1.201	0.0	0.0
1.200	85.0	0.0			

Cellular Storage Manhole: SCS3, DS/PN: S10.000

Invert Level (m) 115.400 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	128.0	0.0	0.401	0.0	0.0
0.400	128.0	0.0			

Porous Car Park Manhole: SPP2, DS/PN: S11.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	10.6
Membrane Percolation (mm/hr)	1000	Length (m)	26.9
Max Percolation (l/s)	79.2	Slope (1:X)	30.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	116.440	Cap Volume Depth (m)	0.800

Dry Swale Manhole: SSWALE 1, DS/PN: S11.002

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Trench Width (m)	2.5
Infiltration Coefficient Side (m/hr)	0.00000	Trench Length (m)	22.0
Safety Factor	2.0	Trench Infiltration Side (m/hr)	0.00000
Porosity	1.00	Trench Porosity	0.30
Invert Level (m)	115.800	Side Slope (1:X)	3.0
Trench Height (m)	0.700	Slope (1:X)	135.0

Dry Swale Manhole: SSWALE 1, DS/PN: S11.002

Cap Volume Depth (m) 0.000 Include Swale Volume Yes
Cap Infiltration Depth (m) 0.000

Porous Car Park Manhole: SPP3, DS/PN: S11.004

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	9.2
Membrane Percolation (mm/hr)	1000	Length (m)	78.0
Max Percolation (l/s)	199.3	Slope (1:X)	270.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	115.440	Cap Volume Depth (m)	0.850

Cellular Storage Manhole: SCS5, DS/PN: S13.000

Invert Level (m) 115.250 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	131.0	0.0	1.201	0.0	0.0
1.200	131.0	0.0			

Porous Car Park Manhole: SPP8, DS/PN: S14.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	10.9
Membrane Percolation (mm/hr)	1000	Length (m)	26.6
Max Percolation (l/s)	80.5	Slope (1:X)	57.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	115.079	Cap Volume Depth (m)	0.900

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	13
Number of Online Controls	14	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 451902 225728 SP 51902 25728
Data Type	Point
Cv (Summer)	0.750
Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	100
Climate Change (%)	40

WARNING: Half Drain Time has not been calculated as the structure is too full.

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.
S1.000	SPP7	360 Winter	100	+40%	100/15 Summer			
S1.001	S2	360 Winter	100	+40%	100/15 Summer			
S2.000	S3	60 Winter	100	+40%	100/15 Winter			
S1.002	S4	60 Winter	100	+40%	100/15 Summer			
S1.003	S5	60 Winter	100	+40%	100/15 Summer	100/30 Winter		
S3.000	S6	15 Winter	100	+40%	100/15 Summer			
S3.001	S7	15 Winter	100	+40%	100/15 Summer	100/15 Summer		
S4.000	SPP1	30 Winter	100	+40%	100/15 Summer			
S3.002	S9	15 Winter	100	+40%	100/15 Summer	100/15 Winter		
S3.003	S10	15 Summer	100	+40%	100/15 Summer			
S3.004	S11	15 Winter	100	+40%	100/15 Summer	100/15 Summer		
S3.005	S12	15 Winter	100	+40%	100/15 Summer	100/15 Summer		

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	SPP7	117.706	0.596	0.000	0.04			1.0	SURCHARGED
S1.001	S2	117.703	1.093	0.000	0.01			0.5	FLOOD RISK
S2.000	S3	117.189	0.349	0.000	0.09			6.9	SURCHARGED
S1.002	S4	117.182	1.038	0.000	0.04			9.9	FLOOD RISK
S1.003	S5	117.181	1.575	1.304	0.07			3.5	FLOOD
S3.000	S6	119.885	1.036	0.000	0.35			14.8	FLOOD RISK
S3.001	S7	119.828	1.276	0.942	0.55			59.2	FLOOD
S4.000	SPP1	119.454	0.504	0.000	0.42		25	12.8	SURCHARGED
S3.002	S9	119.772	1.287	0.263	0.10			15.2	FLOOD
S3.003	S10	118.646	0.302	0.000	0.10			25.4	SURCHARGED
S3.004	S11	118.624	1.277	1.620	0.80			99.4	FLOOD
S3.005	S12	118.536	1.290	1.372	0.92			98.8	FLOOD

PN	US/MH Name	Level Exceeded
S1.000	SPP7	
S1.001	S2	
S2.000	S3	
S1.002	S4	
S1.003	S5	3
S3.000	S6	
S3.001	S7	2
S4.000	SPP1	
S3.002	S9	1
S3.003	S10	
S3.004	S11	2
S3.005	S12	2

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow
S3.006	S13	15 Winter	100	+40%	100/15 Summer	100/15 Winter	
S3.007	S14	15 Winter	100	+40%	100/15 Summer		
S3.008	S15	15 Winter	100	+40%	100/15 Summer		
S5.000	S16	15 Winter	100	+40%			
S3.009	S17	15 Winter	100	+40%	100/15 Summer		
S3.010	S18	10080 Winter	100	+40%	100/15 Summer		
S3.011	S19	10080 Winter	100	+40%	100/15 Summer		
S3.012	SCS1	10080 Winter	100	+40%	100/15 Summer		
S3.013	S21	2880 Winter	100	+40%	100/240 Winter		
S3.014	S22	2880 Winter	100	+40%	100/180 Winter		
S3.015	S23	2880 Winter	100	+40%	100/180 Winter		
S3.016	S24	2880 Winter	100	+40%	100/180 Winter		
S3.017	S25	2880 Winter	100	+40%	100/180 Winter		
S6.000	S26	15 Winter	100	+40%	100/15 Summer		
S6.001	S27	15 Winter	100	+40%	100/15 Summer	100/15 Summer	
S7.000	SPP5	60 Winter	100	+40%	100/15 Summer		
S6.002	S29	15 Summer	100	+40%	100/15 Summer	100/15 Winter	
S6.003	S30	2880 Winter	100	+40%			
S3.018	S31	2880 Winter	100	+40%	100/120 Summer		
S3.019	S32	2880 Winter	100	+40%	100/60 Summer		
S8.000	SPP6	600 Winter	100	+40%	100/15 Summer		
S8.001	S34	600 Winter	100	+40%	100/15 Summer		
S3.020	S35	2880 Winter	100	+40%	100/60 Summer		
S3.021	S36	2880 Winter	100	+40%	100/60 Summer		
S3.022	SCS2	2880 Winter	100	+40%	100/60 Summer		
S3.023	S38	2880 Winter	100	+40%	100/60 Winter		
S9.000	SCS4	2880 Winter	100	+40%	100/120 Winter		
S3.024	SFC4	2880 Winter	100	+40%	100/60 Winter		
S10.000	SCS3	240 Winter	100	+40%			
S3.025	SFC	240 Winter	100	+40%	100/30 Summer		
S3.026	S39	240 Winter	100	+40%			
S11.000	SPP2	120 Winter	100	+40%	100/15 Summer		
S11.001	S41	120 Winter	100	+40%	100/15 Summer		
S11.002	SSWALE 1	600 Winter	100	+40%	100/15 Summer		
S11.003	S43	1440 Winter	100	+40%	100/60 Summer		
S12.000	S44	15 Winter	100	+40%			
S11.004	SPP3	1440 Winter	100	+40%	100/15 Summer		
S11.005	S46	1440 Winter	100	+40%			
S13.000	SCS5	2880 Winter	100	+40%	100/15 Summer		
S13.001	S48	5760 Winter	100	+40%	100/15 Summer	100/480 Winter	
S11.006	S49	1440 Winter	100	+40%			
S11.007	S50	1440 Winter	100	+40%			
S3.027	S51	360 Winter	100	+40%			
S3.028	S52	360 Winter	100	+40%			
S14.000	SPP8	960 Winter	100	+40%	100/15 Summer		
S14.001	S54	960 Winter	100	+40%	100/15 Summer		
S3.029	S55	360 Winter	100	+40%			

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)
S3.006	S13		118.497	1.300	1.255	1.06			123.5
S3.007	S14		118.440	1.341	0.000	1.51			147.9
S3.008	S15		118.278	1.262	0.000	1.15			160.9
S5.000	S16		118.226	-0.149	0.000	0.24			19.9
S3.009	S17		118.103	1.214	0.000	3.02			237.5
S3.010	S18		117.875	1.000	0.000	0.04			3.8
S3.011	S19		117.875	1.083	0.000	0.04			4.0
S3.012	SCS1		117.874	1.150	0.000	0.01		8921	0.8
S3.013	S21		117.107	0.431	0.000	0.01			0.7
S3.014	S22		117.107	0.451	0.000	0.01			0.7
S3.015	S23		117.107	0.488	0.000	0.01			1.0
S3.016	S24		117.107	0.510	0.000	0.01			1.1
S3.017	S25		117.106	0.534	0.000	0.01			1.5
S6.000	S26		119.709	0.935	0.000	0.29			22.3
S6.001	S27		119.627	1.725	1.621	0.51			37.6
S7.000	SPP5		119.290	0.540	0.000	0.21		53	8.9
S6.002	S29		119.546	1.920	0.000	0.13			10.2
S6.003	S30		117.107	-0.054	0.000	0.02			3.0
S3.018	S31		117.106	0.775	0.000	0.03			4.5
S3.019	S32		117.106	0.864	0.000	0.03			5.1
S8.000	SPP6		118.305	0.520	0.000	0.09			4.2
S8.001	S34		118.452	0.944	0.000	0.01			0.9
S3.020	S35		117.106	0.943	0.000	0.07			6.1
S3.021	S36		117.106	0.964	0.000	0.07			6.4
S3.022	SCS2		117.106	0.973	0.000	0.02			2.3
S3.023	S38		116.929	0.805	0.000	0.01			2.3
S9.000	SCS4		116.929	0.654	0.000	0.00			0.6
S3.024	SFC4		116.929	0.843	0.000	0.01			2.2
S10.000	SCS3		115.753	-0.172	0.000	0.02			3.3
S3.025	SFC		115.753	0.138	0.000	0.11			3.4
S3.026	S39		115.398	-0.175	0.000	0.11			3.4
S11.000	SPP2		117.121	0.531	0.000	0.12		119	2.8
S11.001	S41		117.110	0.888	0.000	0.05			2.6
S11.002	SSWALE 1		116.777	0.752	0.000	0.01			0.7
S11.003	S43		116.195	0.327	0.000	0.02			0.6
S12.000	S44		116.488	-0.059	0.000	0.66			19.5
S11.004	SPP3		116.193	0.528	0.000	0.03			1.1
S11.005	S46		115.248	-0.275	0.000	0.02			1.1
S13.000	SCS5		116.270	0.795	0.000	0.22			4.1
S13.001	S48		116.300	0.865	0.172	0.01			0.2
S11.006	S49		115.066	-0.270	0.000	0.02			1.3
S11.007	S50		114.993	-0.271	0.000	0.02			1.3
S3.027	S51		114.818	-0.471	0.000	0.02			4.6
S3.028	S52		114.697	-0.487	0.000	0.02			4.6
S14.000	SPP8		115.828	0.599	0.000	0.03			0.4
S14.001	S54		115.829	0.702	0.000	0.02			0.2
S3.029	S55		114.632	-0.477	0.000	0.02			4.8

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Status	Level Exceeded
S3.006	S13	FLOOD	1
S3.007	S14	FLOOD RISK	
S3.008	S15	SURCHARGED	
S5.000	S16	OK	
S3.009	S17	SURCHARGED	
S3.010	S18	SURCHARGED	
S3.011	S19	SURCHARGED	
S3.012	SCS1	SURCHARGED	
S3.013	S21	SURCHARGED	
S3.014	S22	SURCHARGED	
S3.015	S23	SURCHARGED	
S3.016	S24	SURCHARGED	
S3.017	S25	SURCHARGED	
S6.000	S26	FLOOD RISK	
S6.001	S27	FLOOD	4
S7.000	SPP5	SURCHARGED	
S6.002	S29	FLOOD RISK	
S6.003	S30	OK	
S3.018	S31	SURCHARGED	
S3.019	S32	SURCHARGED	
S8.000	SPP6	SURCHARGED	
S8.001	S34	FLOOD RISK	
S3.020	S35	SURCHARGED	
S3.021	S36	SURCHARGED	
S3.022	SCS2	SURCHARGED	
S3.023	S38	SURCHARGED	
S9.000	SCS4	SURCHARGED	
S3.024	SFC4	SURCHARGED	
S10.000	SCS3	OK	
S3.025	SFC	SURCHARGED	
S3.026	S39	OK	
S11.000	SPP2	SURCHARGED	
S11.001	S41	FLOOD RISK	
S11.002	SSWALE 1	FLOOD RISK	
S11.003	S43	SURCHARGED	
S12.000	S44	OK	
S11.004	SPP3	SURCHARGED	
S11.005	S46	OK	
S13.000	SCS5	SURCHARGED	
S13.001	S48	FLOOD	15
S11.006	S49	OK	
S11.007	S50	OK	
S3.027	S51	OK	
S3.028	S52	OK	
S14.000	SPP8	SURCHARGED	
S14.001	S54	SURCHARGED	
S3.029	S55	OK	

APPENDIX C

Infiltration Testing Extracts

Camp Road, Upper Heyford

Desk Study and Ground Investigation Report

Report for:

Pye Homes Ltd.

Date: 8th March 2019

T&P Ref: 2019Mar_CAM2362_DSGI

T & P Regeneration Ltd
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Document Issuance

Client	Pye Homes Ltd.		
Project	Camp Road, Upper Heyford.		
Issue	001		
Date:	8th March 2019		
PREPARED BY		**CHECKED BY**	**APPROVED BY**
[redacted]			
John Flannery		**Helen Matheson/ James Dodd**	**Mike Nicholas**

Document Revision Record

Issue Number	Date	Revision Details	Revised by	Checked by	Approved by

EXECUTIVE SUMMARY

Project Information	
Project details	This Desk Study and Ground Investigation report has been prepared by T&P Regeneration Ltd (T&P) on behalf of Pye Homes for the site located off Camp Road, Upper Heyford – postcode OX25 5LX / NGR: 451940, 225830.
Site description and current land use	The site occupies an area of 3.14 hectares (ha) and is currently used for agricultural purposes. The site is generally level with an elevation of between 115 and 120 metres Above Ordnance Datum (mAOD). Two tarmacked access routes were noted to be present. The western access is understood to form the boundary of the site and leads to a large residential house, while the southern access route leads to adjacent agricultural land.
Development	The proposed development comprises the construction of up to 77Nº residential dwellings with private gardens and areas of shared landscaping are proposed.
Site Setting	
Environmental setting	Superficial deposits are not indicated to be present beneath the site. The site is indicated to be entirely underlain by Mid-Jurassic Period limestone of the White Limestone Formation. The White Limestone Formation is classified as a Principal Aquifer. There are no licensed groundwater, or surface water abstractions within 500m of the site. The site is not located within a Source Protection Zone. The nearest surface water feature is a stream located adjacent to the western site boundary. At the time of the ground investigation the stream was noted to be flowing from north to south. The site is in a Flood Zone 1 with a low probability of flooding. However, as the site is over 1 hectare, a Flood Risk Assessment will be required. The site is not located within an environmentally sensitive area.
UXO	The site is located in area of low risk with respect to unexploded ordnance. However, the map does identify the airfield located to the north as a potential target of the Luftwaffe. In the context of the post WWII development of the surrounding area and anticipated underlying limestone geology that is likely to restrict deep penetration of munitions, it is considered that the risk is relatively low. However, vigilance for UXO should be maintained during groundworks.
Site history	From the time of the earliest maps in the late 1800's, the site is shown to be undeveloped agricultural land with a track running north to south adjacent to the western site boundary. No significant changes are noted across the site up to the present day. The surrounding area to the south-west and south was dominated by agricultural land from the time of the earliest maps, with 2Nº quarry features located approximately 130m south-east and 170m west of the site boundary. The 1955 map identifies the land to the north as 'Airfield' and by 1966, the airfield with runways and infrastructure is shown to have been constructed to the north and north-west at a distance of between 500m to 1000m of the site boundary. The quarry to the west is no longer identified. By 1975 expansion of the airfield is shown to have continued. A caravan park is also shown to have been developed to the south of Camp Road, with 'tanks' identified located approximately 30m from the south-eastern corner of the site. A substation is also shown to have been constructed by 1975 located approximately 50m south west from the site boundary. The quarry located south-east of the site is no longer identified from 1975. No other significant changes are noted other than the tanks identified within the caravan being recorded as 'sewage works' on the 2018 mapping.
Geohazards	• Potential for shrink-swell behaviour of residual weathered clays of the White Limestone Formation; and, • Attack of buried concrete by aggressive ground conditions (sulphate rich soils).
Areas of potential concern – ground contamination	<u>On-site:</u> • Made ground associated with unrecorded development/ activities. • Agricultural pest/weed control associated with former agricultural practices. <u>Off-site:</u> • Potentially infilled former surface workings located 130m south-east and 170m west of the site which may generate hazardous ground gases. • Sewage works/ treatment tanks located 30m south of the site. • Electrical substation located 50m south west of the site.

Phase 2 Ground Investigation	
T&P ground investigation	An intrusive ground investigation was undertaken between 23rd and 24th January 2019 which comprised: • Excavation of 15No trial pits to a maximum depth of 2.1 metres below ground level (mbgl); and, • Infiltration testing within 6No trial pits.
Ground conditions	Made ground was not encountered during the investigation. Topsoil was encountered in all exploratory locations with a typical thickness ranging between 0.20 and 0.50m. In general, the topsoil was found to comprise brown gravelly clay. Within the majority of trail pits, gravel was encountered immediately beneath the topsoil. The gravel was found to comprise limestone with varying amounts of clay, sand and gravel. Beneath the gravel at depths ranging from 0.60 to 1.55mbgl, a firm to stiff and stiff gravelly clay was encountered within most of the pits. At depths ranging from 1.50 to 2.10mbgl, a competent limestone layer was encountered that prevented further excavation. No visible or olfactory evidence of significant contamination was encountered during the ground investigation.
Groundwater	Groundwater was encountered within 4No trial pits during the ground investigation, all of which were excavated in close proximity to the eastern site boundary. Typical depths to groundwater strikes ranged from 1.60 to 1.80m, with all strikes noted to rise by approximately 200mm after 20 minutes.
Principal Findings and Conclusions	
Human health	All soil concentrations in topsoil and natural soils were recorded below adopted screening levels for residential use with vegetable uptake.
Controlled waters	With consideration of the desk study and ground investigation findings which did not identify any significant on-site sources of contamination, the risk to Controlled Waters is considered to be low.
Gas protection	Radon protection measures are not considered necessary for the proposed development. Based upon the timescales since the possible infilling of the quarries may have occurred, it is considered ground gas emissions emanating from putrescible material (if present) will have peaked some time ago and gas generating potential of any infill material (if present) would now be significantly reduced. Should these features have been infilled, they are considered unlikely to be capped. Together with the underlying granular natural ground any low level gas emissions will likely vent near to the source and unlikely migrate significant distances. Therefore, it is considered that the site has a low ground gas generating potential and that risks to future residents associated with on- or off-site ground gases are low. No ground gas protection measures are deemed necessary within future development.
Plant growth and buried potable supply pipework	Based upon the chemical analysis results and subsequent screening, the natural soils are not considered to pose a significant risk to the existing and proposed flora. Made ground was not encountered during the investigation and no significantly elevated concentrations of benzo(a)pyrene (BaP) were identified in topsoil or natural soil results. Therefore, it is considered that standard PE pipework will be suitable for the buried potable water supply network on site
Waste	The topsoil and natural soils are likely to be classified as non-hazardous waste. Based on the chemical data the soils are likely to be considered as inert. However, Waste Acceptance Criteria (WAC) testing may be required by the receiving site.
Infiltration testing	Based upon the test results and site observations it is considered that traditional soakaways are likely to offer a viable solution for surface water discharge across the majority of the site. However, the finalised surface water management scheme should consider shallow groundwater encountered along the eastern site boundary that would likely to inundate traditional soakaway infrastructure reducing its effectiveness. Allowances elsewhere on-site, such as increased storage/ soakaway infrastructure may need to be made to manage surface waters from the eastern site area.

Engineering design	The soils beneath the site at shallow depth are predominantly granular in nature which is reflected in the geotechnical testing and as such, are unlikely to exhibit significant volume change potential and, as such, will not be susceptible to the influence of trees. However, at greater depths, the cohesive soils found below approximately 1.00mbgl have been found to range between low to high volume change potential. Based on the above and taking into account the NHBC guidance it is considered that traditional shallow strip foundations placed at a minimum depth of 1.0mbgl within the gravel or firm and stiff clay may be designed for an allowable bearing capacity of 100 kPa for acceptable settlement. Should higher bearing capacities be required foundations placed with the weathered limestone bedrock encountered at 1.60 – 2.10mbgl may be designed for an allowable bearing capacity of 225kPa. It is considered likely that groundwater ingress into excavations in close proximity to the eastern boundary below 1.6m depth, will be relatively rapid and may not be adequately dealt with via sump pumping. Should rapid ingress be encountered the advice of specialist dewatering contractors may be sought if the groundwater is not dealt with via traditional methods such as sump pumping The completed in situ vehicle mounted CBR test results recorded across the site range from 0.3% - 2.1%. Based on the test results a conservative design CBR value of <1% is recommended at this point. However, due to the coarse granular nature of the soils encountered on-site, in situ CBRs using the normal plunger are not considered likely to present to true reflection of the underlying bearing ratios and are likely to have underestimated it and further plate load tests are recommended to provide a more robust evaluation of this road design aspect. Sulphate testing of selected soil samples indicates that a suitable design mix for concrete for buried structures is likely to be DS1-AC-1.
Considerations and Recommendations for Further Work	
Considerations	• Due to the gravel content within the shallow soils low CBR values have been recorded by the on-site testing on-site.
Recommendations	<u>Engineering</u> • Supplementary in situ plate load testing is recommended at formation level to provide more representative carriage way design parameters. <u>General</u> • Discussions should be held with local landfill/soil waste treatment facilities to agree material classification/pre-treatment required for any soils to be disposed off-site as a result of proposed construction works. • Although no areas of made ground were encountered during the investigation vigilance should be employed by the groundworks contractor during works. In the event that significant made ground is encountered, advice from a specialist geoenvironmental consultancy should be sought. • Ground workers should be vigilant for potential UXO and seek immediate professional advice if anything suspicious is encountered during groundworks. • A site-specific health and safety plan should be prepared to inform on risks posed from the previous site use and mitigations for ground workers developing the site e.g. requirements for appropriate PPE, hygiene practices, environmental monitoring and requirements for mitigation measures during construction works. • A copy of this report should be provided to the relevant regulatory authorities to confirm that they are in agreement with the report findings.

CONTENTS

APPENDICES

1 INTRODUCTION

1.1 Contract Details

Following instruction from Pye Homes Ltd – 'the client', this report presents the results of a Desk Study and Ground Investigation undertaken for a proposed residential development at Camp Road, Upper Heyford - 'the site'.

1.2 Proposed Development

Information presented to T&P Regeneration Ltd (T&P) indicates that the proposed development is intended to comprise the construction of 77N^{o} traditional one and two storey residential dwellings with associated areas of communal and private soft landscaping with hard landscaped access and parking. A development layout plan is included in Appendix A although it is understood this may be subject to change following completion of master planning.

1.3 Objectives

The purpose of the assessment is to establish the environmental and geotechnical conditions of the site to support a future planning application.

This report also considers the likely foundation options appropriate to the proposed development, along with requirements for any related ground improvement works and/or remediation considered necessary to mitigate potentially unacceptable risks resulting from current and/or or historical land uses.

1.4 Scope of Works

The scope of works to fulfil the purpose of the assessment has included the following:

- Site walkover;
- Review of site specific environmental database information, where available, and publicly available information;
- Development of a preliminary site conceptual model and environmental risk assessment;
- Intrusive ground investigation comprising trial pitting;
- Collection of soil samples for chemical and geotechnical laboratory analysis;
- Assessment of chemical and geotechnical test results;
- Refinement of conceptual site model and update to environmental risk assessment; and,
- Presentation of geotechnical information to assist with foundation design.

1.5 Report Limitations

The recommendations, interpretations and conclusions of this report are based on the historical and current site conditions reported by database and mapping sources as supplemented with information gathered during on-site visits. No responsibility can be accepted for the accuracy of third party information including reference data contained within site specific database reports. Due to the inherent variability of the ground conditions between exploratory hole positions interpretations are accurate only for the date of the investigation works.

2 SITE INFORMATION

2.1 Site Location

Site location information is summarised in Table 2.1. A Site Location Plan is presented within Appendix A.

Table 2.1 Site Location Information

Information	Description
Full postal address	Land off Camp Road, Upper Heyford OX25 5LX
National Grid Reference (NGR)	451940, 225830

2.2 Site Description

A site walkover was undertaken by T&P on 21st January 2019. A summary of pertinent site information gathered during the survey is provided in Table 2.2. A selection of photographs is provided within Appendix B.

Table 2.2 Summary of Site Information

Information		Description
Site description including current site use and dimensions/area (ha)	The site occupies an approximate area of 3.14 hectares (ha). The site was found to comprise a featureless agricultural field. Two tarmacked access routes were noted to be present. The western access is understood to form the boundary of the site and leads to a large residential house, while the southern access route leads to adjacent agricultural land.	
Surrounding land uses	North	Agricultural land (paddocks) is present adjacent to the northern site boundary.
	South	The site is bounded by Camp Road, beyond which a residential development is present.
	East	The site is bounded by agricultural land to the east.
	West	A residential estate is located to the west of the site.
Site access	The site is accessed via an entrance located in the south-western corner off the adjacent Camp Road, which runs parallel to the southern boundary.	
Ground cover (%)	The site ground cover comprises: • Soft landscaping (grass/planting) (90%) • Hard landscaping – tarmac access routes (10%)	
Site elevation and topography	The site elevation ranges between 115 and 120 metres Above Ordnance Datum (mAOD). The site is generally level with a gentle slope down towards the south-eastern corner.	
Site boundaries	North	Wooden post and rail fencing approximately 1.6m high in good condition.
	South	Mature hedgerow approximately 2m.
	East	Mature hedgerow with occasional semi mature trees noted to be present.
	West	A tarmacked access route for a large residential house located approximately 175m north of the northern site boundary. Beyond the access route a mature hedgerow/ tree line was noted to be present.
Services	Underground and overhead utilities are not indicated to be present within the site boundary.	
Other significant on-site features	• A field drain was noted to be present running along the eastern boundary. Water was noted to be flowing within this feature from north to south at the time of the site walkover.	

A Site Features Plan is presented within Appendix A showing pertinent on- and off-site features identified during the survey. Features assessed as requiring further consideration are discussed later in this report.

3 ENVIRONMENTAL SETTING

3.1 Introduction

Pertinent environmental information has been gathered with reference to the available environmental database report and public sources of information, including the BGS online resources, Environment Agency databases and MAGIC website.

Features identified in this section during the review of available desk study information which are deemed to require further consideration within this report are identified as Areas of Potential Concern (APCs) as discussed further within Section 5. Highlighted APCs are summarised on the APC plan included within Appendix A.

3.2 Ground Conditions

3.2.1 *Published geology*

The solid and drift geology of the site is illustrated within the environmental database report, the British Geological Survey (BGS) on-line mapping database and the BGS map of the district, Sheet 218.

Superficial deposits are not indicated to be present beneath the site.

The site is indicated to be entirely underlain by Mid-Jurassic Period limestone of the White Limestone Formation, which is understood to comprise a variety of limestone types and is likely to weather to gravel at the near surface. The White Limestone formation is also noted to contain marls, mudstone and clay.

3.2.2 *Mining Records and Natural Geological Hazards*

Information regarding on- and off-site mining records included within the environmental database report which is considered relevant to this assessment is summarised in Table 3.1.

Table 3.1 Summary of Mining Records

Mining Type	On-site	Off-site
Brine affected areas (CBSCB Compensation District)	None reported	None reported
Coal mining affected areas	None reported	None reported
Non coal mining affected areas	None reported	None reported
Man-made mining cavities area	None reported	None reported
Natural cavities	None reported	None reported
BGS Recorded Mineral Sites	None reported	2N^{o} within 250m of the site.

The BGS mineral sites are located at distances of 126m and 173m to the south east and west respectively and relate to opencast extraction of limestone. Due to their proximity to the site, these features will be considered further in the following sections.

Information regarding other geological hazards and associated hazard ratings included within the environmental database report is summarised in Table 3.2.

Table 3.2 Summary of Geological Hazard Risk Assessment

Geological hazard	On-site hazard rating
Collapsible rocks	Very low
Compressible ground stability	No hazard
Ground dissolution stability	Very low
Landslide ground stability	Very low
Running sand ground stability	No hazard
Shrinking or swelling clay ground stability	No hazard

Geological hazards requiring further consideration (moderate hazard rating or above) are discussed later in this report.

3.2.3 *Potential Infilled Ground*

Features identified which may have the potential to have been historically infilled, and thus may represent a risk to the site via lateral gas/groundwater contamination migration have been highlighted as APCs as shown on the plan included within Appendix A.

3.2.4 *Background Geochemical Data*

The site does not lie in an area where naturally occurring elevated concentrations of metalliferous elements are expected to be present.

3.3 Hydrogeology

The Environment Agency classifies the White Limestone Formation as a Principal Aquifer. The site is not within or near a groundwater Source Protection Zone (SPZ).

Groundwater vulnerability is classified by the Environment Agency as high.

3.4 Hydrology and Surface Water Quality

The nearest surface water feature is a stream located adjacent to the western site boundary. At the time of the ground investigation the stream was noted to be flowing from north to south. No data on the quality of this feature is given within the database report.

The water course is shown to emerge from an ‘issues’ associated with culverted surface water features within the airfield to the north. From the issues the stream is noted to feed ponds within the field adjacent to the north which then flows into the stream along the eastern boundary. The stream ultimately discharges into Gallos Brook approximately 4km to the south of the site.

3.5 Groundwater and Surface Water Abstractions

There are no records of licenced surface water or groundwater abstractions within 500m of the site.

3.6 Groundwater and Surface Water Discharges

There is 1Nº record of a licensed discharge consent within 250m of the site. The licence is recorded approximately 178m to the north associated with ‘sewage discharges – final/treated effluent’ to surface water (Leys Farm Ditch). Due to distance from the site, nature of the discharge and absence of plausible pathway to the site, no further consideration is deemed to be required.

3.7 Pollution Incidents

There are 2N° recorded pollution incidents within 250m radius of the site which occurred between 1991 and 1997. The incidents are recorded at distances of 24m south and 64m west of the site boundary and noted to be 'Category 3 - minor incidents' associated with oils/chemicals. No further details are available.

Given the low impact recorded and the time that has elapsed since the incidents occurred, no further assessment is considered to be required.

3.8 Flood Risk

Whilst the site lies within a Flood Risk Zone 1 where the risk of flooding is very low, a flood risk assessment will be required to support a future planning application as the proposed development area is over 1 hectare.

With respect to groundwater flooding, the site is classified as being within an area with 'potential for groundwater flooding to occur at surface'. In consideration of the nature of the proposed development, site topography, underlying geology and hydrogeological regime, it is considered that the risk of groundwater flooding is low.

3.9 Radon

The site is located in an area where between 1% and 3% of homes surveyed are above the action level. Guidance document BR211[1] provides guidance on building design measures to protect against ingress of radon gas. In consideration of recommendations of this document, no radon protection measures will be required for new development.

3.10 Environmental Designations

No designated environmentally sensitive areas are recorded within a 250m radius of the site.

3.11 Unexploded Ordnance

Based on a review of regional unexploded bomb/ordnance (UXO) risk areas published by Zetica, an independent database authority, the site is shown to be within an area classified as being at low risk of unexploded bombs. However, the map does identify the airfield located to the north as a potential target of the Luftwaffe. In consideration of the post WWII development of the surrounding area and anticipated underlying limestone geology that is likely to restrict deep penetration of munitions, it is considered that the risk is relatively low. However, vigilance for UXO should be maintained during groundworks.

3.12 Industrial Trades/Processes

Current industrial trades/processes identified in the environmental database report have been reviewed. Those requiring further consideration have been highlighted on the APC plan included within Appendix A and are discussed further within Section 5.2.

3.13 Contaminated Land

There are no sites which have been determined under Section 78R of the Environmental Protection Act 1990 as 'contaminated land' within 500m of the site.

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[1] BR211: Guidance on protective measures for new buildings (including supplementary advice for extensions, conversions and refurbishment projects), 2015 Edition. This guidance is endorsed by the Building Regulations 2010, Part C (as amended).

3.14 Landfills and Waste Management Facilities

No historical or active landfill sites or other waste management facilities are recorded within a 250m radius of the site.

3.15 COMAH and Hazardous Substances

There are no records of Control of Major Accident Hazards (COMAH) sites or other hazardous substance consents within 250m of the site.

4 SITE HISTORY

4.1 Summary

The history of the site has been considered through a study of available Town Plans, County Series Plans and Ordnance Survey maps included within the environmental database report. Maps for the periods during and following the two World Wars: 1914-1918 and 1939-1945 are generally unavailable. A copy of the large-scale map series is provided in Appendix C.

A summary of the site history is provided below.

- From the time of the earliest maps in the late 1800's, the site is shown to be undeveloped agricultural with a track running north to south adjacent to the western site boundary. No significant changes are noted across the site up to the present day.

- The surrounding area to the south-west and south was dominated by agricultural land from the time of the earliest maps. However, 2N° quarry features were shown located approximately 130m south-east and 170m west of the site boundary. By 1922 the quarry to the south-east has increased in size.

- The 1955 map identifies the land to the north as 'Airfield' but does not record any buildings or infrastructure. By 1966, the airfield with runways and infrastructure is shown to have been constructed to the north and north-west at a distance of between 500m to 1000m of the site boundary. An area of residential development is shown to have been constructed approximately 25m from the western boundary. The quarry to the west is no longer identified. By 1975 expansion of the airfield is shown to have continued and additional residential housing is shown adjacent to the western site boundary. A caravan park is also shown to have been developed to the south of Camp Road, with 'tanks' identified within the caravan park located approximately 30m from the south-eastern corner of the site. A substation is also shown to have been constructed by 1975 located approximately 50m south west from the site boundary. The quarry located south-east of the site is no longer identified from 1975. No other significant changes are noted other than the tanks identified within the caravan being recorded as 'sewage works' on the 2018 mapping.

On- and off-site historical features identified which are considered pertinent to this environmental assessment are summarised within the APC plan included in Appendix A and are discussed further in Section 5.2.

5 PRELIMINARY CONCEPTUAL SITE MODEL

5.1 Background

A risk assessment has been carried out under the governing terms set by Part 2A of the Environmental Protection Act 1990, statutory guidance entitled 'Contaminated Land Statutory Guidance (April 2012)' and in accordance with UK's risk assessment framework[2].

The conceptual site model for the site has been developed with consideration of national guidance[3] which provides a framework for risk estimation and evaluation of plausible source-pathway-receptor linkages identified in the context of a proposed residential development.

5.2 Potential Contamination Sources

Potential on- and off-site sources of contamination have been identified in consideration of the review of desk based information, as outlined in Sections 2 and 3, in the context of on- and off-site current/historical activities. Potential contaminant sources or APCs identified within a 250m radius of the site are presented in the APC plan in Appendix A and summarised in Table 5.1.

Table 5.1 Summary of Potential Contamination Sources

Areas of potential concern (APC Nº)		Source/hazard description	Source contaminants
On-site sources/hazards	1	Made ground associated with unrecorded development/ activities.	Metals, hydrocarbons, asbestos, pesticides and herbicides, CO_2, CH_4, vapours and radon.
	2	Agricultural pest/weed control associated with former agricultural practices.	
Off-site sources/hazards	3	Potentially infilled former surface workings located 130m south-east and 170m west of the site which may generate hazardous ground gases.	
	4	Sewage works/ treatment tanks located 30m south of the site.	
	5	Electrical substation located 50m south west of the site.	

Notes:
PAHs – polycyclic aromatic hydrocarbons.
OCP/OPP – organochlorine pesticides / organophosphorous pesticides.
CH_4 – methane.
CO_2 – carbon dioxide.

5.3 Potential Receptors

With regard to the current site setting and future proposed development, the following receptors have been identified:

- Future residents.
- Future maintenance workers (including intrusive workers).
- Off-site residents/workers.

[2] *CLR 11. Model Procedures for the Management of Contaminated Land. Defra & Environment Agency. 2004.*
[3] *Annex 4 - Guidance for the Safe Development of Housing on land Affected by Contamination R&D66. NHBC. 2008*

- Groundwater – The underlying White Limestone Formation is classified as a Principal Aquifer. The site is not recorded to lie within a SPZ and no potable water or groundwater abstraction points are recorded within a 500m radius. With reference to national guidance[4], the sensitivity of groundwater as a potential receptor to contaminant impact beneath the site is considered to be Moderate (M1).
- Surface water - the nearest surface water feature to the site is a stream located along the eastern site boundary. No licensed abstractions are recorded within 500m. With reference to the same national guidance, the sensitivity of surface water as a potential receptor to contaminant impact beneath the site is considered to be Moderate (M2).
- Potable water supply pipework and buried concrete associated with the proposed development - Underground services associated with the proposed development may be affected by the chemical characteristics of the soil through direct chemical attack.
- Existing/future flora and fauna - The proposed development is shown to include private and communal areas of soft landscaping which will present viable flora receptors via plant root uptake.

The following receptors have been discounted from further consideration:

- Construction workers – it is considered that risks during the construction works will be managed appropriately to mitigate short term risks through measures such as use of Personal Protective Equipment (PPE), hygiene practices and other on-site controls as outlined in their Construction Phase Health and Safety Plan and method statements/risk assessments.
- Current site users – in the context of the proposed development for the site, future residents represent a more sensitive receptor than current site users, and as such, consideration of potential risks to future residents will be suitably protective of current site users. As such, current site users will not be considered separately.

5.4 Exposure and Migration Pathways

With consideration of the site setting and proposed development, the following exposure pathways are considered to be potentially active:

- Direct contact with contaminated soils/water;
- Dust migration with inhalation;
- Oral ingestion including vegetable uptake;
- Indoor/outdoor vapour/gas inhalation (including gas explosion risk);
- Permeation into drinking water supplies;
- Leaching/dissolution with vertical migration to groundwater;
- Leaching/dissolution with lateral migration of dissolved phase contamination in groundwater to surface water;
- Soil erosion/overland flow to surface water;
- Direct contact (buildings/property); and,
- Uptake by flora.

With consideration of the site setting and proposed development, the following exposure pathways are not considered likely to be active and as such have been discounted from further consideration:

- Migration via service trenches – absence of reported on-site services.

[4] *Annex 2 - Guidance for the Safe Development of Housing on land Affected by Contamination R&D66. NHBC. 2008*

5.5 Preliminary Qualitative Risk Assessment

Table 5.2 highlights the source-pathway-receptor relationships or “contaminant linkages” that may potentially be active in consideration of both the site’s current use and proposed future use. Those contaminant linkages assessed as low or very low risk at this stage will not be considered further.

Table 5.2 Summary of Source-Pathway-Receptor Relationships

APC Nº	Source	Pathway (s)	Receptor	Consequence	Probability	Risk*	Comment
1	On-site Made ground associated with unrecorded development/ activities.	Oral ingestion	Future residents and maintenance workers	Medium	Low likelihood	**Moderate/ Low Risk**	-
		Vegetable uptake	Future residents	Medium	Low likelihood	**Moderate/ Low Risk**	-
		Dermal contact	Future residents and maintenance workers	Medium	Low likelihood	**Moderate /Low Risk**	-
		Dust migration/inhalation	Future residents, maintenance workers and off-site residents/workers	Medium	Low likelihood	**Moderate /Low Risk**	-
		Gas / vapour inhalation/explosion	Future residents and maintenance workers	Medium	Low likelihood	**Moderate /Low Risk**	-
		Permeation into drinking water supplies	Future residents	Medium	Low likelihood	**Moderate /Low Risk**	-
		Leaching/dissolution with vertical migration to groundwater	Groundwater	Medium	Low likelihood	**Moderate/ Low Risk**	-
		Leaching/dissolution with vertical migration to groundwater, and lateral migration in groundwater	Surface water	Medium	Low likelihood	**Moderate/ Low Risk**	-
		Overland flow	Surface water	Medium	Low likelihood	**Moderate/ Low Risk**	-
		Leaching/dissolution with vertical migration to groundwater, lateral migration in groundwater and subsequent volatilisation	Future residents, maintenance workers and off-site residents/workers	Medium	Low likelihood	**Moderate/ Low Risk**	-
		Direct contact	Buildings	Medium	Low likelihood	**Moderate/ Low Risk**	-

APC Nº	Source	Pathway (s)	Receptor	Consequence	Probability	Risk*	Comment
		Uptake via root system	On-site flora	Medium	Low likelihood	**Moderate/ Low Risk**	-
2	<u>On-site</u> Agricultural pest/weed control associated with former agricultural practices.	Oral ingestion	Future residents and maintenance workers	Medium	Unlikely	**Low Risk**	Pesticide and herbicide chemicals have a low environmental persistence. Due to the absence of recorded buildings and structures on-site, the storage and associated leaks and spillages of chemicals on-site is considered unlikely.
		Vegetable uptake	Future residents	Medium	Unlikely	**Low Risk**	
		Dermal contact	Future residents, maintenance workers and fauna	Medium	Unlikely	**Low Risk**	
		Dust migration/inhalation	Future residents, maintenance workers and off-site residents/workers	Medium	Unlikely	**Low Risk**	
		Leaching/dissolution with vertical migration to groundwater	Groundwater	Medium	Unlikely	**Low Risk**	
		Leaching/dissolution with vertical migration to groundwater, and lateral migration in groundwater	Surface water	Medium	Unlikely	**Low Risk**	
		Overland flow	Surface water	Medium	Unlikely	**Low Risk**	
		Migration via service trenches	Surface water	Medium	Unlikely	**Low Risk**	
		Leaching/dissolution with vertical migration to groundwater, lateral migration in groundwater and subsequent volatilisation	Future residents, maintenance workers and off-site residents/workers	Medium	Unlikely	**Low Risk**	
		Direct contact	Buildings	Medium	Unlikely	**Low Risk**	
		Uptake via root system	On-site flora	Mild	Unlikely	**Very Low Risk**	

APC Nº	Source	Pathway (s)	Receptor	Consequence	Probability	Risk*	Comment
3	Off-site Potentially infilled former surface workings	Dust migration	Future residents	Mild	Low likelihood	**Low Risk**	Given the ground cover, potential for dust generation is low.
		Lateral migration and gas / vapour inhalation	Future residents	Medium	Unlikely	**Low Risk**	Due to age since possible infilling, redevelopment (western quarry) and localised extent of features, a potentially significant gas risk is considered unlikely.
		Leaching/dissolution with vertical migration to groundwater, lateral migration in groundwater with subsequent vegetable uptake/direct contact/ soil ingestion	Future residents	Medium	Unlikely	**Low Risk**	Surface water flow was observed to be in a southerly direction. Based upon the site and topography of the surrounding area, groundwater flow is considered likely to be in a southerly direction away from the site. Furthermore, due to the age of the features, and subsequent redevelopment (quarry to the west)which has occurred, the presence of a significant source is considered unlikely.
		Leaching/dissolution with vertical migration to groundwater, lateral migration in groundwater with subsequent volatilisation and inhalation	Future residents and maintenance workers	Medium	Unlikely	**Low Risk**	
		Leaching/dissolution with vertical migration to groundwater, lateral migration in groundwater with permeation into drinking water supplies	Future residents	Medium	Unlikely	**Low Risk**	

APC Nº	Source	Pathway (s)	Receptor	Consequence	Probability	Risk*	Comment
4	Off site Sewage works/ treatment tanks located 30m south of the south eastern site area.	Leaching/dissolution with vertical migration to groundwater, lateral migration in groundwater with subsequent vegetable uptake/direct contact/ soil ingestion	Future residents	Medium	Unlikely	**Low Risk**	Surface water flow was observed to be in a southerly direction. Based upon the site and topography of the surrounding area, groundwater flow is considered likely to be in a southerly direction away from the site. As such, the probability for contaminants to migrate beneath the site is considered to be unlikely.
		Leaching/dissolution with vertical migration to groundwater, lateral migration in groundwater with subsequent volatilisation and inhalation	Future residents and maintenance workers	Medium	Unlikely	**Low Risk**	
		Leaching/dissolution with vertical migration to groundwater, lateral migration in groundwater with permeation into drinking water supplies	Future residents	Medium	Unlikely	**Low Risk**	
5	Off site Electrical substation located 50m south west of the site	Leaching/dissolution with vertical migration to groundwater, lateral migration in groundwater with subsequent vegetable uptake/direct contact/ soil ingestion	Future residents	Medium	Unlikely	**Low Risk**	Based upon the site and topography of the surrounding area, groundwater flow is considered likely to be in a southerly direction away from the site. As such, the probability for contaminants to migrate beneath the site is considered to be unlikely.
		Leaching/dissolution with vertical migration to groundwater, lateral migration in groundwater with subsequent volatilisation and inhalation	Future residents and maintenance workers	Medium	Unlikely	**Low Risk**	

APC Nº	Source	Pathway (s)	Receptor	Consequence	Probability	Risk*	Comment
		Leaching/dissolution with vertical migration to groundwater, lateral migration in groundwater with permeation into drinking water supplies	Future residents	Medium	Unlikely	**Low Risk**	

Where multiple receptors exist the risk classification is based on most sensitive receptor for conservatism.

5.6 Summary of Geohazards

Based on information presented within Section 3 and the anticipated geology beneath the site, the following geohazards have been identified which require further consideration:

- Potential for shrink-swell behaviour of residual weathered clays of the White Limestone Formation; and,
- Attack of buried concrete by aggressive ground conditions (sulphate rich soils).

6 SCOPE OF WORK

6.1 Summary of Fieldwork

An intrusive ground investigation was undertaken by T&P across the site between 23rd and 24th January 2019, comprising the following:

- Excavation of 15Nº trial pits;
- Infiltration testing within 6Nº trial pits;
- *In situ* vehicle mounted California Bearing Ratio (CBR) tests in 5Nº locations;
- Logging of ground conditions in accordance with BS5930[5]; and,
- Soil sampling.

An exploratory hole location plan is presented within Appendix A and the exploratory hole logs are presented as Appendix D.

6.2 Exploratory Locations and Access Restrictions

A summary of exploratory locations with supporting rationale is provided in Table 6.1.

Table 6.1 Rationale for Exploratory Locations

Exploratory location(s)	Rationale/justification
TP101 – TP115	General coverage
TP101, TP103, TP104, TP106, TP111 & TP112	Infiltration testing

6.3 Trial Pits

T&P supervised the excavation of 15Nº trial pits (TP101 – TP115) using a wheeled JCB 3CX backhoe excavator. The trial pits were terminated at depths ranging between 1.50 and 2.10 metres below ground level (mbgl) due to refusal on limestone.

6.4 *In situ* CBR Testing

T&P supervised the completion of 5Nº vehicle mounted California Bearing Ratio (CBR) tests using the plunger method in accordance with BS1377[6] to assist with carriageway design. A summary of geolocation and elevation data is presented in Table 6.2 which is based on inferences from available topographic survey.

Table 6.2 Summary of CBR Test Coordinates and Elevations

Location	Easting (m)	Northing (m)	Elevation (mAOD)*	Depth of test (mAOD)
CBR01	451977	225887	118.00	0.40m (117.60)
CBR02	451925	225864	119.08	0.40m (118.68)
CBR03	451920	225833	118.85	0.35m (118.50)

[5] *BS5930. Code of Practice for Ground Investigations. 2015.*

[6] *BS1377-Part 9: 1990. Methods of Tests for Soils for Civil Engineering Purposes – Part 9. In Situ Tests.*

Location	Easting (m)	Northing (m)	Elevation (mAOD)*	Depth of test (mAOD)
CBR04	451911	225780	118.2	0.35m (117.85)
CBR05	451902	225726	117.2	0.40m (116.80)

*metres Above Ordnance Datum (mAOD) inferred from topographical survey.

6.5 Infiltration Testing

T&P supervised infiltration testing within 6Nº trial pits (TP101, TP103, TP104, TP106, TP111 and TP112) at approximate invert level of proposed drainage.

7 SUMMARY OF GROUND CONDITIONS

7.1 Recorded Ground Conditions

The geological sequence encountered during the ground investigation is summarised in Table 7.1 and described further in the following sub-sections. Ground conditions were found to broadly correspond with published geological information. Exploratory logs are included in Appendix D.

Table 7.1 Summary of Ground Conditions

Top depth range (mbgl)	Base depth range (mbgl)	Exploratory holes	Area of site	General description/comments
Ground level	0.20-0.50	All holes	General	Firm gravelly CLAY. (TOPSOIL)
0.20-0.80	1.20-1.60	TP101 - TP107, TP109- TP115	General	Sandy clayey GRAVEL. Gravel is angular to subangular in to coarse of Limestone. (WHITE LIMESTONE FORMATION)
0.60-1.55	0.80-2.10	TP102- TP110, TP113 &TP115	General	Firm to stiff, stiff gravelly CLAY. Gravel is subangular fine to coarse of limestone. (WHITE LIMESTONE FORMATION)

7.1.1 *Made ground*

Made ground was not encountered during the investigation.

7.1.2 *Topsoil*

Topsoil was encountered in all exploratory locations with a typical thickness ranging between 0.20 and 0.50m. In general, the topsoil was found to comprise brown gravelly clay. Given the agricultural setting of the site, this is likely to have been reworked through ploughing and/or crop cultivation.

7.1.3 *Bedrock Geology – White Limestone Formation*

Within the majority of trail pits, gravel was encountered immediately beneath the topsoil. The gravel was found to comprise limestone with varying amounts of clay, sand and gravel. Beneath the gravel at depths ranging from 0.60 to 1.55mbgl, a firm to stiff and stiff gravelly clay was encountered within most of the pits. The only exception to the above was TP106 where gravelly clay was encountered overlying the gravel.

At depths ranging from 1.50 to 2.10mbgl, a competent limestone layer was encountered that prevented further excavation.

7.1.4 *Evidence of Contamination*

No significant visible or olfactory evidence of any contamination was noted during the ground investigation.

7.1.5 *Below Ground Structures and Obstructions*

No below ground structures or obstructions were encountered during the ground investigation.

7.2 Groundwater

Groundwater was encountered within 4Nº trial pits during the ground investigation, all of which were excavated in close proximity to the eastern site boundary. Typical depths to groundwater strikes ranged from 1.60 to 1.80m, with all strikes noted to rise by approximately 200mm after 20 minutes.

In consideration of the observed groundwater strikes together with the underlying natural ground conditions, groundwater encountered within the pits is likely to be an area of shallow groundwater in hydraulic continuity with the adjacent water course.

8 SUMMARY OF LABORATORY ANALYSES

8.1 Geotechnical Testing

The geotechnical testing deemed necessary to adequately characterise the site from a geotechnical perspective in the context of the proposed development is summarised in Table 8.1.

Samples from the investigation were forwarded to South West Geotechnical Ltd, a UKAS accredited laboratory. Complete results are provided in Appendix E.

Table 8.1 Summary of Geotechnical Testing

Test	Notes	Quantity
Moisture content	-	10 soils
Atterberg limits	-	10 soils
Geochemical analysis BRE SD1 Suite	pH, 2:1 water soluble	8 soils

8.2 Chemical Testing – Soil

The soil testing deemed necessary to adequately characterise the site from a contamination perspective in the context of the conceptual site model and proposed development is summarised in Table 8.2.

Samples from the investigation were forwarded to The Environmental Laboratory Ltd, a UKAS and MCERTS accredited laboratory. Complete chemical results are provided in Appendix F.

Table 8.2 Summary of Chemical Testing

Test type	Quantity
Soils	
Arsenic, Boron, Cadmium, Chromium, Lead, Mercury, Nickel, Copper, Zinc, Selenium, Phenols and US EPA 16 Polycyclic Aromatic Hydrocarbons.	12 soils

9 HUMAN HEALTH RISK ASSESSMENT

9.1 Introduction

A human health generic quantitative risk assessment (GQRA) has been undertaken in accordance with the UK regulatory framework and current guidance on assessment of risks presented by land affected by contamination[7].

9.2 Determination of Averaging Areas/Zones

For the purposes of investigation and assessment a site can be divided into zones based on historical uses or proposed end use. These zones can be further divided into averaging areas, which can be used to assess different soil types or different potential exposure pathways etc. for the purposes of risk evaluation. Each averaging area can be considered independently for human health exposure assessment.

Based upon the proposed end use of the site and the findings of the ground investigation it is proposed that a single zone with one averaging area is appropriate for the site as follows:

- Site wide – topsoil/natural soils.

9.3 Screening Assessment

For each zone/averaging area, the analytical data has been evaluated directly against adopted screening levels[8] for a 'residential with consumption of home-grown produce' end use.

A review of soil data has not identified any elevated soil contaminant concentrations with respect to adopted human health screening levels for a 'residential with homegrown produce' end use.

In consideration of the outcome of the generic quantitative risk assessment, it is concluded that there are no unacceptable risks presented to human health associated with on-site soils via direct contact/ingestion/inhalation pathways. Potential risks associated with ground gas/vapours and permeation via drinking water supplies are considered later in Sections 10 and 11.2.

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[7] *Environmental Protection Act 1990.*
Contaminated Land Statutory Guidance (April 2012).
CLR11 – Model procedures for the management of land contamination. DEFRA/Environment Agency. 2004.

[8] *The LQM/CIEH S4ULs for Human Health Risk Assessment. 2015.*
SP1010 – Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination. CL:AIRE. 2013.

10 CONTROLLED WATERS RISK ASSESSMENT

10.1 Overview of Hydrogeological Setting

The underlying White Limestone Formation is designated as a Principal Aquifer. The site is not recorded to lie within an SPZ and nor are there any licensed abstraction recorded within a 500m radius.

The nearest surface water feature to the site is a stream located along the eastern site boundary. At the time of the ground investigation this feature was noted to be flow from north to south.

The water course is shown to emerge from an ‘issues’ associated with culverted surface water features within the airfield to the north. From the ‘issues’ the stream is noted to feed ponds within the field adjacent to the north which then flows into the stream along the eastern boundary. The stream ultimately discharges into Gallos Brook approximately 4km to the south of the site

On the basis of the above, the sensitive Controlled Waters receptors relating to the site are considered to be:

- Groundwater in White Limestone Formation (Principal Aquifer); and,
- Stream adjacent to eastern boundary.

10.2 Risk Evaluation

The desk study did not identify the presence of potentially significant on-site contamination sources which may present a potentially significant risk to Controlled Waters. This was supported by the ground investigation during which no significant visible or olfactory evidence of contamination was recorded. These observations are reflected in the available chemical test results for topsoil and natural soils, which indicate relatively low contaminant concentrations across the site.

Based on the available information, it is considered that the risk posed to controlled waters is very low and no further assessment is considered necessary.

11 GAS/VAPOUR RISK ASSESSMENT

11.1 Overview of Conceptual Model

Through the development of the preliminary conceptual model potential, the following sources of ground gas/vapour have been identified:

- Off-site potentially infilled former surface working approximately located 130m south-east and 170m west of the site.

In consideration of the ground investigation findings, no additional potential sources of ground gas have been identified on-site.

11.2 Discussion and Risk Evaluation

As indicated above, the desk study identified the presence of two historical quarry features located 130m south-east and 170m west of the site boundary. The western quarry was mapped up to 1966 when this area was developed for residential use. The south-eastern quarry remains identified in historical mapping up to 1966, and it is possible this feature may have been subsequently infilled. No other significant features have been identified during the investigation.

Based upon the timescales since the possible infilling may have occurred, it is considered ground gas emissions emanating from putrescible material (if present) will have peaked some time ago and gas generating potential of any infill material (if present) would now be significantly reduced.

Should these features have been infilled, they are considered unlikely to be capped. Together with the underlying granular natural ground any low level gas emissions will likely vent near to the source and unlikely migrate significant distances.

Therefore, it is considered that the site has a low ground gas generating potential and that risks to future residents associated with ground gases are low. No ground gas protection measures are deemed necessary within future development.

In addition, the site is in a low risk radon area. Therefore, radon protection measures are not considered necessary for any new development.

12 PLANT GROWTH AND POTABLE SUPPLY PIPEWORK RISK ASSESSMENT

12.1 Phytotoxic Risk Estimation

When considering phytotoxic risks, contaminants selected are those listed within Annex 3 of 'Guidance for the Safe Development of Housing on Land Affected by Contamination. R&D66: 2008 Volume 2' as being 'phytotoxic'.

Where available, assessment values have been chosen based on the criteria within (in priority order) SGV Documents, ICRCL 59/83 phytotoxic threshold levels, Dutch RIVM Serious Risk Concentrations (SRC) for ecological receptors (amended for a UK soil of 10% clay and 2% soil organic matter) and US EPA Soil Screening Levels for plants.

A summary of soil concentrations compared with adopted screening levels is provided in Table 12.1.

Table 12.1 Summary of Phytotoxic Soil Screening – Topsoil and Natural Ground

Determinant	Adopted screening level (mg/kg)	Min (mg/kg)	Max (mg/kg)	N° of exceedances	Calculated 95th UCL (mg/kg)
Selenium	10	<1.0	<1.0	0 of 12	-
Boron	3	<0.5	1.2	0 of 12	-
Copper	130	7.7	19	0 of 12	-
Nickel	70	14.2	31.8	0 of 12	-
Zinc	300	19.7	84.6	0 of 12	-
Cadmium	8	<0.5	0.6	0 of 12	-
Chromium	154	20.6	44.1	0 of 12	-
Mercury	28	<0.5	<0.5	0 of 12	-

As indicated by Table 12.1, concentrations for all the determinants were found to be below the adopted screening levels in all soil samples. As such, natural soils are not considered to pose a significant risk to the existing and proposed flora.

12.2 Potable Water Supply Pipework Risk Estimation

Water industry guidance[9] states that only organic contaminants pose a potential risk to plastic pipe materials. The UKWIR report provides threshold values for polyethylene (PE) and polyvinyl chloride (PVC) pipes for the organic contaminants of concern. The results are summarised in Table 12.2 with exceedances against are highlighted in **bold**.

Table 12.2 Summary of Soil Screening Against UKWIR Criteria

Determinant	Pipe material Generic Assessment Criteria (mg/kg)		Min (mg/kg)	Max (mg/kg)
	PE	PVC		
Extended VOC suite[2]	0.5	0.125	<0.1	<0.1
BTEX + MTBE[1]	0.1	0.03	-	-

[9] *Guidance for the selection of water supply pipes to be used in brownfield sites (UK Water Industry Research Limited (UKWIR) - Ref: 10/WM/03/21) - 2010*

Determinant	Pipe material Generic Assessment Criteria (mg/kg)		Min (mg/kg)	Max (mg/kg)
	PE	PVC		
SVOCs TIC by purge and trap or head space and GC-MS with TIC (aliphatic and aromatic C_5-C_{10})	2	1.4	-	-
Phenols[1]	2	0.4	-	-
Cresols and chlorinated phenols[1 3]	2	0.04	-	-
Mineral oil C_{11}-C_{20} [1]	10	Suitable	-	-
Mineral oil C_{21} – C_{40} [1]	500	Suitable	-	-
Corrosive (conductivity, redox and pH)	Suitable	Suitable	-	-
Specific suite identified as relevant following site investigation				
Ethers [1]	0.5	1	-	-
Nitrobenzene [1]	0.5	0.4	-	-
Ketones [1]	0.5	0.02	-	-
Aldehydes [1]	0.5	0.02	-	-
Amines [1]	Not suitable	Suitable	-	-

1. Determinant not tested.

2. Based upon recorded BaP concentrations.

3. Total Monohydric Phenols – Limit of Detection (LOD) is 5.0mg/kg. All speciated phenols are below LOD of 1.0mg/kg.

Given that no visual or olfactory evidence of hydrocarbon or solvent based contamination was encountered on-site during the ground investigation, and the greenfield history of the site, most of the determinants of concern in relation to water supply pipework were not tested.

No significantly elevated concentrations of benzo(a)pyrene (BaP) were identified in topsoil or natural soil results. Therefore, it is considered that standard PE or PVC pipework will be suitable for the buried potable water supply network on site. It is advised that statutory water provider is consulted to confirm agreement with this assessment.

13 REFINED CONCEPTUAL SITE MODEL

13.1 Overview

Following completion of the ground investigation, collection and interrogation of site data with consideration of the outcome of generic quantitative risk assessment discussed in preceding sections of this report, the conceptual site model has been revised.

13.2 Sources

Further to completion of ground investigation, the sources identified within the preliminary conceptual model to require further consideration include:

- On-site made ground associated with unrecorded development/ activities.

No further potential sources of contamination were identified during the subsequent ground investigation works.

13.3 Risk Evaluation

Those SPRs identified within Table 5.2 as presenting a moderate/low or moderate risk have been further interrogated in accordance with UK national guidance and regulatory framework[10] following completion of ground investigation and risk assessment. Table 13.1 presents the revised SPRs with associated classification of risk as appropriate following re-evaluation of risks.

[10] *Annex 4 - Guidance for the Safe Development of Housing on land Affected by Contamination R&D66: 2008. CLR11. Model Procedures for the Management of Land Contamination. Defra & EA. 2004.*

Table 13.1 Revised Source-Pathway-Receptor Relationships

Area of potential concern Nº	Source	Pathway (s)	Receptor	Consequence	Probability	Risk classification*	Comment
1	On-site Made ground associated with unrecorded development/ activities.	Oral ingestion	Future residents and maintenance workers	Medium	Unlikely	**Low Risk**	Made ground not encountered during the investigation. No elevated soil concentrations identified when compared with adopted screening levels.
		Vegetable uptake	Future residents	Medium	Unlikely	**Low Risk**	
		Dermal contact	Future residents, maintenance workers and fauna	Medium	Unlikely	**Low Risk**	
		Dust migration/inhalation	Future residents, maintenance workers and off-site residents/workers	Medium	Unlikely	**Low Risk**	
		Gas / vapour inhalation/explosion	Future residents and maintenance workers	Medium	Unlikely	**Low Risk**	No made ground encountered on-site.
		Permeation into drinking water supplies	Future residents	Medium	Unlikely	**Low Risk**	No significant made ground encountered on-site. No elevated soil concentrations identified when compared with adopted screening levels with respect to the sensitive receptors.
		Leaching/dissolution with vertical migration to groundwater	Groundwater	Medium	Unlikely	**Low Risk**	
		Leaching/dissolution with vertical migration to groundwater, and lateral migration in groundwater	Surface water	Medium	Unlikely	**Low Risk**	
		Overland flow	Surface water	Medium	Unlikely	**Low Risk**	

Area of potential concern Nº	Source	Pathway (s)	Receptor	Consequence	Probability	Risk classification*	Comment
		Leaching/dissolution with vertical migration to groundwater, lateral migration in groundwater and subsequent volatilisation	Future residents, maintenance workers and off-site residents/workers	Medium	Unlikely	**Low Risk**	
		Direct contact	Buildings	Medium	Unlikely	**Low Risk**	
		Uptake via root system	On-site flora	Mild	Unlikely	**Very Low Risk**	

Where multiple receptors exist the risk classification is based on most sensitive receptor for conservatism.

14 WASTE CLASSIFICATION

14.1 Landfill Acceptance Criteria

When waste is intended for disposal at a suitably licensed landfill site it is necessary for the producer (i.e. the developer or consultant on their behalf) to identify, among other general information, the following:

- The List of Waste (LoW) code for the waste.
- The relevant hazardous property (HP1 to HP15).
- The landfill class where the waste may be accepted.
- Waste Acceptance Criteria (WAC) testing results.

Relevant information on the above can be found in WM3[11].

14.2 List of Waste (LoW) code

Based on the available chemical results for the soils, it is anticipated that the most suitable LoW codes for the site will be:

- **17 05 03** (soils and stones containing hazardous substances).
- **17 05 04 (**soils and stones other than those mentioned in 17 05 03).

14.3 Soil Classification

For the determination of whether the soils revealed on the site are hazardous, the chemical analysis results obtained have been assessed using the HazWaste program. A copy of the HazWaste report is included in Appendix J. The results are summarised in Table 14.1.

Table 14.1 Summary of Soil Classification for Waste Disposal

Exploratory Location	Sample Depth (mbgl)	Soil type	Soil classification
TP101	0.00-0.20	Topsoil	Non Hazardous
TP101	0.20-0.60	Natural ground	Non Hazardous
TP102	0.00-0.40	Topsoil	Non Hazardous
TP102	0.40-0.60	Natural ground	Non Hazardous
TP103	0.00-0.30	Topsoil	Non Hazardous
TP104	0.00-0.30	Topsoil	Non Hazardous
TP105	0.00-0.40	Topsoil	Non Hazardous
TP105	0.40-0.60	Natural ground	Non Hazardous
TP107	0.00-0.25	Topsoil	Non Hazardous
TP112	0.00-0.30	Topsoil	Non Hazardous
TP112	0.30-0.60	Natural ground	Non Hazardous
TP113	0.00-0.35	Topsoil	Non Hazardous

[11] *EA 'Guidance on the classification and assessment of waste (1st Edition 2015) - Technical Guidance WM3'*

14.4 Waste Acceptance Criteria

Following the implementation of the Landfill Regulations 2002, the use of Waste Acceptance Criteria (WAC) testing for waste classification was introduced on 16th July 2005.

WAC testing is intended to supplement the waste identification and classification methods above, and is often required by landfills to assist in the determination of whether a waste can reliably be classified as 'inert' or 'stable non-reactive' depending on whether it is non-hazardous or hazardous.

14.5 Landfill Tax

Following the termination of the landfill tax exemption scheme by the government in November 2008 any material leaving site that is classed as non-hazardous or hazardous waste will be liable to the landfill tax levy, which is currently set at £88.95/tonne (2018/2019)[12] unless it can be proven to be inactive waste through WAC testing.

14.6 Discussion

Based on the HazWaste assessment the topsoil and natural is classified as non-hazardous waste. The chemical data indicates the soil will likely be treated as inert, avoiding the higher rate of landfill tax. However, this is not guaranteed and will need to be confirmed through discussions with the receiving tip/waste soils treatment facility who may require WAC testing.

[12] *Details on landfill tax rates can be found at: https://www.gov.uk/government/publications/landfill-tax-increase-in-rates/landfill-tax-increase-in-rates*

15 INFILTRATION TESTING

15.1 Summary of Field Testing

Infiltration testing was undertaken within 6N^{o} trial pits (TP101, TP103, TP104, TP106, TP111 and TP112) at approximate assumed deep soakaway formation level (i.e. 2m below existing levels) to assess the viability of using traditional soakaway drainage within the proposed redevelopment. Graphical representations of the data are contained within Appendix K.

The trial pits were positioned as per the exploratory hole location plan contained within Appendix A. Infiltration tests were not completed in areas of the site where made ground was encountered.

The infiltration testing and subsequent calculation of soil infiltration rates were carried out in general accordance with the methodologies detailed within BRE 365[13].

Ideally, to fully comply with the BRE methodology, soakaway tests should be repeated a minimum of three times. However, due slow infiltration rates encountered, it was not possible to complete 3N^{o} repeat tests TP104 and TP112. Therefore, the results for these tests should be considered as preliminary only for final drainage design consideration.

15.2 Soil Infiltration Rate Calculations

The infiltration rates (F) have been calculated in accordance with BRE Digest DG-365 (2016). A summary of the results of the infiltration tests and calculated infiltration rates is provided in Table 15.1.

Table 15.1 Summary of Calculated Infiltration Rates

Exploratory Location	Date	Total Measured water level change (m)	Time Period (mins)	Calculated infiltration rate (m/s)
TP101 (T1)	23/1/19	0.47	180	$2.77x10^{-5}$
TP101 (T2)	23/1/19	0.44	180	$2.12x10^{-5}$
TP101 (T3)	24/1/19	0.55	180	$2.53x10^{-5}$
TP103 (T1)	23/1/19	0.44	25	$1.03x10^{-4}$
TP103 (T2)	23/1/19	0.63	90	$5.35x10^{-5}$
TP103 (T3)	23/1/19	0.58	90	$3.76x10^{-5}$
TP104 (T1)	23/1/19	0.23	300	$3.56x10^{-6}$
TP104 (T2)	24/1/19	0.20	300	$2.84x10^{-6}$
TP106 (T1)	23/1/19	0.65	10	$4.12x10^{-4}$
TP106 (T2)	23/1/19	0.61	13	$2.41x10^{-4}$
TP106 (T3)	23/1/19	0.62	11	$3.15x10^{-4}$
TP111 (T1)	23/1/19	0.57	120	$3.34x10^{-5}$
TP111 (T2)	23/1/19	0.52	150	$2.71x10^{-5}$
TP111 (T3)	24/1/19	0.54	90	$4.31x10^{-5}$
TP112 (T1)	23/1/19	0.17	300	$3.75x10^{-6}$
TP112 (T2)	24/1/19	0.23	300	$4.10x10^{-6}$

[13] *Soakaway Design BRE Digest DG-365 (2016).*

15.3 Discussion

The calculated infiltration rates indicate the majority soils beneath the site have relatively good infiltration characteristics which is reflective of the gravel/ weathered limestone encountered associated with the White Limestone Formation.

Within two locations, TP104 and TP112, slower rates of infiltration were recorded. The inferred infiltration rates are a magnitude higher than the complete tests but have indicated that both pits would discharge 50% volume within a 24 hour period. It should also be noted that infiltration testing was not undertaken in close proximity to the eastern boundary due to shallow groundwater being encountered with in the excavated pits which will limit the potential use of traditional soakaways in this area.

Based upon the test results and site observations it is considered that traditional soakaways are likely to offer a viable solution for surface water discharge across the majority of the site.

However, the finalised surface water management scheme should consider shallow groundwater encountered along the eastern site boundary that would be likely to inundate traditional soakaway infrastructure reducing its effectiveness and creating a scenario of direct discharge into controlled waters which is unlikely to be permitted. Allowances elsewhere on-site, such as increased storage/ soakaway infrastructure may need to be made to manage surface waters from the eastern site area.

16 COMMENTS ON ENGINEERING DESIGN

16.1 General

Eurocode 7 (Section 2)[14] advocates the use of geotechnical categorisation of the proposed structures to establish the design requirements. Information presented to T&P indicates that the proposed development is to comprise 77N^{o} traditional one and two storey residential dwellings with associated areas of communal and private soft landscaping and hard landscaped access and parking. It has been assumed that the dwellings will be of masonry construction with line loads of between 50-70kN/m.

In consideration of the available information on the development proposals, for the purposes of this investigation the proposed structures have been classified as follows:

- Geotechnical category 1: Small and relatively simple buildings (houses) with strip or piled foundations, roads, pavements, car parks, retaining walls below 2m, small excavations for drainage works, with the proposed housing development considered to be within this category.

16.2 Summary of Geotechnical Parameters

Stratum thicknesses and geotechnical parameters for the strata encountered in the investigation are summarised in the following sections. The level of confidence in the derived parameters is provided in Table 16.1.

Table 16.1 Confidence Levels

Key	Description
value	High level of confidence - based on information from investigation.
value	Medium level of confidence - based on published data.
value	Low level of confidence – more data required if parameter to be used in design.

16.2.1 *White Limestone Formation*

The design thicknesses and geotechnical parameters for use in the White Limestone Formation are described in Table 16.2.

Table 16.2 Summary of Geotechnical Parameters – White Limestone Formation

Parameter	Units	Min	Max	Design	Comments
Top Depth	mbgl	0.20	0.50	-	-
Base Depth	mbgl	>1.60	>2.10	>2.10	-
Thickness	m	>1.40	>1.90	-	-
Moisture Content	%	5.9	33	-	-
Liquid Limit	%	24	76	-	-
Plastic Limit	%	14	18	-	-
Plasticity Index	-	10	58	58	-
% passing 425µm sieve	%	14	98	-	-

[14] *BS EN 1997 – Part 2. Geotechnical Design.*

Parameter	Units	Min	Max	Design	Comments
Modified Plasticity Index	-	1	45	>40	Based on the NHBC guidance (2018), results are indicative of soils of a high volume change potential
pH	-	7.4	7.6	-	
Water soluble sulphate (SO_4)	mg/l	<0.01	0.06	0.06	(Ref = BRE Special Digest 1).

16.3 Construction Considerations

16.3.1 *Subsurface Concrete*

Based on the pH values, water soluble sulphate concentrations recorded by the chemical and geotechnical laboratory analysis, a DS1-AC1 design mix concrete should be suitable for buried structures placed within the shallow soils when compared against the BRE[15] assessment levels.

16.3.2 *Floor Slabs*

The results of the investigation indicate that the shallow soils on site are essentially non-plastic. However due to the variable granular and cohesive content of the soils and wide variation in soil plasticity at greater depth it is advised high volume change potential is assumed at this stage. As such, proprietary suspended ground floor slabs should be designed with a minimum 300mm void based upon NHBC guidance.

16.3.3 *Building Near Trees*

The cohesive soils found below approximately 1.00m have been found to range between low to high volume change potential. Based upon the potential high volume change potential and in accordance with NHBC guidelines the minimum founding depth of traditional foundations would be 1.00mbgl. At this stage due to the high volume change potential provision should be made for the use of void formers where shallow strip foundations are to be placed at a depth greater than 1.50mbgl. Furthermore, the impact of any new planting associated with future potential development of the site should take into account the volume change potential of the soils.

Due to the high volume change potential of the soils, foundations will be highly susceptible to the influence of trees. It is recommended the findings of this report are considered in conjunction with an arboricultural survey and the recommendations given by the NHBC regarding the over deepening of foundations in the vicinity of trees.

However, overdeepening of foundations is likely to be limited due to the presence of weathered bedrock encountered between 1.60m to 2.10m beneath the site which is considered to be non-plastic and, as such, mitigates against the necessity for further over deepening of foundations due to the influence of trees.

16.3.4 *Deep Excavations*

Superficial deposits were generally found to be stable during the intrusive ground investigation. Man entry into any excavations should be avoided where possible. However, if entry into excavations is required, the excavation sides should be adequately shored and supported or battered back to a safe angle in accordance with appropriate temporary works design.

[15] *BRE Special Digest 1:2005 – Third edition – Concrete in aggressive ground.*

16.3.5 *Groundwater*

Groundwater was not encountered within the majority of the exploratory holes during the ground investigation. Groundwater was however encountered during the ground investigation at depths ranging between 1.6 and 1.8 mbgl, in close proximity to the eastern site boundary.

It is considered that this is likely to be representative of shallow laterally discontinuous groundwater associated with the stream/ field drain. Groundwater inflow into excavations was noted to be rapid and rose during a 20 minute monitoring period potentially indicating the water is under positive hydrostatic pressure.

As such, it is considered likely that groundwater ingress into excavations in close proximity to the eastern boundary below 1.6m depth, will be relatively rapid and may not be adequately dealt with via sump pumping. Should rapid ingress be encountered the advice of specialist dewatering contractors may be sought if the groundwater is not dealt with via traditional methods such as sump pumping

16.3.6 *Buried Utilities*

Utility service plans do not indicate the presence of existing underground services beneath the site.

16.3.7 *Earthworks and Material Handling*

Currently it is anticipated that site levels will remain relatively neutral. As such, it is likely that re-use of existing soils will be relatively limited as part of redevelopment proposals. Should earthworks be required, an earthworks specification will be necessary to ensure the appropriate management and reuse of the existing soils.

In the event that on-site re-use of soils is planned, a Materials Management Plan (MMP) may be required, in line with the CL:AIRE Definition of Waste Code of Practice.

16.3.8 *Road Construction*

In total 5N^{o} vehicle mounted CBR tests (CBR01 – CBR05) were undertaken along the proposed roadways across the site. However, due to the granular nature of the shallow soils, three of the tests were not completed in accordance with the guidance given in BS1377. The results of the CBR tests are shown in Appendix E. Table 16.3 below summarises the findings of the CBR testing.

Table 16.3 Summary of CBR testing

Location	Depth of test (mAOD)	Design CBR value	Soil description
CBR01	0.40m (117.60)	2.1%	Soft orangish brown friable CLAY.
CBR02	0.40m (118.68)	4.2%*	Orangish brown clayey GRAVEL with angular tabular cobbles of limestone.
CBR03	0.35m (118.50)	2.2%*	Orangish brown clayey GRAVEL with angular tabular cobbles of limestone.
CBR04	0.35m (117.85)	-*	Orangish brown clayey GRAVEL with angular tabular cobbles of limestone.
CBR05	0.40m (116.80)	0.3%	Soft orangish brown slightly sandy CLAY.

*Test was suspended due to vehicle lifting prior to 2.5mm or 5.0mm penetration and values should be considered preliminary.

The completed *in situ* vehicle mounted CBR test results recorded across the site range from 0.3% - 2.1%. Based on the test results a conservative design CBR value of <1% is

recommended at this point. However, due to the coarse granular nature of the soils encountered on site, plunger CBRs are not considered likely to present to true reflection of the underlying soil strengths and are likely to underestimate it. As such, it is considered likely that more representative CBR results could be derived from further *in situ* plate load tests.

It should be noted however that where revealed the clay soils are moisture sensitive and will be prone to deterioration to give lower CBR values if left exposed during periods of wet weather. In such circumstances the use of geotextile at the base of construction may be prudent to reduce the potential loss of granular sub-base if placed during periods of inclement weather.

16.4 Preliminary Foundation Recommendations

The proposed development is to comprise 77N^{o} traditional two storey residential dwellings of masonry construction with assumed line loads of between 50-70kN/m.

The ground conditions across the site were broadly constant, with clayey gravel encountered below the topsoil to depths ranging from 1.20 to 1.60m and underlain by gravelly clay. At depths varying from 1.60 to 2.10m competent limestone strata was encountered that prevented further excavation.

The Atterberg testing and subsequent volume change calculation has indicated the shallow soils to be essentially non-plastic. However, the cohesive soils found beneath from approximately 1.00m have been found to range between low to high volume change potential.

Based on the above and taking into account the NHBC guidance it is considered that traditional shallow strip foundations placed at a minimum depth of 1.0mbgl within the gravel or firm and stiff clay may be designed for an allowable bearing capacity of 100kPa for acceptable settlement.

Should higher bearing capacities be required foundations placed with the weathered limestone bedrock encountered at 1.60 – 2.10mbgl may be designed for an allowable bearing capacity of 225kPa. Additionally, the weathered bedrock is considered to be non-plastic and, as such, mitigates against the necessity for further over deepening of foundations due to the influence of trees.

Should foundations span between the gravel or limestone and clay mesh reinforcement should be utilised in foundations to minimise the possibility of differential settlement.

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17 CONSIDERATIONS AND RECOMMENDATIONS

17.1 Considerations

The following uncertainties/data gaps have been identified which may require further consideration:

- Due to the gravel content within the shallow soils low CBR values have been recorded by the on-site testing on-site.

17.2 Recommendations

17.2.1 *Engineering*

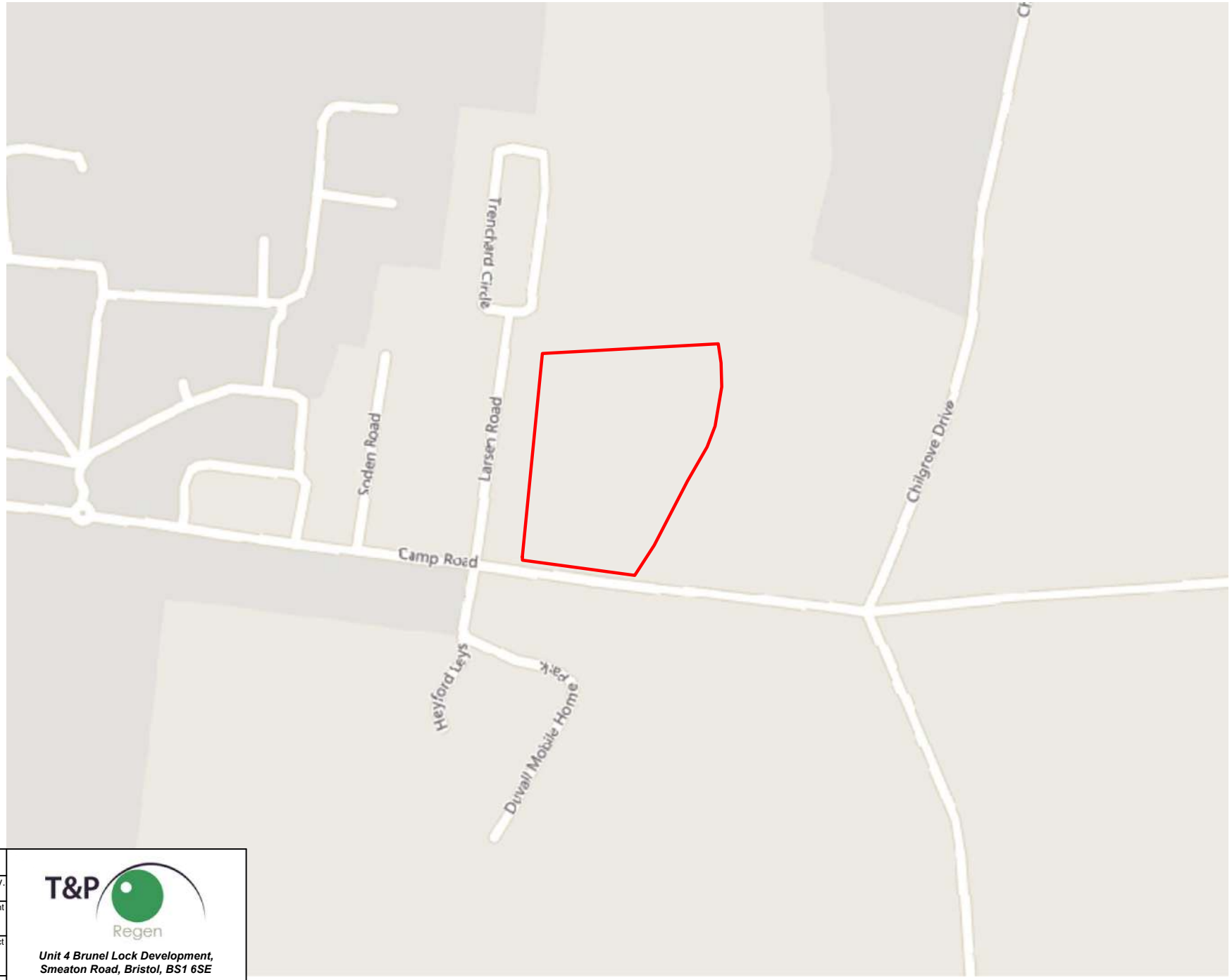
- Supplementary *insitu* plate load testing is recommended at formation level to provide carriage way design parameters.

17.2.2 *General*

- Discussions should be held with local landfill/soil waste treatment facilities to agree material classification/pre-treatment required for any soils to be disposed off-site as a result of proposed construction works.
- Although no areas of made ground were encountered during the investigation vigilance should be employed by the groundworks contractor during works. In the event that significant made ground is encountered, advice from a specialist geoenvironmental consultancy should be sought.
- Ground workers should be vigilant for potential UXO and seek immediate professional advice if anything suspicious is encountered during groundworks.
- A site-specific health and safety plan should be prepared to inform on risks posed from the previous site use and mitigations for ground workers developing the site e.g. requirements for appropriate PPE, hygiene practices, environmental monitoring and requirements for mitigation measures during construction works.
- A copy of this report should be provided to the relevant regulatory authorities to confirm that they are in agreement with the report findings.

Appendix A – Drawings

Site Boundary



Base Map
Company: -T&P Regeneration
Dwg Title: -N/a
Dwg No: - N/a
Date: -11/01/19

-	-	-	-	-
Checked	Drawn	Amendment	Date	Rev.

Client: Pye Homes Ltd

Project: Camp Road, Upper Heyford

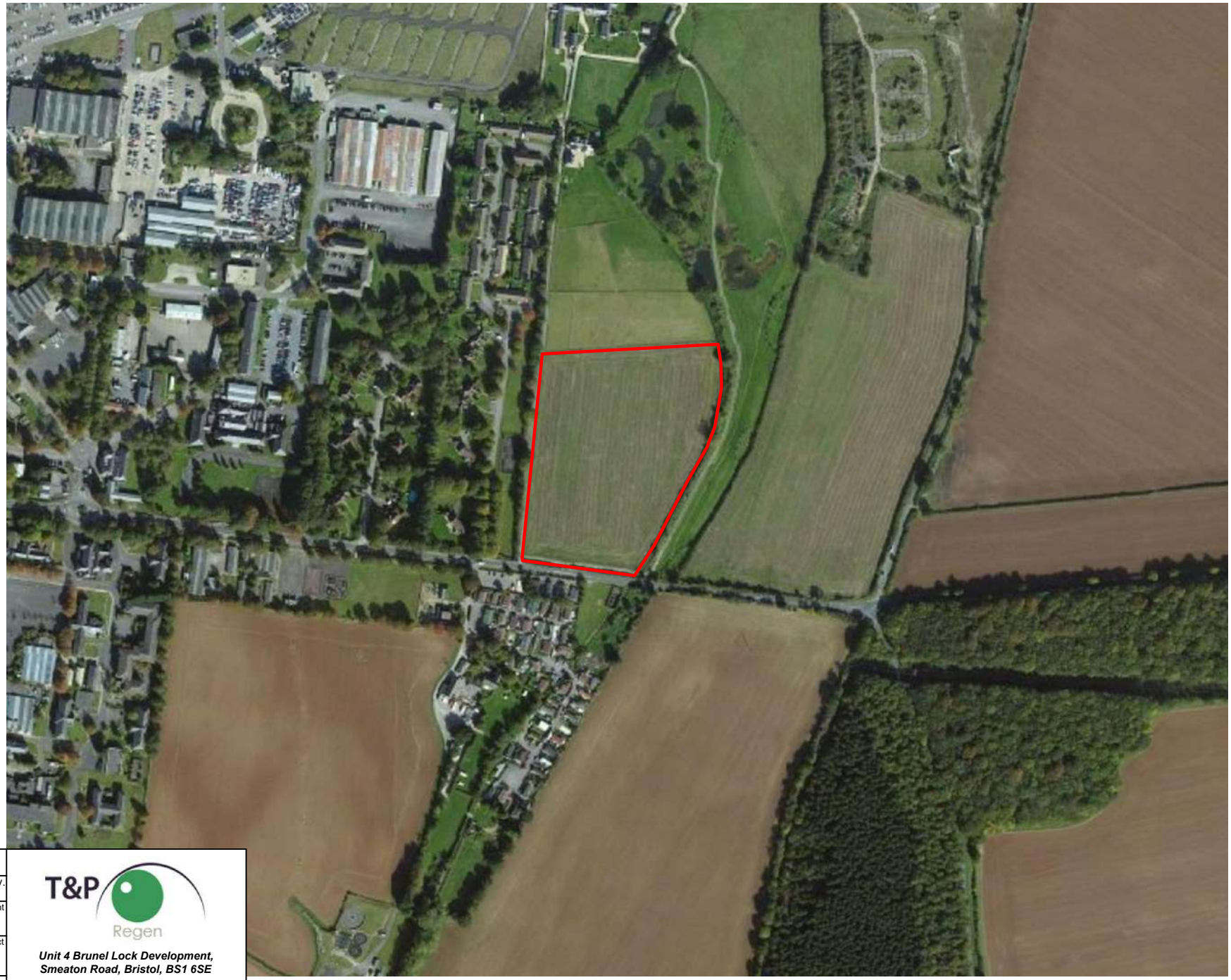
Title: Site Location Plan

T&P Regen
Unit 4 Brunel Lock Development, Smeaton Road, Bristol, BS1 6SE
Tel: 0117 927 7756
Email: Info@TP-regen.co.uk

Scale	Date	Check by	Drawn by	Rev.	Drawing No.
1:5000@A4	11/01/19	JF	AW	-	CAM2362_01_001

0 150 300m

Site Boundary



Base Map
Company: -T&P Regeneration
Dwg Title: -N/a
Dwg No: - N/a
Date: -11/01/19

-	-	-	-	-
Checked	Drawn	Amendment	Date	Rev.

Client: Pye Homes Ltd

Project: Camp Road, Upper Heyford

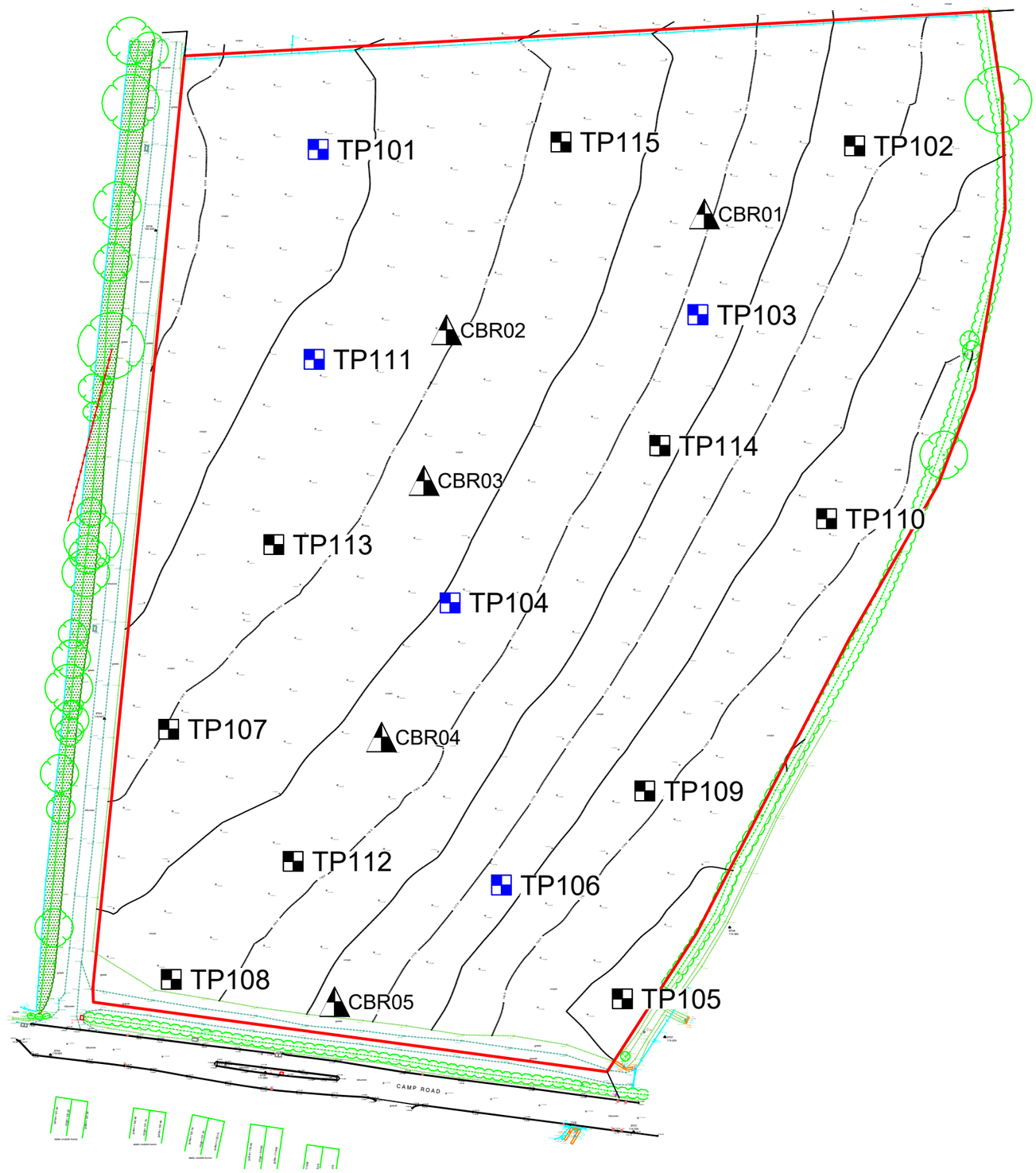
Title: Site Location Plan

T&P Regen
Unit 4 Brunel Lock Development, Smeaton Road, Bristol, BS1 6SE
Tel: 0117 927 7756
Email: Info@TP-regen.co.uk

Scale	Date	Check by	Drawn by	Rev.	Drawing No.
1:5000@A4	11/01/19	JF	AW	-	CAM2362_01_002

0 150 300m

- Trial Pit Locations (TP101 - TP115)
- Infiltration Test Pits (TP101, TP103 - TP104, TP106, TP111)
- CBR Locations (CBR01 - CBR05)
- Site Boundary



0 30 60

Base Map
Company: - West Waddy ADP
Dwg Title: -Proposed Site Plan
Dwg No: - 626-P01-H
Date: - 20/07/17

-	-	-	-	-
Checked	Drawn	Amendment	Date	Rev.

Client: Pye Homes Ltd

Project: Camp Road, Upper Hayford

Title: Exploratory Hole Location Plan

T&P Regen
Unit 4 Brunel Lock Development, Smeaton Road, Bristol, BS1 6SE
Tel: 0117 927 7756
Email: Info@TP-regen.co.uk

Scale	Date	Check by	Drawn by	Rev.	Drawing No.
1:1000@A3	25/01/19	JF	AW	-	CAM2362_01_003

- Trial Pit Locations (TP101 - TP115)
- Infiltration Test Pits (TP101, TP103 - TP104, TP106, TP111)
- CBR Locations (CBR01 - CBR05)
- Site Boundary

Base Map
Company: - West Waddy ADP
Dwg Title: -Proposed Site Plan
Dwg No: - 626-P01-H
Date: - 20/07/17

-	-	-	-	-
Checked	Drawn	Amendment	Date	Rev.

Client: Pye Homes Ltd

Project: Camp Road, Upper Hayford

Title: Exploratory Hole Location Plan

T&P Regen
Unit 4 Brunel Lock Development, Smeaton Road, Bristol, BS1 6SE
Tel: 0117 927 7756
Email: Info@TP-regen.co.uk

Scale	Date	Check by	Drawn by	Rev.	Drawing No.
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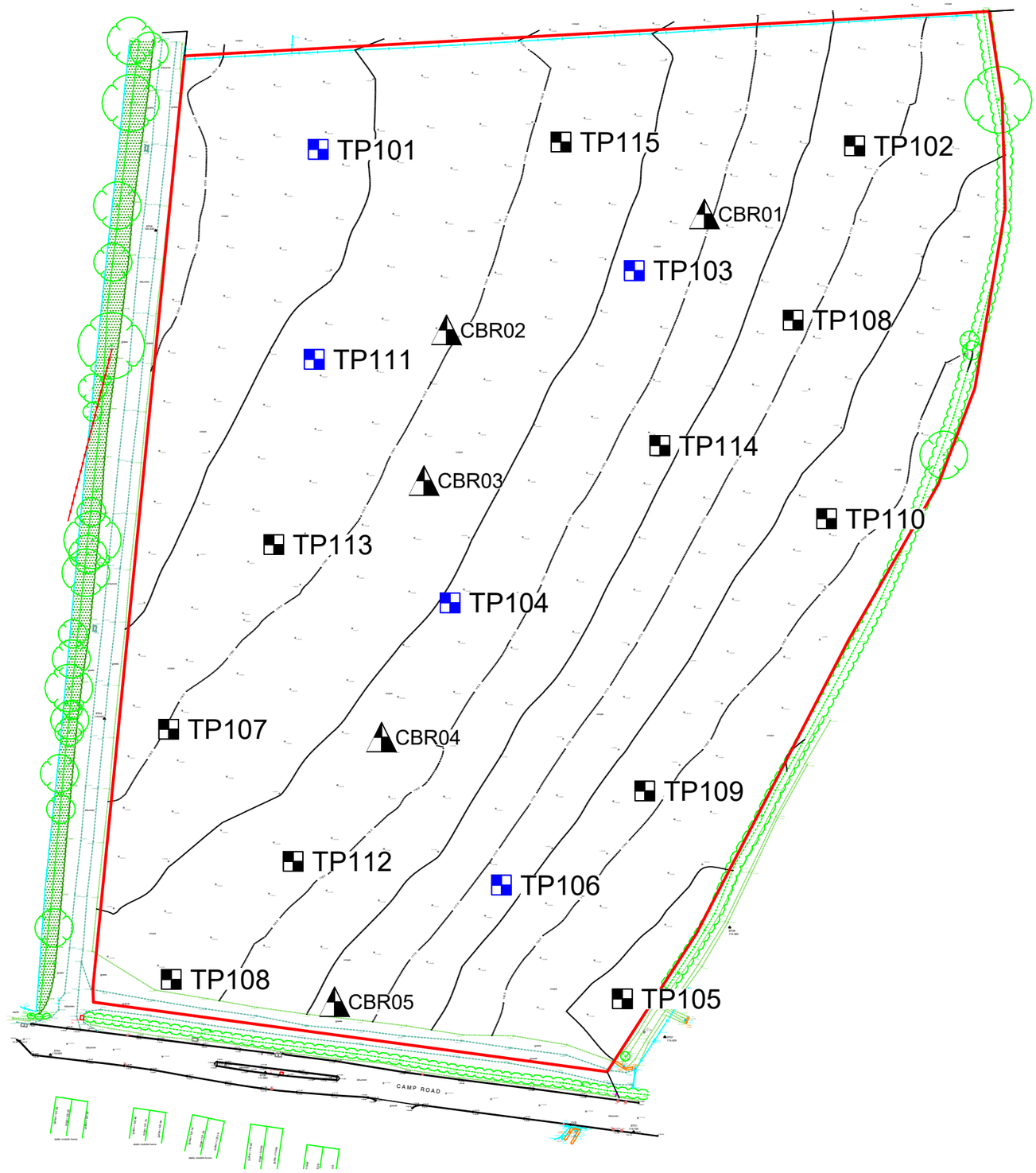
- Trial Pit Locations (TP101 - TP115)
- Field Drain
- Access Tracks
- Site Boundary



0 30 60m

Base Map
Company: - West Waddy ADP
Dwg Title: -Proposed Site Plan
Dwg No: - 626-P01-H
Date: - 20/07/17

-	-	-	-	-
Checked	Drawn	Amendment	Date	Rev.

Client: Pye Homes Ltd

Project: Camp Road, Upper Heyford

Title: Site Features Plan

T&P Regen
Unit 4 Brunel Lock Development, Smeaton Road, Bristol, BS1 6SE
Tel: 0117 927 7756
Email: Info@TP-regen.co.uk

Scale	Date	Check by	Drawn by	Rev.	Drawing No.
1:1000@A3	27/02/19	JF	AW	-	CAM2362_01_007

Appendix B – Photographs

APPENDIX - SITE PHOTOGRAPHS

PLATE 01 – Site Overview – Looking East.

PLATE 02 – Site Overview – Looking North.

PLATE 03 – Site Overview – Looking South/ South East.

PLATE 04 – Site Overview – Looking South West.

	
PLATE 05 – Typical Trial Pit Excavation (TP112).	**PLATE 06 – Typical Trial Pit Spoil (TP112).**
	
PLATE 07 – Typical Trial Pit Excavation – TP103.	**PLATE 08 – Typical Trial Pit Spoil – TP103.**

Appendix C – Historical Maps

Historical Mapping Legends

Ordnance Survey County Series 1:10,560

Gravel Pit
Sand Pit
Other Pits
Quarry
Shingle
Orchard
Osiers
Reeds
Marsh
Mixed Wood
Deciduous
Brushwood
Fir
Furze
Rough Pasture
Arrow denotes flow of water
Trigonometrical Station
Site of Antiquities
Bench Mark
Pump, Guide Post, Signal Post
Well, Spring, Boundary Post
285 Surface Level
Sketched Contour
Instrumental Contour
Main Roads
Fenced
Un-Fenced
Minor Roads
Fenced
Un-Fenced
Sunken Road
Raised Road
Road over Railway
Railway over River
Railway over Road
Level Crossing
Road over River or Canal
Road over Stream
Road over Stream
County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)
R.D. Bdy. Rural District Boundary
Civil Parish Boundary

Ordnance Survey Plan 1:10,000

Chalk Pit, Clay Pit or Quarry
Gravel Pit
Sand Pit
Disused Pit or Quarry
Refuse or Slag Heap
Lake, Loch or Pond
Dunes
Boulders
Coniferous Trees
Non-Coniferous Trees
Orchard
Scrub
Coppice
Bracken
Heath
Rough Grassland
Marsh
Reeds
Saltings
Building
Direction of Flow of Water
Shingle
Sand
Glasshouse
Pylon
Electricity Transmission Line
Pole
Sloping Masonry
Cutting
Embankment
Standard Gauge Multiple Track
Road Under
Road Over
Level Crossing
Foot Bridge
Standard Gauge Single Track
Siding, Tramway or Mineral Line
Narrow Gauge
Geographical County
Administrative County, County Borough or County of City
Municipal Borough, Urban or Rural District, Burgh or District Council
Borough, Burgh or County Constituency
Shown only when not coincident with other boundaries
Civil Parish
Shown alternately when coincidence of boundaries occurs

BP, BS	Boundary Post or Stone	Pol Sta	Police Station
Ch	Church	PO	Post Office
CH	Club House	PC	Public Convenience
F E Sta	Fire Engine Station	PH	Public House
FB	Foot Bridge	SB	Signal Box
Fn	Fountain	Spr	Spring
GP	Guide Post	TCB	Telephone Call Box
MP	Mile Post	TCP	Telephone Call Post
MS	Mile Stone	W	Well

1:10,000 Raster Mapping

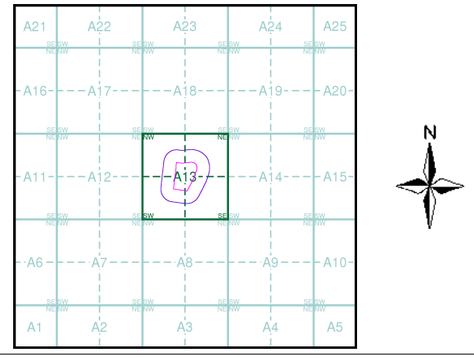
Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or community boundary
District, Unitary, Metropolitan, London Borough boundary
Constituency boundary
Area of wooded vegetation
Non-coniferous trees
Non-coniferous trees (scattered)
Coniferous trees
Coniferous trees (scattered)
Positioned tree
Orchard
Coppice or Osiers
Rough Grassland
Heath
Scrub
Marsh, Salt Marsh or Reeds
Water feature
Flow arrows
MHW(S) Mean high water (springs)
MLW(S) Mean low water (springs)
Telephone line (where shown)
Electricity transmission line (with poles)
BM 123.45 m Bench mark (where shown)
Triangulation station
Point feature (e.g. Guide Post or Mile Stone)
Pylon, flare stack or lighting tower
Site of (antiquity)
Glasshouse
General Building
Important Building

T&P Regen

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Oxfordshire	1:10,560	1884 - 1885	2
Oxfordshire	1:10,560	1900	3
Oxfordshire	1:10,560	1923	4
Historical Aerial Photography	1:10,560	1947	5
Ordnance Survey Plan	1:10,000	1955	6
Ordnance Survey Plan	1:10,000	1966	7
Ordnance Survey Plan	1:10,000	1982	8
Ordnance Survey Plan	1:10,000	1993	9
10K Raster Mapping	1:10,000	1999	10
10K Raster Mapping	1:10,000	2006	11
VectorMap Local	1:10,000	2018	12

Historical Map - Slice A



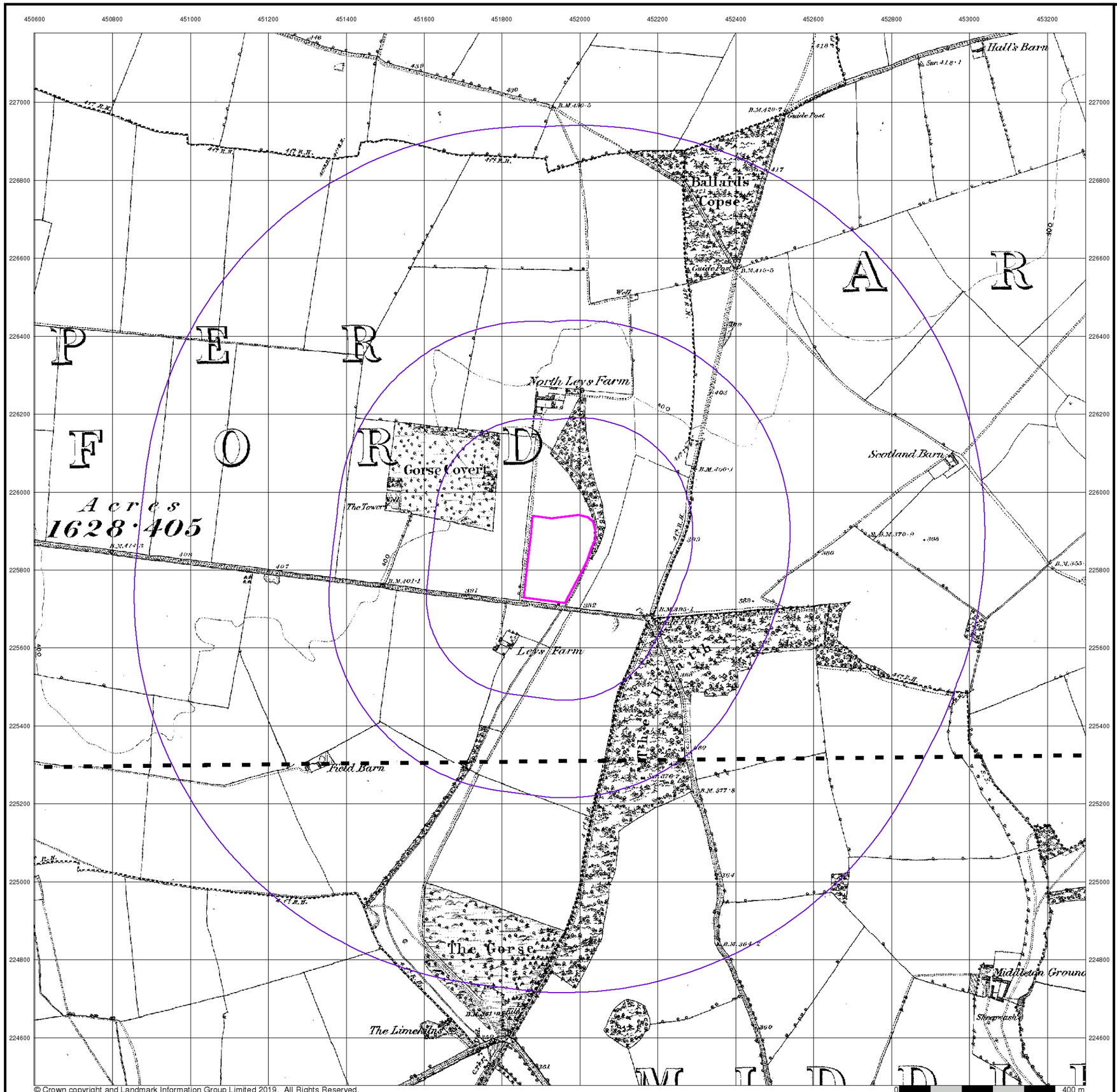
Order Details

Order Number: 191471348_1_1
Customer Ref: CAM2362
National Grid Reference: 451940, 225830
Slice: A
Site Area (Ha): 3.14
Search Buffer (m): 1000

Site Details

Camp road, Upper Heyford, BICESTER, OX25 5TA

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



T&P Regen

Oxfordshire

Published 1884 - 1885

Source map scale - 1:10,560

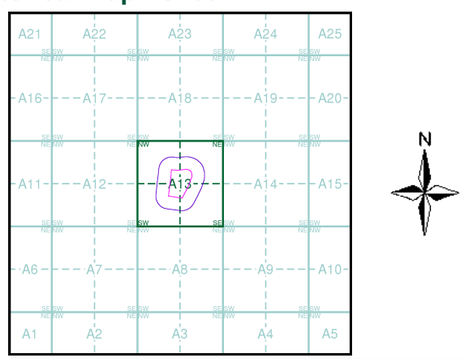
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

01600
1885
1:10,560

02200
1884
1:10,560

Historical Map - Slice A



Order Details

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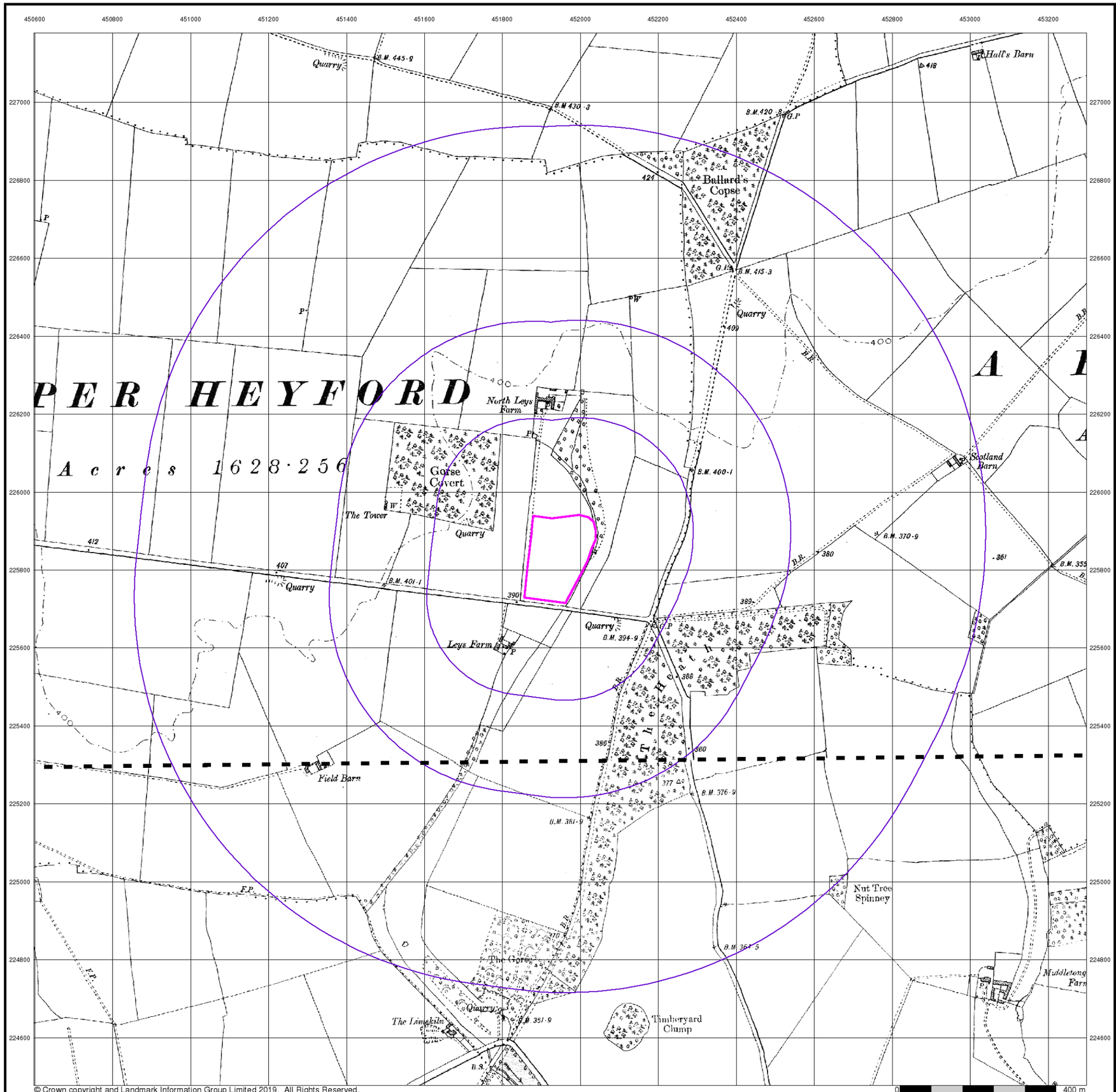


T&P Regen

Oxfordshire

Published 1900

Source map scale - 1:10,560

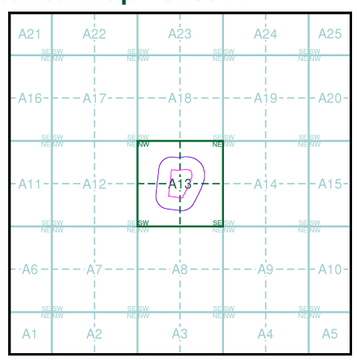
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

016SE
1900
1:10,560

022NE
1900
1:10,560

Historical Map - Slice A



Order Details

Order Number:	191471348_1_1
Customer Ref:	CAM2362
National Grid Reference:	451940, 225830
Slice:	A
Site Area (Ha):	3.14
Search Buffer (m):	1000

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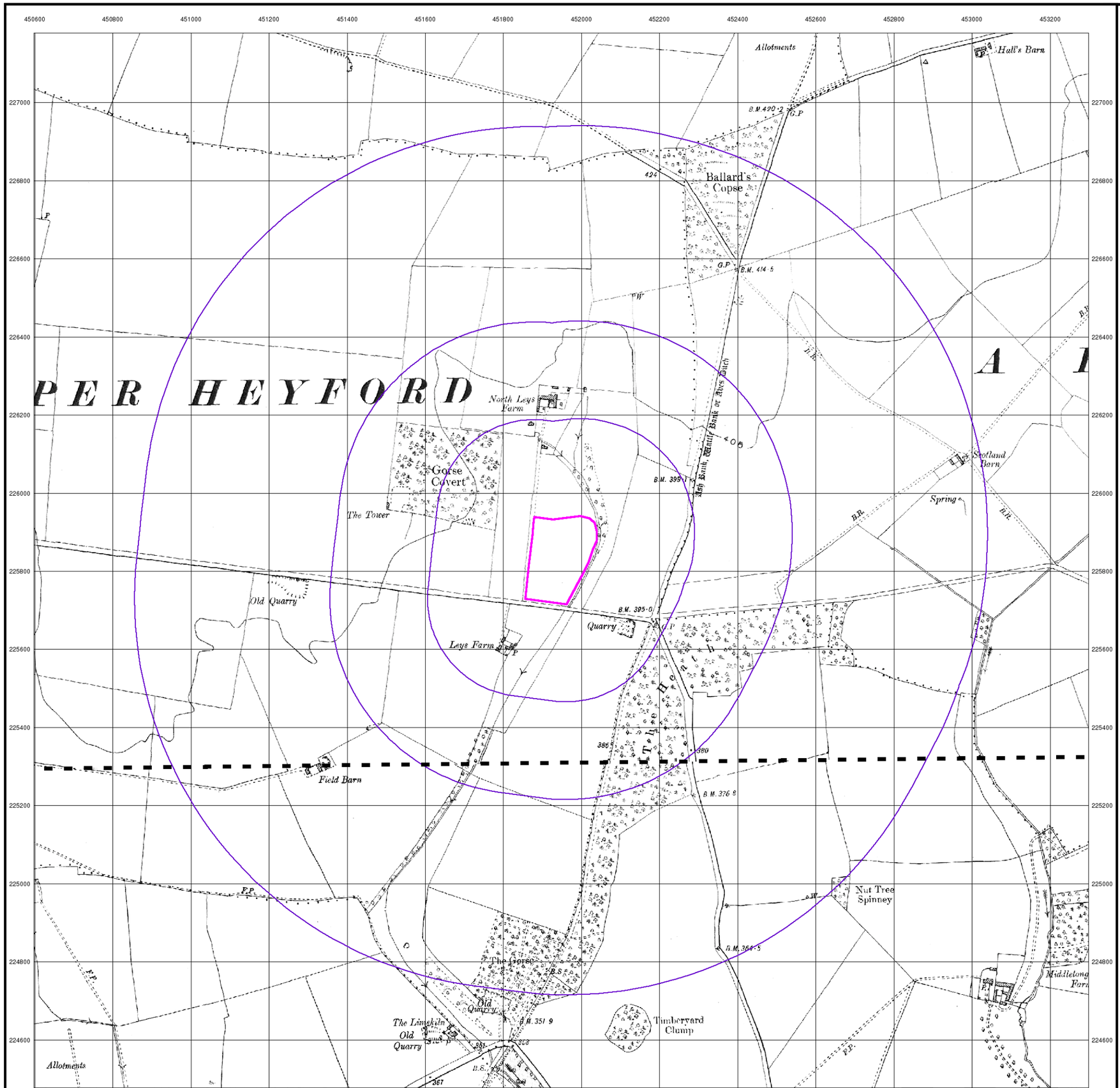


T&P Regen

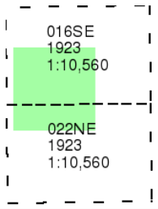
Oxfordshire

Published 1923

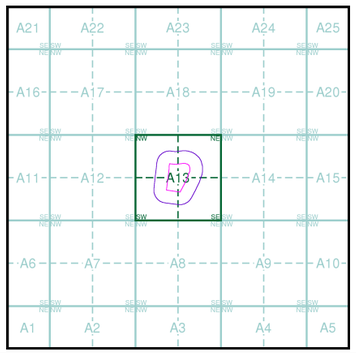
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



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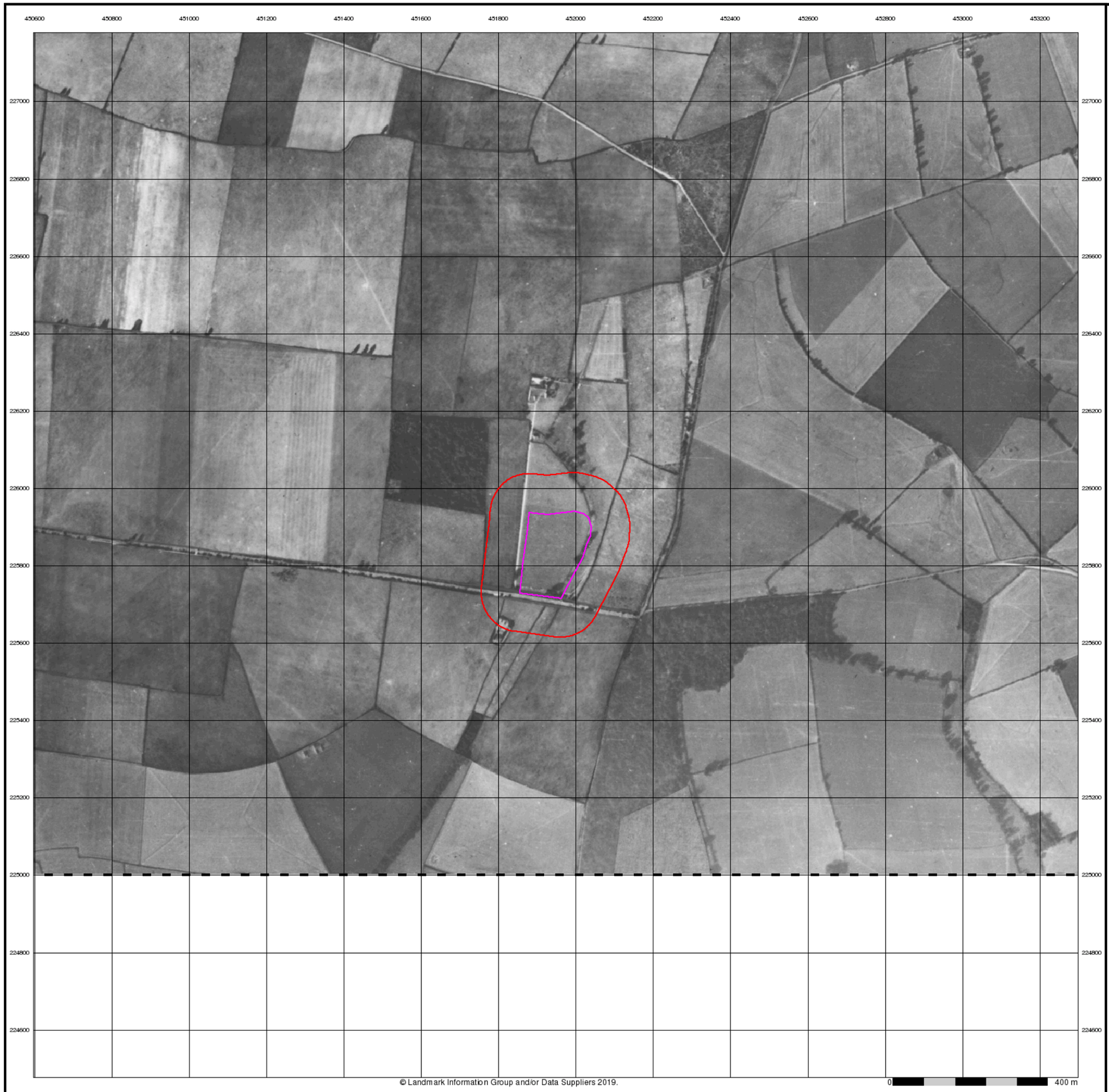


T&P Regen

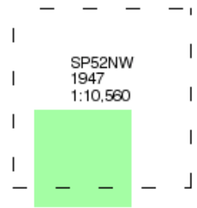
Historical Aerial Photography

Published 1947

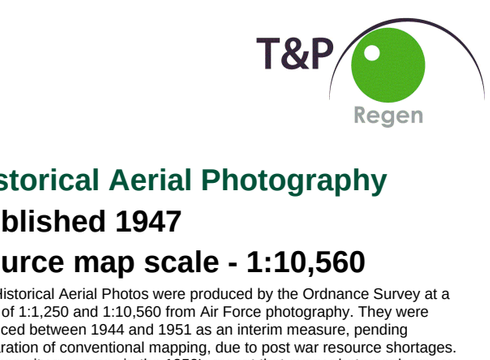
Source map scale - 1:10,560

The Historical Aerial Photos were produced by the Ordnance Survey at a scale of 1:1,250 and 1:10,560 from Air Force photography. They were produced between 1944 and 1951 as an interim measure, pending preparation of conventional mapping, due to post war resource shortages. New security measures in the 1950's meant that every photograph was re-checked for potentially unsafe information with security sites replaced by fake fields or clouds. The original editions were withdrawn and only later made available after a period of fifty years although due to the accuracy of the editing, without viewing both revisions it is not easy to spot the edits. Where available Landmark have included both revisions.

Map Name(s) and Date(s)



Historical Aerial Photography - Slice A



Order Details

Order Number:	191471348_1_1
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National Grid Reference:	451940, 225830
Slice:	A
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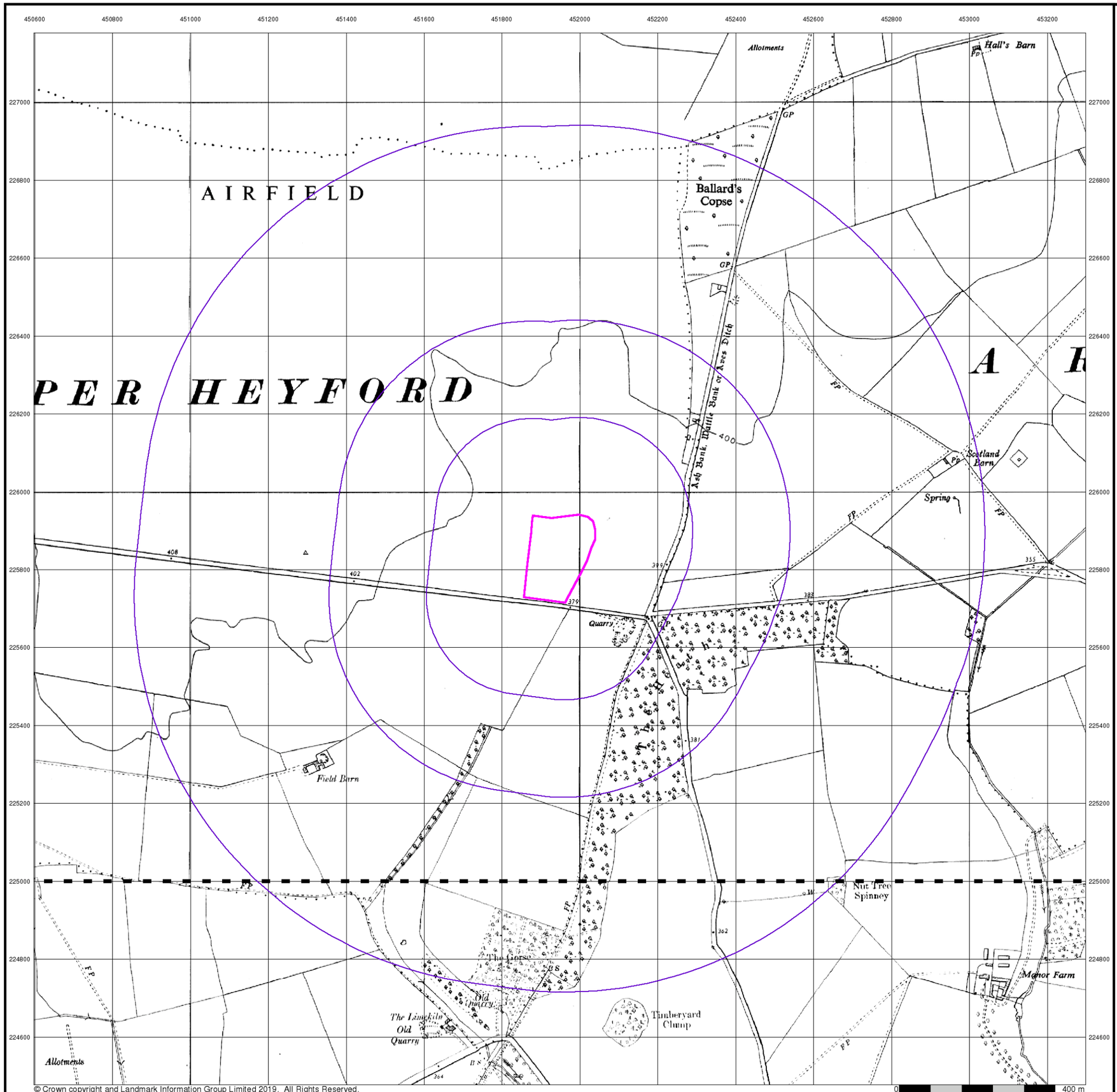

T&P Regen

Ordnance Survey Plan

Published 1955

Source map scale - 1:10,000

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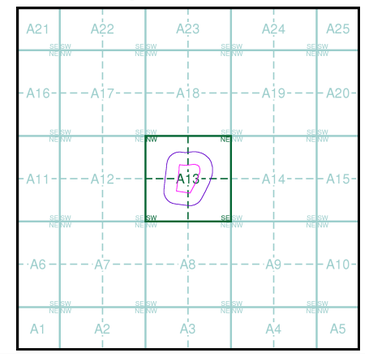
Map Name(s) and Date(s)

SP52NW
1955
1:10,560

SP52SW
1955
1:10,560

Historical Map - Slice A



Order Details

Order Number:	191471348_1_1
Customer Ref:	CAM2362
National Grid Reference:	451940, 225830
Slice:	A
Site Area (Ha):	3.14
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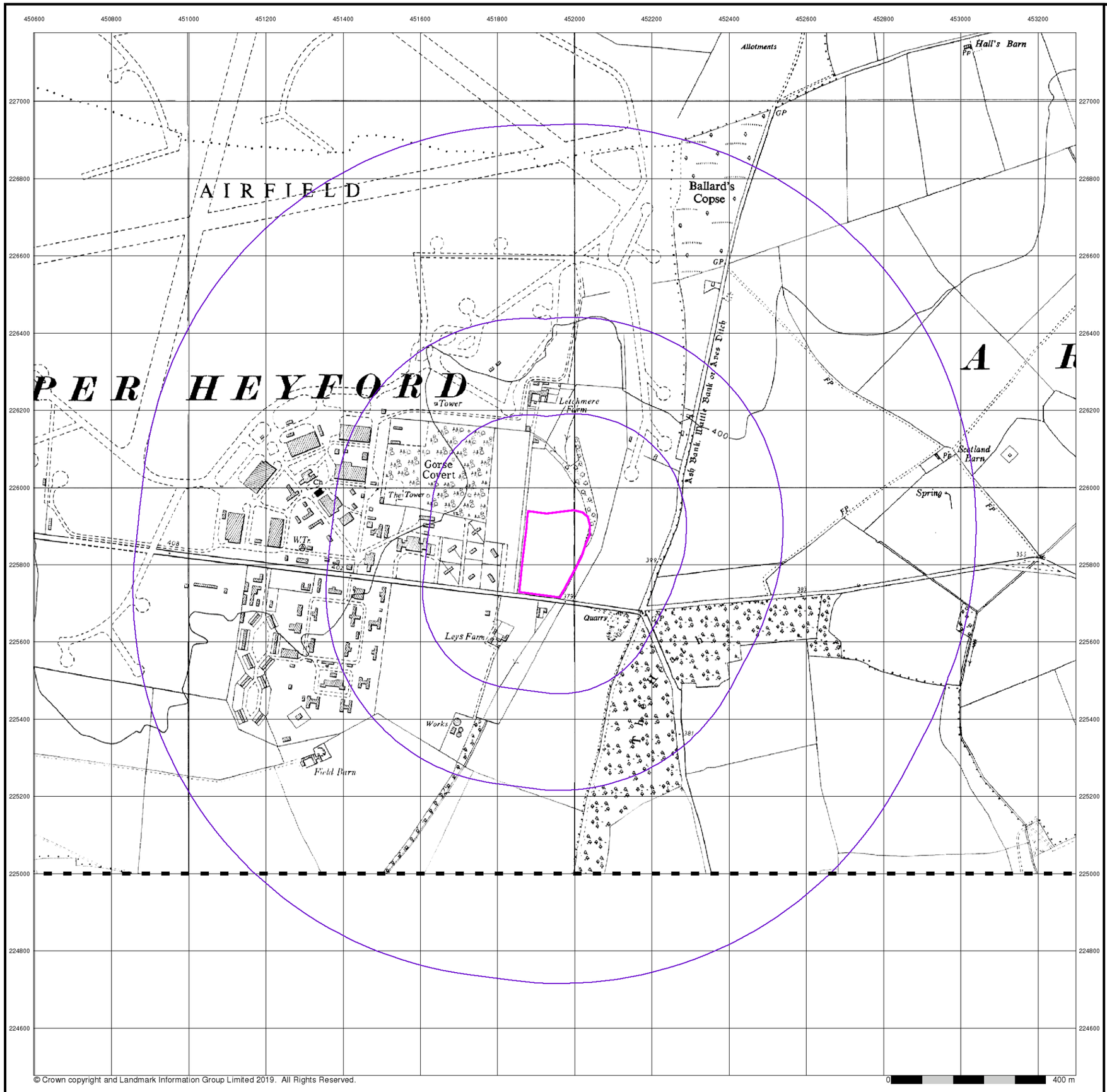

T&P Regen

Ordnance Survey Plan

Published 1966

Source map scale - 1:10,000

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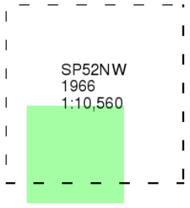
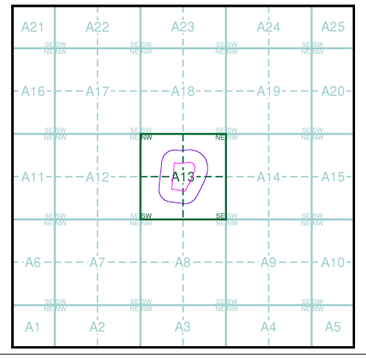
Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number:	191471348_1_1
Customer Ref:	CAM2362
National Grid Reference:	451940, 225830
Slice:	A
Site Area (Ha):	3.14
Search Buffer (m):	1000

Site Details

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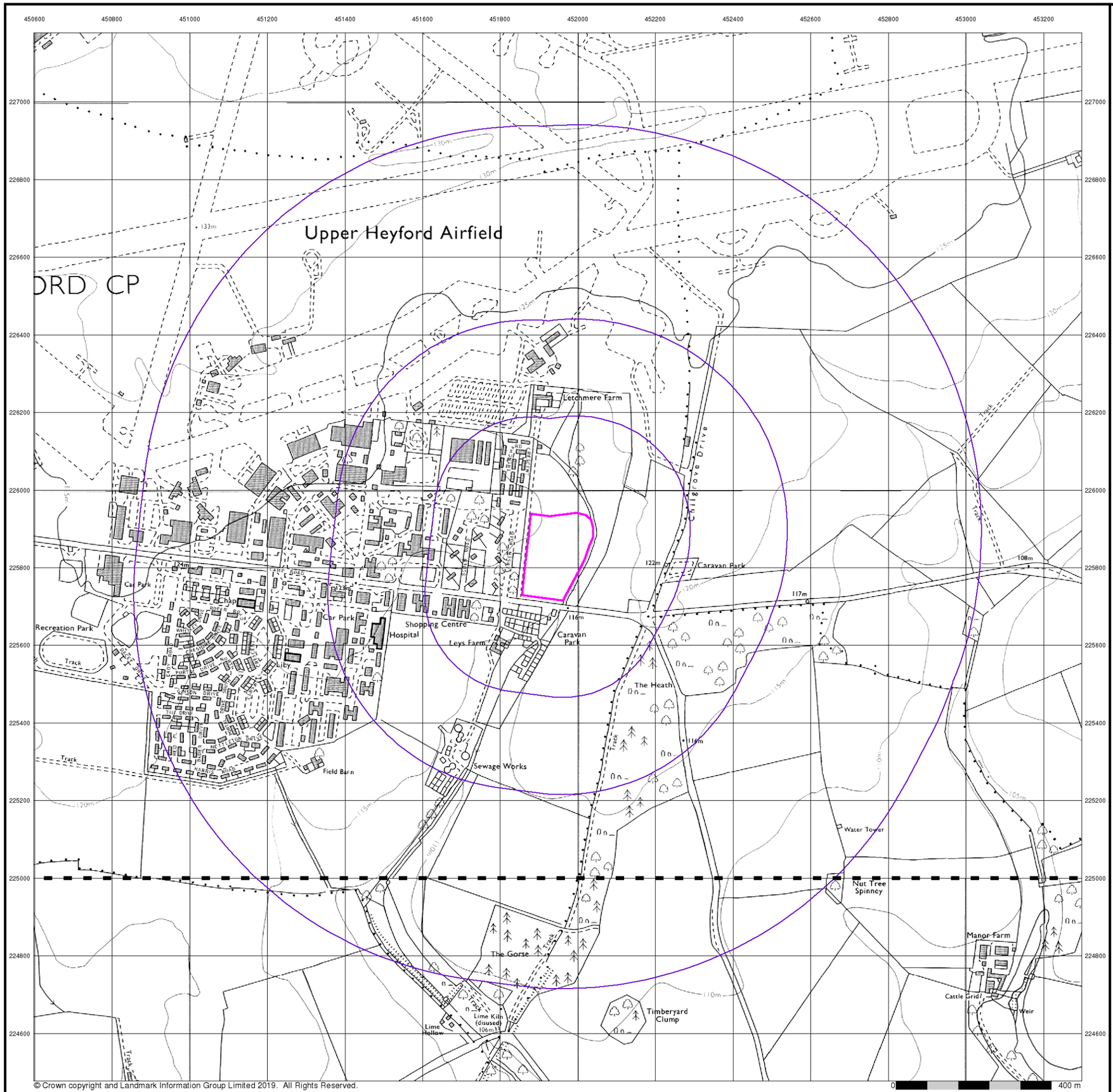
Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



T&P Regen

Ordnance Survey Plan

Published 1982

Source map scale - 1:10,000

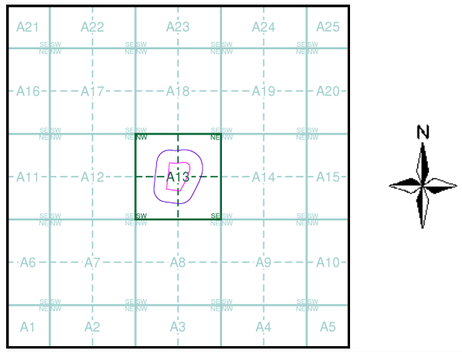
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

SP52NW
1982
1:10,000

SP52SW
1982
1:10,000

Historical Map - Slice A



Order Details

Order Number:	191471348_1_1
Customer Ref:	CAM2362
National Grid Reference:	451940, 225830
Slice:	A
Site Area (Ha):	3.14
Search Buffer (m):	1000

Site Details

Camp road, Upper Heyford, BICESTER, OX25 5TA

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

T&P Regen

Ordnance Survey Plan

Published 1993

Source map scale - 1:10,000

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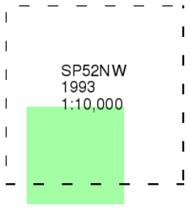
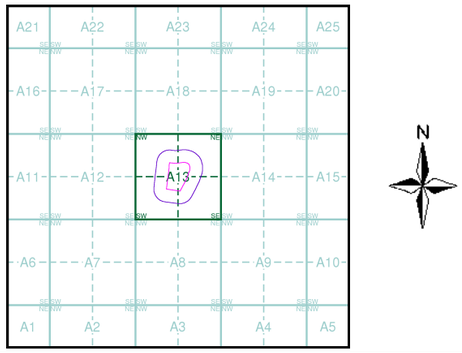
Map Name(s) and Date(s)



Historical Map - Slice A



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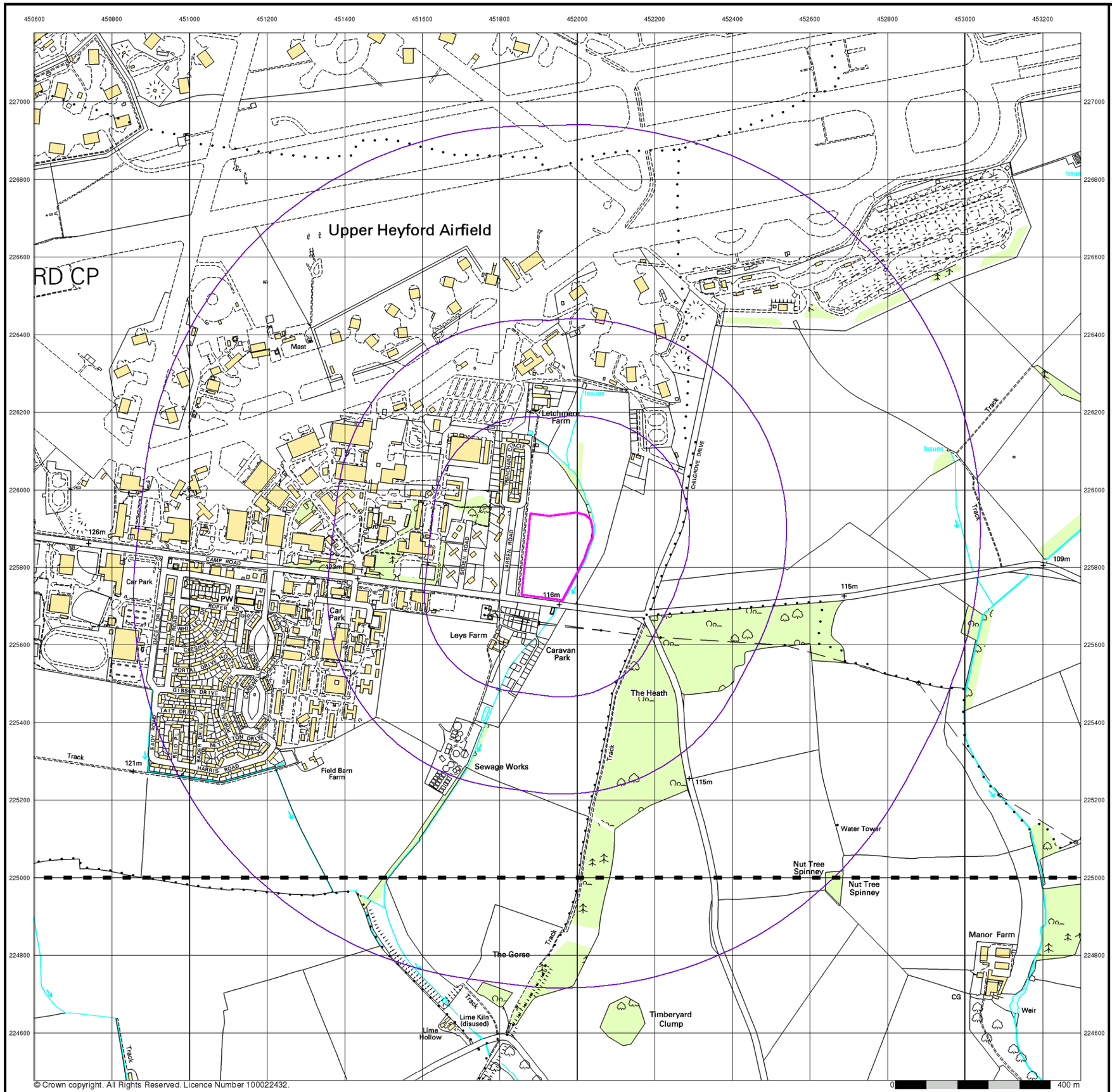


T&P Regen

10k Raster Mapping

Published 1999

Source map scale - 1:10,000

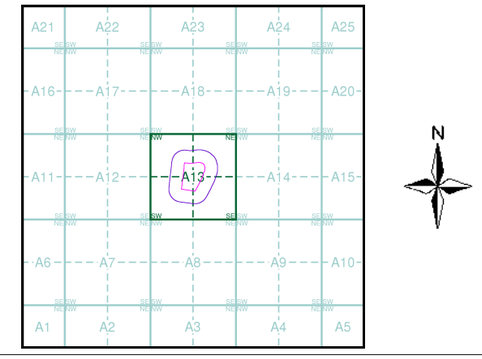
The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)

SP52NW
1999
1:10,000

SP52SW
1999
1:10,000

Historical Map - Slice A



Order Details

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Slice:	A
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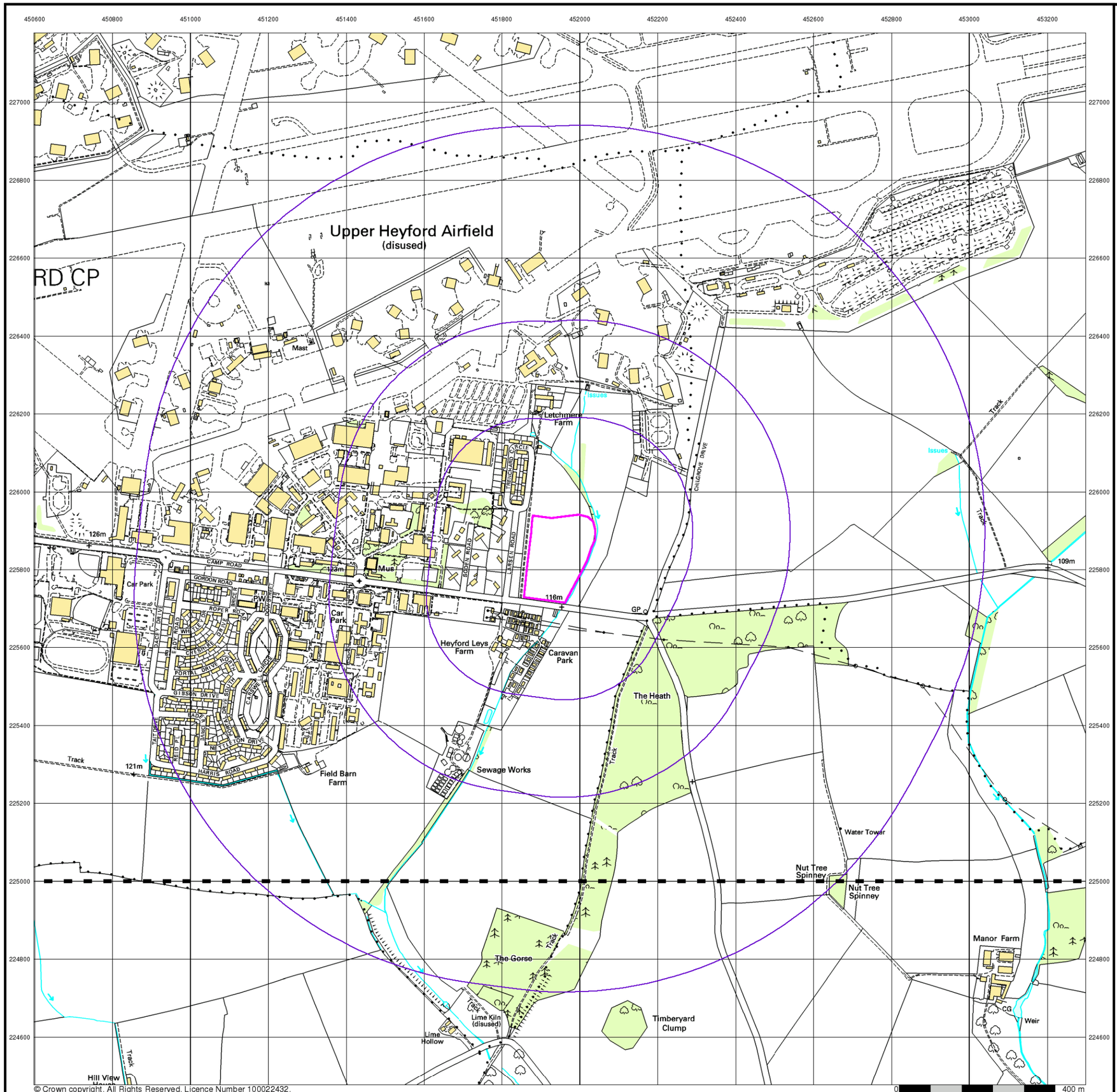


T&P Regen

10k Raster Mapping

Published 2006

Source map scale - 1:10,000

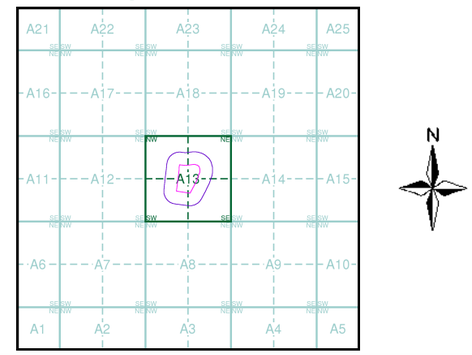
The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)

SP52NW
2006
1:10,000

SP52SW
2006
1:10,000

Historical Map - Slice A



Order Details

Order Number:	191471348_1_1
Customer Ref:	CAM2362
National Grid Reference:	451940, 225830
Slice:	A
Site Area (Ha):	3.14
Search Buffer (m):	1000

Site Details

Camp road, Upper Heyford, BICESTER, OX25 5TA

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

T&P Regen

VectorMap Local

Published 2018

Source map scale - 1:10,000

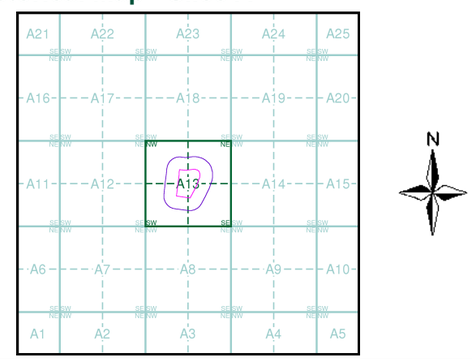
VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced from OS's VectorMap Local, a simple vector dataset at a nominal scale of 1:10,000, covering the whole of Great Britain, that has been designed for creating graphical mapping. OS VectorMap Local is derived from large-scale information surveyed at 1:1250 scale (covering major towns and cities),1:2500 scale (smaller towns, villages and developed rural areas), and 1:10 000 scale (mountain, moorland and river estuary areas).

Map Name(s) and Date(s)

SP52NW
2018
Variable

SP52SW
2018
Variable

Historical Map - Slice A



Order Details

Order Number:	191471348_1_1
Customer Ref:	CAM2362
National Grid Reference:	451940, 225830
Slice:	A
Site Area (Ha):	3.14
Search Buffer (m):	1000

Site Details

Camp road, Upper Heyford, BICESTER, OX25 5TA

Appendix D – Exploratory Logs

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Trial Pit Log

Contract Name:	Client:	Trial Pit ID:
Camp Road, Upper Heyford	Pye Homes	TP101

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
CAM2362	23/01/2019	JF	JD	FINAL	

Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
451990	225901	119.58mOD	JCB 3CX	08/03/2019	1:25

Weather: Clear | Termination: Refusal on limestone | Stability: Stable

Samples & In Situ Testing			Strata Details				Water	Backfill
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.00 - 0.20	ES1					Firm brown gravelly CLAY. Gravel is subangular fine to coarse of limestone. (TOPSOIL)		
0.20 - 0.60	ES2		119.38	0.20				
0.50 - 0.70	D3			(0.60)		Orangish brown slightly clayey GRAVEL. Gravel is angular to subangular fine to coarse of limestone. (WHITE LIMESTONE FORMATION)		
1.00 - 1.20	D4		118.78	0.80		Yellowish brown (calcareous) sandy GRAVEL. Gravel is angular to subangular fine to coarse of limestone. (WHITE LIMESTONE FORMATION)		
				(0.70)		*Below 1.20m: Low cobble content. Cobbles are angular tabular of limestone.*		
			118.08	1.50		End of Trial Pit at 1.50m		

1 2 3 4 5

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Remarks:

Groundwater not encountered.

Dimensions:

Length: 2.40m

Width: 0.60m

Orientation: °

Groundwater Details

Depth encountered (m)	Remarks

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Contract Name:		Client:			Trial Pit ID:
Camp Road, Upper Heyford		Pye Homes			TP102
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
CAM2362	23/01/2019	JF	JD	FINAL	
Trial Pit Log	Easting: 452009	Northing: 225902	Ground Level: 117.08mOD	Plant Used: JCB 3CX	Print Date: 08/03/2019	Scale: 1:25

Weather: Clear | Termination: Refusal on limestone | Stability: Stable

Samples & In Situ Testing			Strata Details				Water	Backfill
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.00 - 0.40	ES1			(0.40)		Firm brown gravelly CLAY. Gravel is subangular fine to coarse of limestone. (TOPSOIL)		
0.40 - 0.60	ES2		116.68	0.40		Yellowish brown (calcareous) sandy GRAVEL. Gravel is angular to subangular fine to coarse of limestone. (WHITE LIMESTONE FORMATION)		
0.80 - 1.00	D3			(0.80)				
1.20 - 1.40	D4		115.88	1.20		Firm to stiff yellowish brown gravelly CLAY. Gravel is subangular fine to coarse of limestone. (WHITE LIMESTONE FORMATION)		
				(0.50)				
			115.38	1.70		End of Trial Pit at 1.70m		

1 2 3 4 5

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Remarks:

Groundwater encountered at 1.60m rising to 1.40m.

Dimensions:

Length: 2.20m

Width: 0.60m

Orientation: °

Groundwater Details

Depth encountered (m)	Remarks
1.60	Rapid ingress

T&P Regen

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Contract Name:		Client:			Trial Pit ID:
Camp Road, Upper Heyford		Pye Homes			TP103
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
CAM2362	23/01/2019	JF	JD	FINAL	
Trial Pit Log	Easting: 451964	Northing: 225876	Ground Level: 118.40mOD	Plant Used: JCB 3CX	Print Date: 08/03/2019	Scale: 1:25

Weather: Clear | Termination: Refusal on limestone | Stability: Stable

Samples & In Situ Testing			Strata Details				Water	Backfill
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.00 - 0.30	ES1			(0.30)		Firm brown gravelly CLAY. Gravel is subangular fine to coarse of limestone. (TOPSOIL)		
0.30 - 0.60	ES2		118.10	0.30		Orangish brown sandy GRAVEL. Gravel is angular to subangular fine to coarse of limestone. (WHITE LIMESTONE FORMATION)		
				(0.60)				
0.90 - 1.10	D3		117.50	0.90		Stiff yellowish brown gravelly CLAY. Gravel is subangular fine to coarse of limestone. (WHITE LIMESTONE FORMATION)		
				(0.65)				
			116.85	1.55		End of Trial Pit at 1.55m		

1 2 3 4 5

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Remarks:

Groundwater not encountered.

Dimensions:

Length: 2.50m

Width: 0.60m

Orientation: °

Groundwater Details

Depth encountered (m)	Remarks

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Contract Name:	Client:	Trial Pit ID:
Camp Road, Upper Heyford	Pye Homes	TP104

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
CAM2362	23/01/2019	JF	JD	FINAL	

Trial Pit Log	Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
	451926	225808	118.41mOD	JCB 3CX	08/03/2019	1:25

Weather: Clear | Termination: Refusal on limestone | Stability: Stable

Samples & In Situ Testing			Strata Details				Water	Backfill
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.00 - 0.30	ES1			(0.30)		Firm brown gravelly CLAY. Gravel is subangular fine to coarse of limestone. (TOPSOIL)		
0.30 - 0.60	ES2		118.11	0.30		Orangish brown and yellowish brown slightly clayey GRAVEL. Gravel is subangular fine to coarse of limestone. (WHITE LIMESTONE FORMATION)		
				(0.50)				
			117.61	0.80		Yellowish brown GRAVEL with a medium cobble content. Gravel is angular to subangular fine to coarse of limestone. Cobbles are angular tabular of limestone. (WHITE LIMESTONE FORMATION)		
				(0.50)				
1.30 - 1.50	D3		117.11	1.30		Firm yellowish brown silty CLAY with occasional thin beds of (calcareous) sand. (WHITE LIMESTONE FORMATION)		
				(0.60)				
			116.51	1.90		End of Trial Pit at 1.90m		

1 2 3 4 5

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Remarks:
Groundwater not encountered.

Dimensions:
Length: 2.40m
Width: 0.60m
Orientation: °

Groundwater Details

Depth encountered (m)	Remarks

T&P Regen

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Contract Name:		Client:			Trial Pit ID:
Camp Road, Upper Heyford		Pye Homes			TP105
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
CAM2362	23/01/2019	JF	JD	FINAL	
Trial Pit Log	Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
	451961	225727	115.30mOD	JCB 3CX	08/03/2019	1:25

Weather: Clear | Termination: Refusal on limestone | Stability: Stable

Samples & In Situ Testing			Strata Details				Water	Backfill
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.00 - 0.40	ES1			(0.40)		Firm brown gravelly CLAY. Gravel is subangular fine to coarse of limestone. (TOPSOIL)		
0.40 - 0.60	ES2		114.90	0.40		Orangish brown and yellowish brown slightly clayey GRAVEL. Gravel is subangular fine to coarse of limestone. (WHITE LIMESTONE FORMATION)		
0.80 - 1.00	D3		114.50	0.80		Yellowish brown (calcareous) sandy GRAVEL. Gravel is angular to subangular fine to coarse of limestone. (WHITE LIMESTONE FORMATION)		
1.50 - 1.70	D4		113.80	1.50		Firm to stiff yellowish brown mottled grey silty CLAY. (WHITE LIMESTONE FORMATION)		
			113.55	1.75		End of Trial Pit at 1.75m		

1 2 3 4 5

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Remarks:

Groundwater encountered at 1.75m rising to 1.60m

Dimensions:

Length: 2.20m

Width: 0.60m

Orientation: °

Groundwater Details

Depth encountered (m)	Remarks
1.75	Rapid ingress

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Contract Name:		Client:			Trial Pit ID:
Camp Road, Upper Heyford		Pye Homes			TP106
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
CAM2362	23/01/2019	JF	JD	FINAL	
Trial Pit Log	Easting: 451936	Northing: 225750	Ground Level: 116.80mOD	Plant Used: JCB 3CX	Print Date: 08/03/2019	Scale: 1:25

Weather: Clear | Termination: Refusal on limestone | Stability: Stable

Samples & In Situ Testing			Strata Details				Water	Backfill
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.00 - 0.30	ES1			(0.30)		Firm brown gravelly CLAY. Gravel is subangular fine to coarse of limestone. (TOPSOIL)		
0.30 - 0.60	ES2		116.50	0.30		Orangish brown slightly clayey GRAVEL. Gravel is angular to subangular fine to coarse of limestone. (WHITE LIMESTONE FORMATION)		
				(0.30)				
0.60 - 0.80	D3		116.20	0.60		Firm yellowish brown silty CLAY. (WHITE LIMESTONE FORMATION)		
0.80 - 1.00	D4		116.00	0.80		Yellowish brown and grey (calcareous) sandy slightly clayey GRAVEL. Gravel is subangular fine to coarse of limestone. (WHITE LIMESTONE FORMATION)		
				(0.80)		*Below 1.40m: Low cobble content. Cobbles are angular tabular of limestone.*		
			115.20	1.60		End of Trial Pit at 1.60m		

1 2 3 4 5

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Remarks:

Groundwater not encountered.

Dimensions:

Length: 2.10m

Width: 0.60m

Orientation: °

Groundwater Details

Depth encountered (m)	Remarks

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Contract Name:		Client:			Trial Pit ID:
Camp Road, Upper Heyford		Pye Homes			TP107
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
CAM2362	23/01/2019	JF	JD	FINAL	
Trial Pit Log	Easting: 451868	Northing: 225782	Ground Level: 118.87mOD	Plant Used: JCB 3CX	Print Date: 08/03/2019	Scale: 1:25
Weather: Clear	Termination: Refusal on limestone	Stability: Stable			

Samples & In Situ Testing			Strata Details				Water	Backfill
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.00 - 0.25	ES1					Firm brown gravelly CLAY. Gravel is subangular fine to coarse of limestone. (TOPSOIL)		
0.25 - 0.60	ES2		118.62	0.25				
				(1.05)		Orangish brown slightly clayey GRAVEL. Gravel is angular to subangular fine to coarse of limestone. (WHITE LIMESTONE FORMATION)		
1.30 - 1.50	D3		117.57	1.30				
				(0.75)		Firm to stiff yellowish brown silty CLAY with occasional thin beds of (calcareous) sand. (WHITE LIMESTONE FORMATION)		
			116.82	2.05		End of Trial Pit at 2.05m		

1 2 3 4 5

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Remarks:
Groundwater not encountered.

Dimensions:
Length: 2.10m
Width: 0.60m
Orientation: °

Groundwater Details

Depth encountered (m)	Remarks

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Contract Name:		Client:			Trial Pit ID:
Camp Road, Upper Heyford		Pye Homes			TP108
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
CAM2362	23/01/2019	JF	JD	FINAL	
Trial Pit Log	Easting: 451869	Northing: 225731	Ground Level: 118.25mOD	Plant Used: JCB 3CX	Print Date: 08/03/2019	Scale: 1:25

Weather: Clear | Termination: Refusal on limestone | Stability: Stable

Samples & In Situ Testing			Strata Details				Water	Backfill
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.00 - 0.50	ES1			(0.50)		Firm brown gravelly CLAY. Gravel is subangular fine to coarse of limestone. (WHITE LIMESTONE FORMATION)		
0.50 - 0.60	ES2		117.75	0.50				
0.60 - 0.80	D3			(1.00)		Frm to stiff yellowish brown mottled orangish brown gravelly CLAY. Gravel is subangular fine to coarse of limestone. (WHITE LIMESTONE FORMATION)		
			116.75	1.50		End of Trial Pit at 1.50m		

1 2 3 4 5

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Remarks:

Groundwater not encountered.

Dimensions:

Length: 2.00m

Width: 0.60m

Orientation: °

Groundwater Details

Depth encountered (m)	Remarks

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Contract Name:		Client:			Trial Pit ID:
Camp Road, Upper Heyford		Pye Homes			TP109
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
CAM2362	23/01/2019	JF	JD	FINAL	
Trial Pit Log	Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
	451966	225770	116.20mOD	JCB 3CX	08/03/2019	1:25

Weather: Clear | Termination: Refusal on limestone | Stability: Stable

Samples & In Situ Testing			Strata Details				Water	Backfill
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.00 - 0.45	ES1			(0.45)		Firm brown gravelly CLAY. Gravel is subangular fine to coarse of limestone. (TOPSOIL)		
0.45 - 0.60	ES2		115.75	0.45		Yellowish brown (calcareous) sandy GRAVEL. Gravel is angular to subangular fine to coarse of limestone. (WHITE LIMESTONE FORMATION)		
1.00 - 1.20	D3			(0.95)				
1.50 - 1.70	D4		114.80	1.40		Firm to stiff yellowish brown mottled grey silty CLAY. (WHITE LIMESTONE FORMATION)		
			114.40	(0.40) 1.80		End of Trial Pit at 1.80m		

1 2 3 4 5

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Remarks:

Groundwater encountered at 1.80m rising to 1.50m.

Dimensions:

Length: 2.10m

Width: 0.60m

Orientation: °

Groundwater Details

Depth encountered (m)	Remarks
1.80	Rapid ingress

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Contract Name:		Client:			Trial Pit ID:
Camp Road, Upper Heyford		Pye Homes			TP110
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
CAM2362	23/01/2019	JF	JD	FINAL	
Trial Pit Log	Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
	452003	225825	116.35mOD	JCB 3CX	08/03/2019	1:25

Weather: Clear | Termination: Refusal on limestone | Stability: Stable

Samples & In Situ Testing			Strata Details				Water	Backfill
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.00 - 0.45	ES1			(0.45)		Firm brown gravelly CLAY. Gravel is subangular fine to coarse of limestone. (TOPSOIL)		
0.45 - 0.60	ES2		115.90	0.45		Orangish brown and yellowish brown (calcareous) sandy GRAVEL. Gravel is subangular fine to coarse of limestone. (WHITE LIMESTONE FORMATION)		
				(1.10)				
1.60 - 1.80	D3		114.80	1.55		Firm to stiff yellowish brown mottled orangish brown silty CLAY. (WHITE LIMESTONE FORMATION)		
			114.55	1.80		End of Trial Pit at 1.80m		

1 2 3 4 5

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Remarks:

Groundwater encountered at 1.80m rising to 1.60m.

Dimensions:

Length: 1.90m

Width: 0.60m

Orientation: °

Groundwater Details

Depth encountered (m)	Remarks
1.80	Rapid ingress

T&P Regen

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Contract Name:	Client:	Trial Pit ID:
Camp Road, Upper Heyford	Pye Homes	TP111

Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
CAM2362	24/01/2019	JF	JD	FINAL	

Trial Pit Log	Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
	451898	225858	119.43mOD	JCB 3CX	08/03/2019	1:25

Weather: Overcast | Termination: Refusal on limestone | Stability: Stable

Samples & In Situ Testing			Strata Details				Water	Backfill
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.00 - 0.30	ES1			(0.30)		Firm brown gravelly CLAY. Gravel is subangular fine to coarse of limestone. (TOPSOIL)		
0.30 - 0.60	ES2		119.13	0.30		Orangish brown and yellowish brown slightly clayey GRAVEL. Gravel is angular to subangular fine to coarse of limestone. (WHITE LIMESTONE FORMATION)		
0.50 - 0.70	D3			(1.30)		*Below 1.20m: Low cobble content. Cobbles are angular tabular of limestone.*		
						Below 1.40m: Medium cobble content. Cobbles are angular tabular of limestone.		
			117.83	1.60		End of Trial Pit at 1.60m		

1 2 3 4 5

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Remarks:

Groundwater not encountered.

Dimensions:

Length: 2.00m

Width: 0.60m

Orientation: °

Groundwater Details

Depth encountered (m)	Remarks

T&P Regen

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Contract Name:		Client:			Trial Pit ID:
Camp Road, Upper Heyford		Pye Homes			TP112
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
CAM2362	24/01/2019	JF	JD	FINAL	
Trial Pit Log	Easting: 451894	Northing: 225755	Ground Level: 118.20mOD	Plant Used: JCB 3CX	Print Date: 08/03/2019	Scale: 1:25

Weather: Overcast | Termination: Refusal on limestone | Stability: Stable

Samples & In Situ Testing			Strata Details				Water	Backfill
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.00 - 0.30	ES1			(0.30)		Firm brown gravelly CLAY. Gravel is subangular fine to coarse of limestone. (TOPSOIL)		
0.30 - 0.60	ES2		117.90	0.30		Orangish brown slightly clayey GRAVEL. Gravel is angular to subangular fine to coarse of limestone. (WHITE LIMESTONE FORMATION)		
0.60 - 0.80	D3			(0.70)				
			117.20	1.00		Yellowish brown (calcareous) sandy GRAVEL. Gravel is angular to subangular fine to coarse of limestone. (WHITE LIMESTONE FORMATION)		
1.40 - 1.60	D4			(0.80)				
			116.40	1.80		End of Trial Pit at 1.80m		

1 2 3 4 5

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Remarks:

Groundwater not encountered.

Dimensions:

Length: 2.00m

Width: 0.60m

Orientation: °

Groundwater Details

Depth encountered (m)	Remarks

T&P Regen

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Contract Name:		Client:			Trial Pit ID:
Camp Road, Upper Heyford		Pye Homes			TP113
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
CAM2362	24/01/2019	JF	JD	FINAL	
Trial Pit Log	Easting:	Northing:	Ground Level:	Plant Used:	Print Date:	Scale:
	451890	225820	119.15mOD	JCB 3CX	08/03/2019	1:25
Weather: Overcast	Termination: Refusal on limestone		Stability: Stable		

Samples & In Situ Testing			Strata Details				Water	Backfill
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.00 - 0.35	ES1			(0.35)		Firm brown gravelly CLAY. Gravel is subangular fine to coarse of limestone. (TOPSOIL)		
0.35 - 0.60	ES2		118.80	0.35		Orangish brown and yellowish brown (calcareous) sandy GRAVEL. Gravel is subangular fine to coarse of limestone. (WHITE LIMESTONE FORMATION)		
				(1.15)				
1.60 - 1.80	D3		117.65	1.50		Stiff yellowish brown silty CLAY. (WHITE LIMESTONE FORMATION)		
				(0.60)		*Below 1.90m: Becomes very stiff.*		
			117.05	2.10		End of Trial Pit at 2.10m		

1 2 3 4 5

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Remarks:

Groundwater not encountered.

Dimensions:

Length: 1.90m

Width: 0.60m

Orientation: °

Groundwater Details

Depth encountered (m)	Remarks

T&P Regen www.tandpregeneration.co.uk	Contract Name: Camp Road, Upper Heyford		Client: Pye Homes			Trial Pit ID: TP114 Sheet 1 of 1
	Contract Number: CAM2362	Date Started: 24/01/2019	Logged By: JF	Checked By: JD	Status: FINAL	
Trial Pit Log	Easting: 451969	Northing: 225840	Ground Level: 117.70mOD	Plant Used: JCB 3CX	Print Date: 08/03/2019	Scale: 1:25
Weather: Overcast		Termination: Refusal on limestone			Stability: Stable	

Samples & In Situ Testing			Strata Details				Water	Backfill
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.00 - 0.30	ES1			(0.30)		Firm brown gravelly CLAY. Gravel is subangular fine to coarse of limestone. (TOPSOIL)		
0.30 - 0.60	ES2		117.40	0.30		Yellowish brown (calcareous) sandy GRAVEL. Gravel is angular to subangular fine to coarse of limestone. (WHITE LIMESTONE FORMATION)		
0.50 - 0.70	D3			(1.50)				
			115.90	1.80		End of Trial Pit at 1.80m		

1 2 3 4 5

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Remarks:

Groundwater not encountered.

Dimensions:

Length: 2.00m

Width: 0.60m

Orientation: °

Groundwater Details

Depth encountered (m)	Remarks

T&P Regen

www.tandpregeneration.co.uk

Contract Name:		Client:			Trial Pit ID:
Camp Road, Upper Heyford		Pye Homes			TP115
Contract Number:	Date Started:	Logged By:	Checked By:	Status:	Sheet 1 of 1
CAM2362	24/01/2019	JF	JD	FINAL	
Trial Pit Log	Easting: 451949	Northing: 225903	Ground Level: 118.84mOD	Plant Used: JCB 3CX	Print Date: 08/03/2019	Scale: 1:25
Weather: Overcast	Termination: Refusal on limestone	Stability: Stable			

Samples & In Situ Testing			Strata Details				Water	Backfill
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		
0.00 - 0.20	ES1			(0.30)		Firm brown gravelly CLAY. Gravel is subangular fine to coarse of limestone. (TOPSOIL)		
0.20 - 0.60	ES2		118.54	0.30		Orangish brown (calcareous) sandy GRAVEL. Gravel is angular to subangular fine to coarse of limestone. (WHITE LIMESTONE FORMATION)		
0.60 - 0.80	D3			(0.80)				
1.10 - 1.30	D4		117.74	1.10		Stiff yellowish brown mottled grey silty CLAY. (WHITE LIMESTONE FORMATION)		
				(0.50)				
			117.24	1.60		End of Trial Pit at 1.60m		
			117.24					

1 2 3 4 5

Sample Key: B = Bulk Disturbed D = Small Disturbed U = Undisturbed Open-Drive W = Water G = Gas ES = Environmental Soil EW = Environmental Water

Remarks:

Groundwater not encountered.

Dimensions:

Length: 2.10m

Width: 0.60m

Orientation: °

Groundwater Details

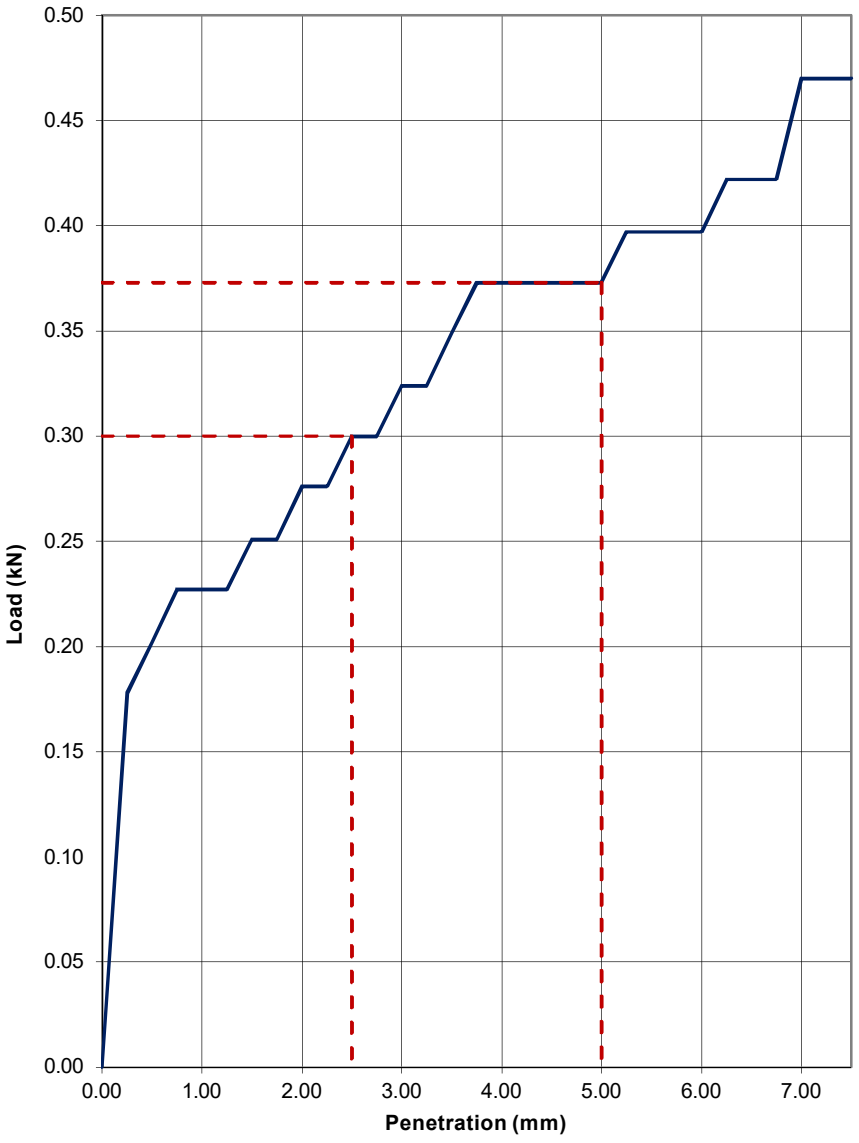
Depth encountered (m)	Remarks

Appendix E – Geotechnical Results

In Situ California Bearing Ratio (CBR) Test
In Accordance With BS 1377:1990 - Part 9

Project Name:	Camp Road, Upper Hayford				Project ID:	CAM2362	
Client:	Pye Homes				Test Date:	28/02/2019	
Test ID:	CBR01	Depth (m):	0.40	Operator:	CP	Checked:	JF
Coordinates:	451977, 225887			Existing Ground Level (mAOD):		118	
Soil Description:				Weather:		Overcast	
Soft orangish brown friable CLAY.				Seating Reading:		0.040	
				Seating Load (kN):		0.98	
				Mass of Surcharge (kg):			

Penetration (mm)	Dial Reading	Load (kN)
0.00	0.000	0.00
0.25	0.007	0.18
0.50	0.008	0.20
0.75	0.009	0.23
1.00	0.009	0.23
1.25	0.009	0.23
1.50	0.010	0.25
1.75	0.010	0.25
2.00	0.011	0.28
2.25	0.011	0.28
2.50	**0.012**	**0.30**
2.75	0.012	0.30
3.00	0.013	0.32
3.25	0.013	0.32
3.50	0.014	0.35
3.75	0.015	0.37
4.00	0.015	0.37
4.25	0.015	0.37
4.50	0.015	0.37
4.75	0.015	0.37
5.00	0.015	**0.37**
5.25	0.016	0.40
5.50	0.016	0.40
5.75	0.016	0.40
6.00	0.016	0.40
6.25	0.017	0.42
6.50	0.017	0.42
6.75	0.017	0.42
7.00	0.019	0.47
7.25	0.019	0.47
7.50	0.019	0.47



Moisture Content (%)	Penetration (mm)	Load (kN)	CBR (%)
22%	2.5	0.30	2.3%
	5.0	0.37	1.9%
		Design CBR Value	**2.1%**

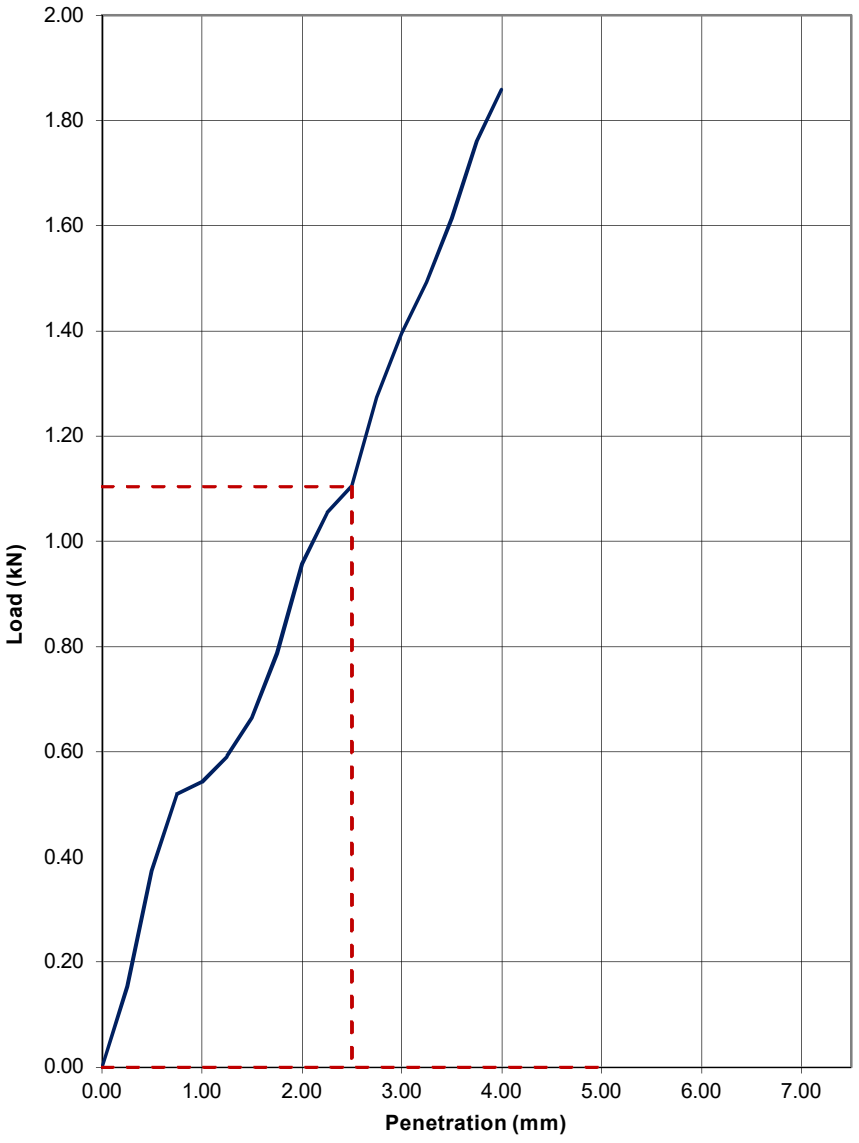
Remarks:

Penetration and force readings zeroed after seating load. Particle size below plunger <20mm. Loading applied at a rate of 1.0mm/min.

In Situ California Bearing Ratio (CBR) Test
In Accordance With BS 1377:1990 - Part 9

Project Name:	Camp Road, Upper Hayford				Project ID:	CAM2362	
Client:	Pye Homes				Test Date:	28/02/2019	
Test ID:	CBR02	Depth (m):	0.40	Operator:	CP	Checked:	JF
Coordinates:	451925, 225864			Existing Ground Level (mAOD):		119.08	
Soil Description:				Weather:		Overcast	
Orangish brown clayey GRAVEL with angular tabular cobbles of limestone. Gravel is angular to subangular medium to coarse of limestone.				Seating Reading:		0.115	
				Seating Load (kN):		2.81	
				Mass of Surcharge (kg):			

Penetration (mm)	Dial Reading	Load (kN)
0.00	0.000	0.00
0.25	0.006	0.15
0.50	0.015	0.37
0.75	0.021	0.52
1.00	0.022	0.54
1.25	0.024	0.59
1.50	0.027	0.67
1.75	0.032	0.79
2.00	0.039	0.96
2.25	0.043	1.06
2.50	**0.045**	**1.10**
2.75	0.052	1.27
3.00	0.057	1.40
3.25	0.061	1.49
3.50	0.066	1.62
3.75	0.072	1.76
4.00	0.076	1.86
4.25		
4.50		
4.75		
5.00		
5.25		
5.50		
5.75		
6.00		
6.25		
6.50		
6.75		
7.00		
7.25		
7.50		



Moisture Content (%)	Penetration (mm)	Load (kN)	CBR (%)
	2.5	1.10	8.4%
	5.0	0.00	0.0%
		Preliminary CBR Value	**4.2%**

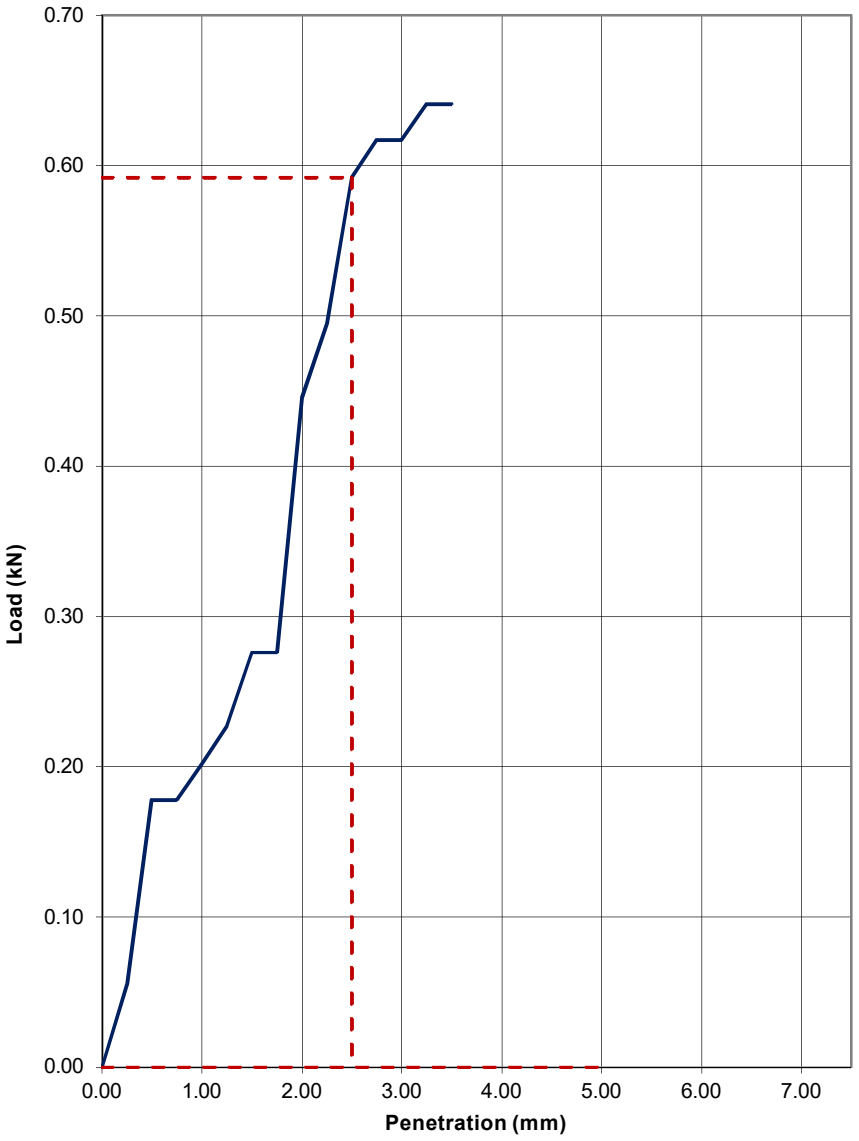
Remarks:

Penetration and force readings zeroed after seating load. Test not in accordance with guidance due to particle size below plunger >20mm. Loading applied at a rate of 1.0mm/min. The test was suspended due to vehicle lifting.

In Situ California Bearing Ratio (CBR) Test
In Accordance With BS 1377:1990 - Part 9

Project Name:	Camp Road, Upper Hayford				Project ID:	CAM2362	
Client:	Pye Homes				Test Date:	28/02/2019	
Test ID:	CBR03	Depth (m):	0.35	Operator:	CP	Checked:	JF
Coordinates:	451920, 225833			Existing Ground Level (mAOD):		118.85	
Soil Description:				Weather:		Heavy Rain	
Orangish brown clayey GRAVEL with angular tabular cobbles of limestone. Gravel is angular to subangular medium to coarse of limestone.				Seating Reading:		0.125	
				Seating Load (kN):		3.05	
				Mass of Surcharge (kg):			

Penetration (mm)	Dial Reading	Load (kN)
0.00	0.000	0.00
0.25	0.002	0.06
0.50	0.007	0.18
0.75	0.007	0.18
1.00	0.008	0.20
1.25	0.009	0.23
1.50	0.011	0.28
1.75	0.011	0.28
2.00	0.018	0.45
2.25	0.020	0.50
2.50	**0.024**	**0.59**
2.75	0.025	0.62
3.00	0.025	0.62
3.25	0.026	0.64
3.50	0.026	0.64
3.75		
4.00		
4.25		
4.50		
4.75		
5.00		
5.25		
5.50		
5.75		
6.00		
6.25		
6.50		
6.75		
7.00		
7.25		
7.50		



Moisture Content (%)	Penetration (mm)	Load (kN)	CBR (%)
11%	2.5	0.59	4.5%
	5.0	0.00	0.0%
		Design CBR Value	**2.2%**

Remarks:

Penetration and force readings zeroed after seating load. Test not in accordance with guidance due to particle size below plunger >20mm. Loading applied at a rate of 1.0mm/min. The test was suspended due to vehicle lifting.

In Situ California Bearing Ratio (CBR) Test
In Accordance With BS 1377:1990 - Part 9

Project Name:	Camp Road, Upper Hayford				Project ID:	CAM2362	
Client:	Pye Homes				Test Date:	28/02/2019	
Test ID:	CBR04	Depth (m):	0.35	Operator:	CP	Checked:	JF
Coordinates:	451911, 225780			Existing Ground Level (mAOD):		118.2	
Soil Description:				Weather:		Slightly raining	
Orangish brown clayey GRAVEL with angular tabular cobbles of limestone. Gravel is angular to subangular medium to coarse of limestone.				Seating Reading:		0.123	
				Seating Load (kN):		3.00	
				Mass of Surcharge (kg):			

Penetration (mm)	Dial Reading	Load (kN)
0.00	0.000	0.00
0.25	0.003	0.08
0.50	0.016	0.40
0.75	0.023	0.57
1.00	0.034	0.84
1.25	0.050	1.23
1.50	0.064	1.57
1.75	0.071	1.74
2.00		
2.25		
2.50		
2.75		
3.00		
3.25		
3.50		
3.75		
4.00		
4.25		
4.50		
4.75		
5.00		
5.25		
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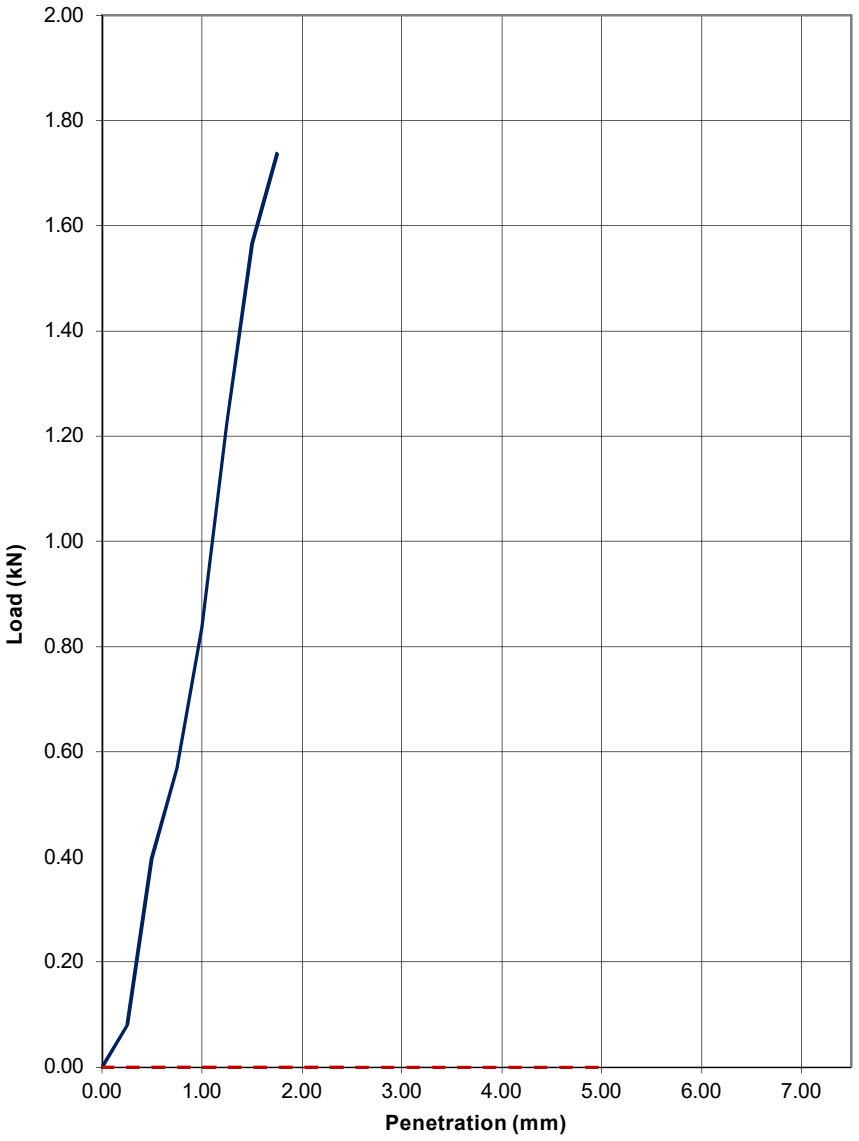
6.00		
6.25		
6.50		
6.75		
7.00		
7.25		
7.50		



Moisture Content (%)	Penetration (mm)	Load (kN)	CBR (%)
15%	2.5	0.00	0.0%
	5.0	0.00	0.0%
		Design CBR Value	**0.0%**

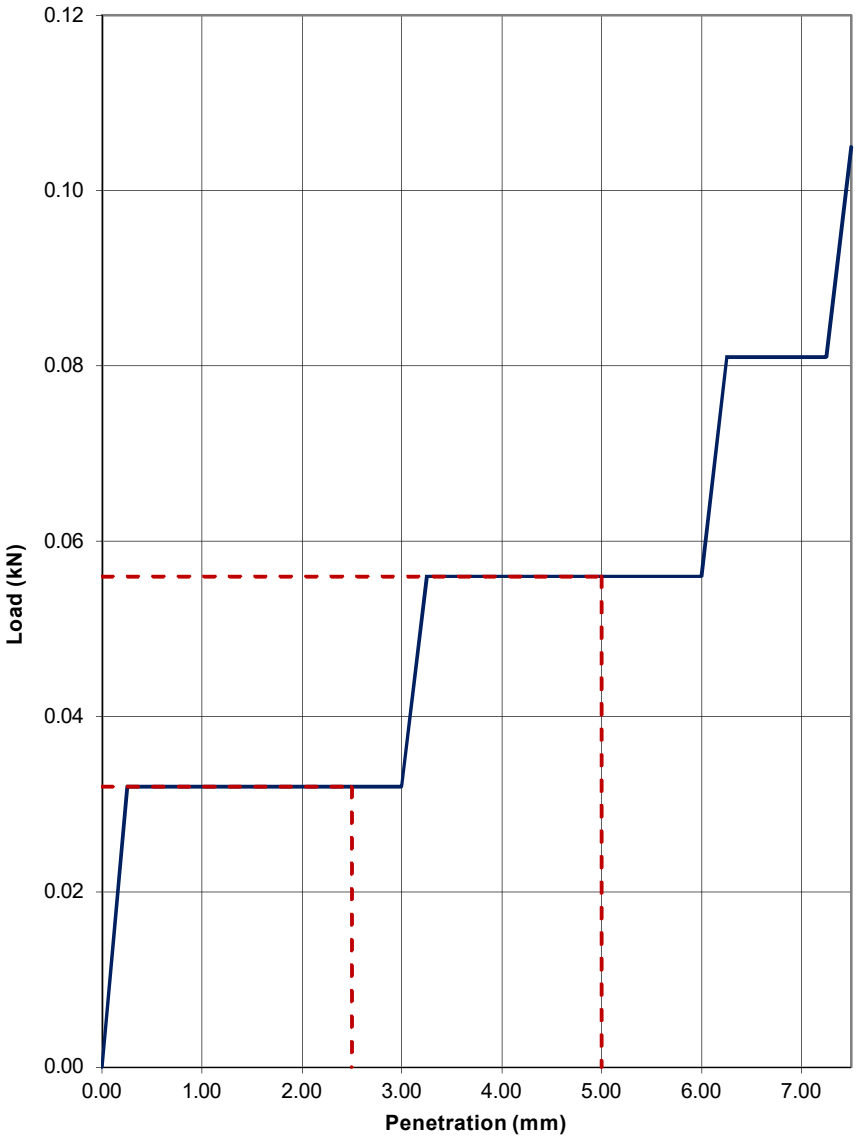
Remarks:

Penetration and force readings zeroed after seating load. Test not in accordance with guidance due to particle size below plunger >20mm. Loading applied at a rate of 1.0mm/min. The test was suspended due to vehicle lifting.

In Situ California Bearing Ratio (CBR) Test
In Accordance With BS 1377:1990 - Part 9

Project Name:	Camp Road, Upper Hayford				Project ID:	CAM2362	
Client:	Pye Homes				Test Date:	28/02/2019	
Test ID:	CBR05	Depth (m):	0.40	Operator:	CP	Checked:	JF
Coordinates:	451902, 225726			Existing Ground Level (mAOD):		117.2	
Soil Description:				Weather:		Slightly raining	
Soft orangish brown slightly sandy CLAY.				Seating Reading:		0.053	
				Seating Load (kN):		1.30	
				Mass of Surcharge (kg):			

Penetration (mm)	Dial Reading	Load (kN)
0.00	0.000	0.00
0.25	0.001	0.03
0.50	0.001	0.03
0.75	0.001	0.03
1.00	0.001	0.03
1.25	0.001	0.03
1.50	0.001	0.03
1.75	0.001	0.03
2.00	0.001	0.03
2.25	0.001	0.03
2.50	0.001	**0.03**
2.75	0.001	0.03
3.00	0.001	0.03
3.25	0.002	0.06
3.50	0.002	0.06
3.75	0.002	0.06
4.00	0.002	0.06
4.25	0.002	0.06
4.50	0.002	0.06
4.75	0.002	0.06
5.00	0.002	**0.06**
5.25	0.002	0.06
5.50	0.002	0.06
5.75	0.002	0.06
6.00	0.002	0.06
6.25	0.003	0.08
6.50	0.003	0.08
6.75	0.003	0.08
7.00	0.003	0.08
7.25	0.003	0.08
7.50	0.004	0.11



Moisture Content (%)	Penetration (mm)	Load (kN)	CBR (%)
19%	2.5	0.03	0.2%
	5.0	0.06	0.3%
		Design CBR Value	**0.3%**

Remarks:

Penetration and force readings zeroed after seating load. Particle size below plunger <20mm. Loading applied at a rate of 1.0mm/min.

Test Report

South West Geotechnical Ltd
Unit 3 Brooklands,
Howden Road,
Tiverton,
Devon
EX16 5HW

Job No:	11025	**Date Received:**	29/01/19
Job Name:	Camp Road	**Date Sent:**	08/02/19
Client Name:	T&P Regeneration	**Transmittal Number:**	T4262
Client Job No:	CAM2362	**Senders Initials:**	DT
Client Address	Unit 4, Brunel Lock Development, Smeaton Rd, Avon, Bristol BS1 6SE	**Report Revision No.**	1
		Sampled by SWG lab staff?	No

Ref.	Test Detail	No. of Tests / Report No.
A1	BS1377: Part 2: 1990: Clause 3 - Moisture Content - UKAS Accredited	10
A5	BS1377: Part 2: 1990: Clause 4 & 5 - Atterberg Limits - UKAS Accredited	10

Sampling not performed by South West Geotechnical laboratory staff. Results apply to the samples as received.

Approved Signatories:

Nick Worthington-Williams (Laboratory Quality Manager), Dan Ayre (Deputy Quality Manager)

David Trowbridge (Laboratory Manager)

8260
Accredited to
ISO/IEC
17025:2005

SOUTH WEST GEOTECHNICAL

Summary of Classification Test Results

Unit 3 Brooklands,
Howden Road,
Tiverton,
Devon
EX16 5HW

Project No.	Project Name
11025	Camp Road
Client Job No.	**Client**
CAM2362	T&P Regeneration

UKAS TESTING 8260 Accredited to ISO/IEC 17025:2005

Hole No.	Sample				Soil Description	*mc* Cl.3.2	Passing 425µm	LL	PL Cl5.3	PI Cl5.4	Particle density	Remarks
	Type	Top	Base	Ref		%	%	%	%	%	Mg/m3	
TP102	D	0.80	1.00	-	Yellow brown and light grey very clayey very sandy GRAVEL	10	39 - Sieved	29	16	13	-	
TP102	D	1.20	1.40	-	Yellowish brown slightly gravelly slightly sandy silty CLAY	14	74 - Sieved	30	17	13	-	
TP103	D	0.90	1.10	-	Yellowish brown slightly gravelly sandy CLAY	15	79 - Sieved	33	13	20	-	
TP105	D	0.80	1.00	-	Yellowish brown slightly gravelly sandy CLAY	17	75 - Sieved	38	15	23	-	
TP105	D	1.50	1.70	-	Light grey and yellowish brown slightly gravelly slightly sandy CLAY	16	66 - Sieved	39	15	24	-	
TP107	D	0.60	0.80	-	Yellowish brown clayey sandy GRAVEL	6	28 - Sieved	30	15	15	-	
TP107	D	1.30	1.50	-	Brown and light brown sandy silty CLAY with occasional shell fragments	33	98 - Sieved	76	18	58	-	
TP111	D	0.50	0.70	-	Yellowish brown sandy clayey GRAVEL	5.9	14 - Sieved	24	14	10	-	
TP115	D	0.60	0.80	-	Light brown sandy clayey GRAVEL	7.3	21 - Sieved	31	17	14	-	
TP115	D	1.10	1.30	-	Yellowish brown slightly gravelly sandy CLAY	16	79 - Sieved	35	14	21	-	

Preparation Clauses: Particle Density (BS1377:Part 1: 1990: CL7.4.4) Atterberg Limits (BS1377:Part 1: 1990: CL7.4.3) Moisture Content (BS1377: Part 1: 1990: CL7.3.3 & 7.4.2)

Key

Atterberg Limits BS1377-2:1990
4pt cone (CL.4.3) unless :
1pt - single point test (CL.4.4)
4.2.3 - Natural
4.2.4 - Sieved
Moisture Content (mc) %

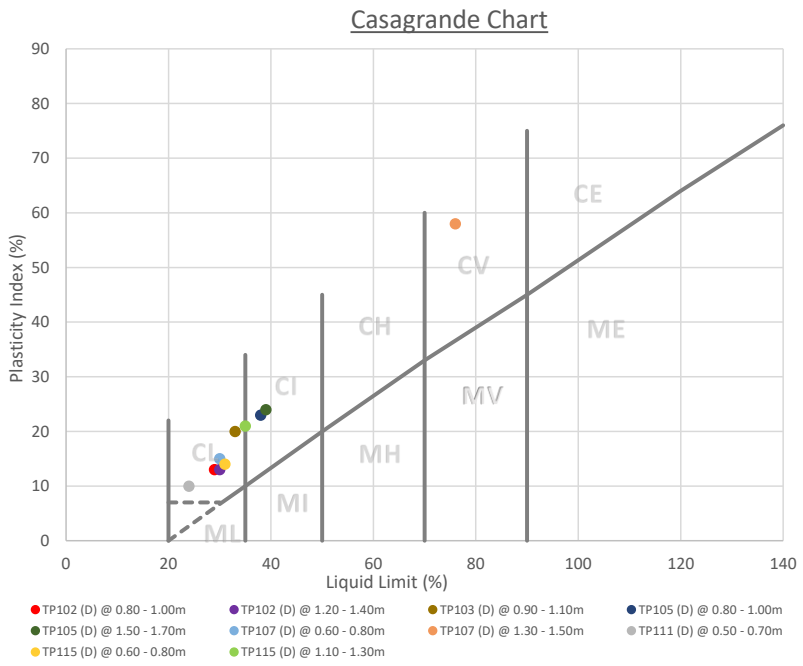
Particle density BS1377-2:1990
sp - small pyknometer CL.8.3
gj - gas jar CL.8.2

Date	Approved By	Page No.	1
11/02/2019	David Trowbridge - Laboratory Manager	KL001R Index Summary	

Graphical Summary of Atterberg Test Results

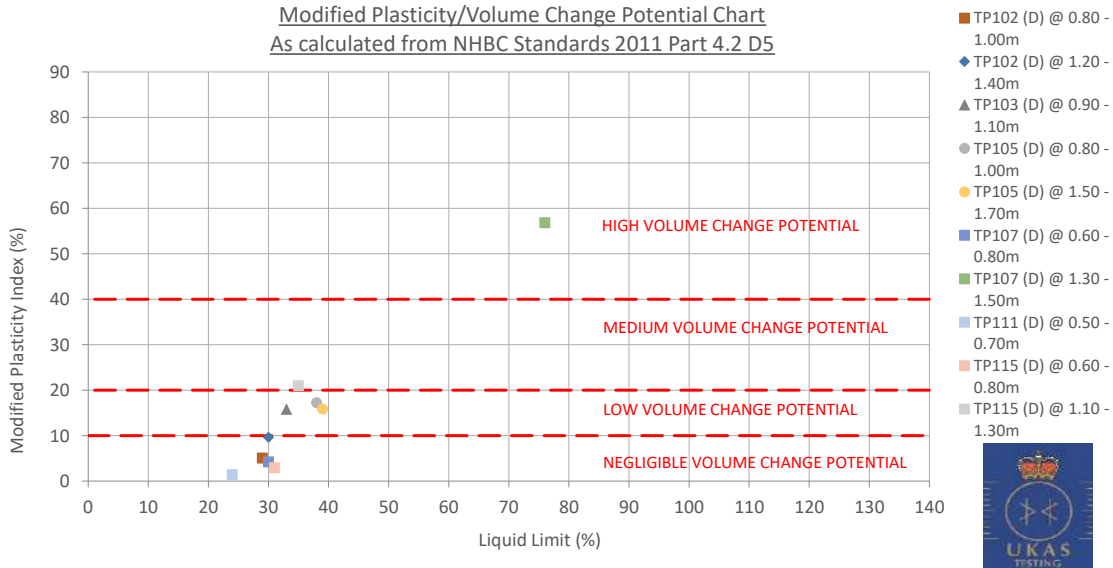
Unit 3 Brooklands,
Howden Road,
Tiverton,
Devon
EX16 5HW

Project No.	Project Name
11025	Camp Road
Client Job No.	**Client**
CAM2362	T&P Regeneration



Sample ID	Plasticity Index (%)	Modified Plasticity Index (%)
TP102 (D) @ 0.80 - 1.00m	13	5
TP102 (D) @ 1.20 - 1.40m	13	10
TP103 (D) @ 0.90 - 1.10m	20	16
TP105 (D) @ 0.80 - 1.00m	23	17
TP105 (D) @ 1.50 - 1.70m	24	16
TP107 (D) @ 0.60 - 0.80m	15	4
TP107 (D) @ 1.30 - 1.50m	58	57
TP111 (D) @ 0.50 - 0.70m	10	1
TP115 (D) @ 0.60 - 0.80m	14	3
TP115 (D) @ 1.10 - 1.30m	21	21

**The Modified Plasticity Index (I'p) is defined as the Plasticity Index (Ip) of the soil multiplied by the percentage of particles less than 425µm.
ie. I'p x % less than 425um/100%**



KL001a Index Graphical Summary	Approved By	Date
	David Trowbridge - Laboratory Manager	11/02/2019 12:22

8260
Accredited to ISO/IEC 17025:2005

Test Report

South West Geotechnical Ltd
Unit 3 Brooklands,
Howden Road,
Tiverton,
Devon
EX16 5HW

Job No:	11025	**Date Received:**	30/01/19
Job Name:	Camp Road	**Date Sent:**	08/02/19
Client Name:	T&P Regeneration	**Transmittal Number:**	T4262A
Client Job No:	CAM2362	**Senders Initials:**	MB
Client Address	Unit 4, Brunel Lock Development, Smeaton Rd, Avon, Bristol BS1 6SE	**Report Revision No.**	1
		Sampled by SWG lab staff?	No

Ref.	Test Detail	No. of Tests / Report No.
CHEM	External Chemical Testing	19-01474.1

Sampling not performed by South West Geotechnical laboratory staff. Results apply to the samples as received.

Approved Signatories:

Nick Worthington-Williams (Laboratory Quality Manager), Dan Ayre (Deputy Quality Manager)

David Trowbridge (Laboratory Manager)

8260
Accredited to
ISO/IEC
17025:2005

Neil Forrow
South West Geotechnical Ltd
Unit 3 Brooklands
Howden Road
Tiverton
Devon
EX16 5HW

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
russell.jarvis@dets.co.uk

DETS Report No: 19-01474

Site Reference:	Camp Road
Project / Job Ref:	11025/T4262A
Order No:	None Supplied
Sample Receipt Date:	04/02/2019
Sample Scheduled Date:	04/02/2019
Report Issue Number:	1
Reporting Date:	07/02/2019

Authorised by:

[redacted]
Russell Jarvis
Associate Director of Client Services

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate						
DETS Report No: 19-01474	**Date Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
South West Geotechnical Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Camp Road	**TP / BH No**	TP102	TP102	TP105	TP105	TP107
Project / Job Ref: 11025/T4262A	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: None Supplied	**Depth (m)**	0.80 - 1.00	1.20 - 1.40	0.80 - 1.00	1.50 - 1.70	0.60 - 0.80
Reporting Date: 07/02/2019	**DETS Sample No**	387022	387023	387024	387025	387026

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	MCERTS	7.6	7.6	7.5	7.6	7.6
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	< 10	15	< 10	< 10	< 10
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	< 0.01	0.01	< 0.01	< 0.01	< 0.01

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate						
DETS Report No: 19-01474	**Date Sampled**	None Supplied	None Supplied	None Supplied		
South West Geotechnical Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: Camp Road	**TP / BH No**	TP107	TP115	TP115		
Project / Job Ref: 11025/T4262A	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: None Supplied	**Depth (m)**	1.30 - 1.50	0.60 - 0.80	1.10 - 1.30		
Reporting Date: 07/02/2019	**DETS Sample No**	387027	387028	387029		

Determinand	Unit	RL	Accreditation					
pH	pH Units	N/a	MCERTS	7.4	7.4	7.5		
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	57	< 10	< 10		
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	0.06	< 0.01	< 0.01		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Subcontracted analysis (S)

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions
DETS Report No: 19-01474
South West Geotechnical Ltd
Site Reference: Camp Road
Project / Job Ref: 11025/T4262A
Order No: None Supplied
Reporting Date: 07/02/2019

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
^ 387022	TP102	None Supplied	0.80 - 1.00	6.6	Brown clayey sand with stones
^ 387023	TP102	None Supplied	1.20 - 1.40	9.8	Beige clayey sand
^ 387024	TP105	None Supplied	0.80 - 1.00	10.4	Brown clayey sand with stones
^ 387025	TP105	None Supplied	1.50 - 1.70	12.3	Brown clayey sand
^ 387026	TP107	None Supplied	0.60 - 0.80	2.7	Brown clayey sand with stones
^ 387027	TP107	None Supplied	1.30 - 1.50	17.1	Brown clayey sand
^ 387028	TP115	None Supplied	0.60 - 0.80	7.6	Brown clayey sand with stones
^ 387029	TP115	None Supplied	1.10 - 1.30	14.4	Brown clayey sand

Moisture content is part of procedure E003 & is not an accredited test
Insufficient Sample I/S
Unsuitable Sample U/S
^ no sampling date provided; unable to confirm if samples are within acceptable holding times

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 19-01474
South West Geotechnical Ltd
Site Reference: Camp Road
Project / Job Ref: 11025/T4262A
Order No: None Supplied
Reporting Date: 07/02/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

Appendix F – Chemical Results

Unit A2
Windmill Road
Ponswood Industrial Estate
St Leonards on Sea
East Sussex
TN38 9BY
Telephone: (01424) 718618

cs@elab-uk.co.uk
info@elab-uk.co.uk

THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number:	19-21513
Issue:	1
Date of Issue:	30/01/2019
Contact:	John Flannery
Customer Details:	T & P Regeneration Ltd (Smeaton Road) Unit 4 Brunel Lock Development Bristol BS1 6SE
Quotation No:	Q15-00390
Order No:	5436-CAM2362
Customer Reference:	CAM2362
Date Received:	28/01/2019
Date Approved:	30/01/2019
Details:	CAM2362
Approved by:	[redacted]

John Wilson, Operations Manager

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683)

Sample Summary

Report No.: 19-21513

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
163584	TP101 0.00 - 0.20	23/01/2019	28/01/2019	Sandy silty loam	
163585	TP101 0.20 - 0.60	23/01/2019	28/01/2019	Sandy silty loam	
163586	TP102 0.00 - 0.40	23/01/2019	28/01/2019	Silty loam	
163587	TP102 0.40 - 0.60	23/01/2019	28/01/2019	Sandy silty loam	
163588	TP103 0.00 - 0.30	23/01/2019	28/01/2019	Silty loam	
163589	TP103 0.30 - 0.60	23/01/2019	28/01/2019		
163590	TP104 0.00 - 0.30	23/01/2019	28/01/2019	Silty loam	
163591	TP104 0.30 - 0.60	23/01/2019	28/01/2019		
163592	TP105 0.00 - 0.40	23/01/2019	28/01/2019	Sandy silty loam	
163593	TP105 0.40 - 0.60	23/01/2019	28/01/2019	Sandy silty loam	
163594	TP106 0.00 - 0.30	23/01/2019	28/01/2019		
163595	TP106 0.30 - 0.60	23/01/2019	28/01/2019		
163596	TP107 0.00 - 0.25	23/01/2019	28/01/2019	Silty loam	
163597	TP107 0.25 - 0.60	23/01/2019	28/01/2019		
163598	TP108 0.00 - 0.50	23/01/2019	28/01/2019		
163599	TP108 0.50 - 0.60	23/01/2019	28/01/2019		
163600	TP111 0.00 - 0.30	24/01/2019	28/01/2019		
163601	TP111 0.30 - 0.60	24/01/2019	28/01/2019		
163602	TP112 0.00 - 0.30	24/01/2019	28/01/2019	Silty loam	
163603	TP112 0.30 - 0.60	24/01/2019	28/01/2019	Sandy silty loam	
163604	TP113 0.00 - 0.35	24/01/2019	28/01/2019	Sandy silty loam	
163605	TP113 0.35 - 0.60	24/01/2019	28/01/2019		
163606	TP115 0.00 - 0.30	24/01/2019	28/01/2019		
163607	TP115 0.30 - 0.60	24/01/2019	28/01/2019		

Results Summary

Report No.: 19-21513

			ELAB Reference	163584	163585	163586	163587	163588	163590
			Customer Reference						
			Sample ID						
			Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sample Location	TP101	TP101	TP102	TP102	TP103	TP104
			Sample Depth (m)	0.00 - 0.20	0.20 - 0.60	0.00 - 0.40	0.40 - 0.60	0.00 - 0.30	0.00 - 0.30
			Sampling Date	23/01/2019	23/01/2019	23/01/2019	23/01/2019	23/01/2019	23/01/2019
Determinand	**Codes**	**Units**	**LOD**						
Metals									
Arsenic	M	mg/kg	1	26.3	18.7	17.4	18.1	16.6	19.7
Cadmium	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	0.6	< 0.5	< 0.5
Chromium	M	mg/kg	5	44.1	27.7	30.8	36.2	27.6	32.0
Copper	M	mg/kg	5	19.0	13.8	13.3	14.3	10.5	11.3
Lead	M	mg/kg	5	35.5	17.9	18.1	15.9	20.2	21.0
Mercury	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel	M	mg/kg	5	31.8	21.9	23.7	28.3	18.6	22.5
Selenium	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc	M	mg/kg	5	84.6	37.8	49.1	45.3	45.8	49.6
Anions									
Water Soluble Sulphate	M	g/l	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Inorganics									
Hexavalent Chromium	N	mg/kg	0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8
Water Soluble Boron	N	mg/kg	0.5	1.0	0.6	0.6	< 0.5	0.7	0.6
Miscellaneous									
pH	M	pH units	0.1	7.8	8.1	7.6	7.9	7.9	7.9
Total Organic Carbon	N	%	0.01	1.8	0.49	0.42	0.27	1.5	1.2
Phenols									
Phenol	M	mg/kg	1	< 1	< 1	< 1	< 1	< 1	< 1
M,P-Cresol	N	mg/kg	1	< 1	< 1	< 1	< 1	< 1	< 1
O-Cresol	N	mg/kg	1	< 1	< 1	< 1	< 1	< 1	< 1
3,4-Dimethylphenol	N	mg/kg	1	< 1	< 1	< 1	< 1	< 1	< 1
2,3-Dimethylphenol	M	mg/kg	1	< 1	< 1	< 1	< 1	< 1	< 1
2,3,5-trimethylphenol	M	mg/kg	1	< 1	< 1	< 1	< 1	< 1	< 1
Total Monohydric Phenols	N	mg/kg	5	< 5	< 5	< 5	< 5	< 5	< 5
Polyaromatic hydrocarbons									
Naphthalene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2	< 0.1
Pyrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.1	< 0.1
Benzo(a)anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo[g,h,i]perylene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total PAH(16)	M	mg/kg	0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4

Results Summary

Report No.: 19-21513

			ELAB Reference	163592	163593	163596	163602	163603	163604
			Customer Reference						
			Sample ID						
			Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sample Location	TP105	TP105	TP107	TP112	TP112	TP113
			Sample Depth (m)	0.00 - 0.40	0.40 - 0.60	0.00 - 0.25	0.00 - 0.30	0.30 - 0.60	0.00 - 0.35
			Sampling Date	23/01/2019	23/01/2019	23/01/2019	24/01/2019	24/01/2019	24/01/2019
Determinand	**Codes**	**Units**	**LOD**						
Metals									
Arsenic	M	mg/kg	1	16.5	11.6	17.3	22.7	12.0	16.5
Cadmium	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chromium	M	mg/kg	5	28.8	23.7	27.3	39.1	20.6	25.1
Copper	M	mg/kg	5	10.2	7.7	10.4	14.7	9.6	10.0
Lead	M	mg/kg	5	17.9	12.5	20.6	28.4	11.6	19.5
Mercury	M	mg/kg	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Nickel	M	mg/kg	5	19.9	16.4	19.2	26.8	14.2	17.2
Selenium	M	mg/kg	1	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc	M	mg/kg	5	41.9	42.2	44.2	67.5	19.7	43.7
Anions									
Water Soluble Sulphate	M	g/l	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Inorganics									
Hexavalent Chromium	N	mg/kg	0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8
Water Soluble Boron	N	mg/kg	0.5	0.9	0.7	0.7	1.2	< 0.5	0.8
Miscellaneous									
pH	M	pH units	0.1	8.2	8.4	7.9	7.8	8.2	7.9
Total Organic Carbon	N	%	0.01	0.98	0.24	1.1	1.8	0.20	1.5
Phenols									
Phenol	M	mg/kg	1	< 1	< 1	< 1	< 1	< 1	< 1
M,P-Cresol	N	mg/kg	1	< 1	< 1	< 1	< 1	< 1	< 1
O-Cresol	N	mg/kg	1	< 1	< 1	< 1	< 1	< 1	< 1
3,4-Dimethylphenol	N	mg/kg	1	< 1	< 1	< 1	< 1	< 1	< 1
2,3-Dimethylphenol	M	mg/kg	1	< 1	< 1	< 1	< 1	< 1	< 1
2,3,5-trimethylphenol	M	mg/kg	1	< 1	< 1	< 1	< 1	< 1	< 1
Total Monohydric Phenols	N	mg/kg	5	< 5	< 5	< 5	< 5	< 5	< 5
Polyaromatic hydrocarbons									
Naphthalene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2
Pyrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	0.2
Benzo(a)anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo[g,h,i]perylene	M	mg/kg	0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total PAH(16)	M	mg/kg	0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4

Method Summary

Report No.: 19-21513

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
Hexavalent chromium	N	As submitted sample	29/01/2019	110	Colorimetry
pH	M	Air dried sample	29/01/2019	113	Electromeric
Aqua regia extractable metals	M	Air dried sample	29/01/2019	118	ICPMS
Phenols in solids	M	As submitted sample	29/01/2019	121	HPLC
PAH (GC-FID)	M	As submitted sample	29/01/2019	133	GC-FID
Water soluble anions	M	Air dried sample	29/01/2019	172	Ion Chromatography
Water soluble boron	N	Air dried sample	29/01/2019	202	Colorimetry
Total organic carbon/Total sulphur	N	Air dried sample	30/01/2019	210	IR

Tests marked N are not UKAS accredited

Report Information

Report No.: 19-21513

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
NS	Subcontracted to approved laboratory. UKAS accreditation is not applicable.
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"

Soil sample results are expressed on an air dried basis (dried at < 30°C)
ELAB are unable to provide an interpretation or opinion on the content of this report.
The results relate only to the items tested
PCB congener results may include any coeluting PCBs
Uncertainty of measurement for the determinands tested are available upon request

Deviation Codes

a	No date of sampling supplied
b	No time of sampling supplied (Waters Only)
c	Sample not received in appropriate containers
d	Sample not received in cooled condition
e	The container has been incorrectly filled
f	Sample age exceeds stability time (sampling to receipt)
g	Sample age exceeds stability time (sampling to analysis)

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month
All water samples will be retained for 7 days following the date of the test report
Charges may apply to extended sample storage

Appendix G – HazWaste Report

Waste Classification Report

N3V9E-QGULP-A9VVL

Job name

CAM2362

Description/Comments

Project

CAM2362

Site

Camp Road, Upper Heyford

Related Documents

#	Name	Description
None		

Waste Stream Template

T&P 2 Standard

Classified by

Name:
Alessandro Dunne
Date:
01 Mar 2019 16:19 GMT
Telephone:
0117 927 7756

Company:
T&P Regeneration Ltd
Unit 4
Brunel Lock Development, Smeaton Road
Bristol
BS1 6SE

Report

Created by: Alessandro Dunne
Created date: 01 Mar 2019 16:19 GMT

Job summary

Classification of sample: TP101

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:	LoW Code:
TP101	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	
0.00 - 0.20 m	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		26.3 mg/kg	1.32	34.725 mg/kg	0.00347 %	✓	
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.5 mg/kg	1.285	<0.643 mg/kg	<0.00005 %		<**LOD**
3	chromium { chromium(III) oxide }		215-160-9	1308-38-9		44.1 mg/kg	1.462	64.455 mg/kg	0.00645 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		19 mg/kg	1.126	21.392 mg/kg	0.00214 %	✓	
5	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	35.5 mg/kg		35.5 mg/kg	0.00355 %	✓	
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.5 mg/kg	1.353	<0.677 mg/kg	<0.0000677 %		<**LOD**
7	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		31.8 mg/kg	1.579	50.228 mg/kg	0.00502 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
9	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		84.6 mg/kg	2.469	208.902 mg/kg	0.0209 %	✓	
10	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1 mg/kg	13.43	13.43 mg/kg	0.00134 %	✓	
11	pH			PH		7.8 pH		7.8 pH	7.8 pH		
12	phenol	604-001-00-2	203-632-7	108-95-2		<1 mg/kg		<1 mg/kg	<0.0001 %		<**LOD**
13	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
15		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
16		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
17		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
18		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
19		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
20		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
21		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
22		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
23		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
24		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
25		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
26		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
27		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
28		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
										Total:	0.0435 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP101[1]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:	LoW Code:
TP101[1]	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	
0.20 - 0.60 m	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		18.7 mg/kg	1.32	24.69 mg/kg	0.00247 %	✓	
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.5 mg/kg	1.285	<0.643 mg/kg	<0.00005 %		<**LOD**
3	chromium { chromium(III) oxide }		215-160-9	1308-38-9		27.7 mg/kg	1.462	40.485 mg/kg	0.00405 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		13.8 mg/kg	1.126	15.537 mg/kg	0.00155 %	✓	
5	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	17.9 mg/kg		17.9 mg/kg	0.00179 %	✓	
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.5 mg/kg	1.353	<0.677 mg/kg	<0.0000677 %		<**LOD**
7	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		21.9 mg/kg	1.579	34.591 mg/kg	0.00346 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
9	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		37.8 mg/kg	2.469	93.339 mg/kg	0.00933 %	✓	
10	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.6 mg/kg	13.43	8.058 mg/kg	0.000806 %	✓	
11	pH			PH		8.1 pH		8.1 pH	8.1 pH		
12	phenol	604-001-00-2	203-632-7	108-95-2		<1 mg/kg		<1 mg/kg	<0.0001 %		<**LOD**
13	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
15		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
16		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
17		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
18		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
19		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
20		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
21		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
22		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
23		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
24		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
25		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
26		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
27		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
28		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
										Total:	0.0241 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP102

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:	LoW Code:
TP102	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	
0.00 - 0.40 m	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		17.4 mg/kg	1.32	22.974 mg/kg	0.0023 %	✓	
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.5 mg/kg	1.285	<0.643 mg/kg	<0.00005 %		<**LOD**
3	chromium { chromium(III) oxide }		215-160-9	1308-38-9		30.8 mg/kg	1.462	45.016 mg/kg	0.0045 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		13.3 mg/kg	1.126	14.974 mg/kg	0.0015 %	✓	
5	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	18.1 mg/kg		18.1 mg/kg	0.00181 %	✓	
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.5 mg/kg	1.353	<0.677 mg/kg	<0.0000677 %		<**LOD**
7	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		23.7 mg/kg	1.579	37.434 mg/kg	0.00374 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
9	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		49.1 mg/kg	2.469	121.242 mg/kg	0.0121 %	✓	
10	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.6 mg/kg	13.43	8.058 mg/kg	0.000806 %	✓	
11	pH			PH		7.6 pH		7.6 pH	7.6 pH		
12	phenol	604-001-00-2	203-632-7	108-95-2		<1 mg/kg		<1 mg/kg	<0.0001 %		<**LOD**
13	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
15		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
16		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
17		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
18		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
19		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
20		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
21		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
22		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
23		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
24		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
25		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
26		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
27		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
28		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
										Total:	0.0274 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP102[1]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:	LoW Code:
TP102[1]	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	
0.40 - 0.60 m	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		18.1 mg/kg	1.32	23.898 mg/kg	0.00239 %	✓	
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	0.6 mg/kg	1.285	0.771 mg/kg	0.00006 %	✓	
3	chromium { chromium(III) oxide }		215-160-9	1308-38-9		36.2 mg/kg	1.462	52.908 mg/kg	0.00529 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		14.3 mg/kg	1.126	16.1 mg/kg	0.00161 %	✓	
5	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	15.9 mg/kg		15.9 mg/kg	0.00159 %	✓	
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.5 mg/kg	1.353	<0.677 mg/kg	<0.0000677 %		<LOD
7	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		28.3 mg/kg	1.579	44.7 mg/kg	0.00447 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
9	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		45.3 mg/kg	2.469	111.859 mg/kg	0.0112 %	✓	
10	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		<0.5 mg/kg	13.43	<6.715 mg/kg	<0.000672 %		<LOD
11	pH			PH		7.9 pH		7.9 pH	7.9 pH		
12	phenol	604-001-00-2	203-632-7	108-95-2		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
13	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
15		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
16		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
17		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
18		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
19		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
20		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
21		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
22		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
23		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
24		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
25		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
26		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
27		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
28		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
										Total:	0.0279 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP103

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:
TP103
Sample Depth:
0.00 - 0.30 m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		16.6 mg/kg	1.32	21.917 mg/kg	0.00219 %	✓	
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.5 mg/kg	1.285	<0.643 mg/kg	<0.00005 %		<**LOD**
3	chromium { chromium(III) oxide }		215-160-9	1308-38-9		27.6 mg/kg	1.462	40.339 mg/kg	0.00403 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		10.5 mg/kg	1.126	11.822 mg/kg	0.00118 %	✓	
5	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	20.2 mg/kg		20.2 mg/kg	0.00202 %	✓	
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.5 mg/kg	1.353	<0.677 mg/kg	<0.0000677 %		<**LOD**
7	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		18.6 mg/kg	1.579	29.379 mg/kg	0.00294 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
9	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		45.8 mg/kg	2.469	113.094 mg/kg	0.0113 %	✓	
10	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.7 mg/kg	13.43	9.401 mg/kg	0.00094 %	✓	
11	pH			PH		7.9 pH		7.9 pH	7.9 pH		
12	phenol	604-001-00-2	203-632-7	108-95-2		<1 mg/kg		<1 mg/kg	<0.0001 %		<**LOD**
13	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
15		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
16		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
17		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
18		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
19		fluoranthene				0.2	mg/kg		0.2	mg/kg	0.00002 %	✓	
			205-912-4	206-44-0									
20		pyrene				0.1	mg/kg		0.1	mg/kg	0.00001 %	✓	
			204-927-3	129-00-0									
21		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
22		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
23		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
24		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
25		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
26		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
27		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
28		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
										Total:	0.0253 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP104

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:	LoW Code:
TP104	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	
0.00 - 0.30 m	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		19.7 mg/kg	1.32	26.01 mg/kg	0.0026 %	✓	
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.5 mg/kg	1.285	<0.643 mg/kg	<0.00005 %		<**LOD**
3	chromium { chromium(III) oxide }		215-160-9	1308-38-9		32 mg/kg	1.462	46.77 mg/kg	0.00468 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		11.3 mg/kg	1.126	12.723 mg/kg	0.00127 %	✓	
5	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	21 mg/kg		21 mg/kg	0.0021 %	✓	
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.5 mg/kg	1.353	<0.677 mg/kg	<0.0000677 %		<**LOD**
7	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		22.5 mg/kg	1.579	35.539 mg/kg	0.00355 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
9	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		49.6 mg/kg	2.469	122.477 mg/kg	0.0122 %	✓	
10	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.6 mg/kg	13.43	8.058 mg/kg	0.000806 %	✓	
11	pH			PH		7.9 pH		7.9 pH	7.9 pH		
12	phenol	604-001-00-2	203-632-7	108-95-2		<1 mg/kg		<1 mg/kg	<0.0001 %		<**LOD**
13	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
15		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
16		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
17		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
18		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
19		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
20		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
21		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
22		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
23		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
24		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
25		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
26		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
27		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
28		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
										Total:	0.0279 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP105

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:	LoW Code:
TP105	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	
0.00 - 0.40 m	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		16.5 mg/kg	1.32	21.785 mg/kg	0.00218 %	✓	
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.5 mg/kg	1.285	<0.643 mg/kg	<0.00005 %		<**LOD**
3	chromium { chromium(III) oxide }		215-160-9	1308-38-9		28.8 mg/kg	1.462	42.093 mg/kg	0.00421 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		10.2 mg/kg	1.126	11.484 mg/kg	0.00115 %	✓	
5	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	17.9 mg/kg		17.9 mg/kg	0.00179 %	✓	
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.5 mg/kg	1.353	<0.677 mg/kg	<0.0000677 %		<**LOD**
7	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		19.9 mg/kg	1.579	31.432 mg/kg	0.00314 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
9	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		41.9 mg/kg	2.469	103.464 mg/kg	0.0103 %	✓	
10	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.9 mg/kg	13.43	12.087 mg/kg	0.00121 %	✓	
11	pH			PH		8.2 pH		8.2 pH	8.2 pH		
12	phenol	604-001-00-2	203-632-7	108-95-2		<1 mg/kg		<1 mg/kg	<0.0001 %		<**LOD**
13	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
15		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
16		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
17		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
18		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
19		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
20		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
21		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
22		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
23		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
24		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
25		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
26		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
27		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
28		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
										Total:	0.0247 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP105[1]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:	LoW Code:
TP105[1]	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	
0.40 - 0.60 m	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		11.6 mg/kg	1.32	15.316 mg/kg	0.00153 %	✓	
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.5 mg/kg	1.285	<0.643 mg/kg	<0.00005 %		<**LOD**
3	chromium { chromium(III) oxide }		215-160-9	1308-38-9		23.7 mg/kg	1.462	34.639 mg/kg	0.00346 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		7.7 mg/kg	1.126	8.669 mg/kg	0.000867 %	✓	
5	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	12.5 mg/kg		12.5 mg/kg	0.00125 %	✓	
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.5 mg/kg	1.353	<0.677 mg/kg	<0.0000677 %		<**LOD**
7	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		16.4 mg/kg	1.579	25.904 mg/kg	0.00259 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
9	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		42.2 mg/kg	2.469	104.204 mg/kg	0.0104 %	✓	
10	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.7 mg/kg	13.43	9.401 mg/kg	0.00094 %	✓	
11	pH			PH		8.4 pH		8.4 pH	8.4 pH		
12	phenol	604-001-00-2	203-632-7	108-95-2		<1 mg/kg		<1 mg/kg	<0.0001 %		<**LOD**
13	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
15		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
16		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
17		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
18		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
19		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
20		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
21		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
22		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
23		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
24		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
25		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
26		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
27		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
28		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
										Total:	0.0217 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP107

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:	LoW Code:
TP107	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	
0.00 - 0.25 m	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		17.3 mg/kg	1.32	22.842 mg/kg	0.00228 %	✓	
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.5 mg/kg	1.285	<0.643 mg/kg	<0.00005 %		<**LOD**
3	chromium { chromium(III) oxide }		215-160-9	1308-38-9		27.3 mg/kg	1.462	39.9 mg/kg	0.00399 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		10.4 mg/kg	1.126	11.709 mg/kg	0.00117 %	✓	
5	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	20.6 mg/kg		20.6 mg/kg	0.00206 %	✓	
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.5 mg/kg	1.353	<0.677 mg/kg	<0.0000677 %		<**LOD**
7	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		19.2 mg/kg	1.579	30.326 mg/kg	0.00303 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
9	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		44.2 mg/kg	2.469	109.143 mg/kg	0.0109 %	✓	
10	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.7 mg/kg	13.43	9.401 mg/kg	0.00094 %	✓	
11	pH			PH		7.9 pH		7.9 pH	7.9 pH		
12	phenol	604-001-00-2	203-632-7	108-95-2		<1 mg/kg		<1 mg/kg	<0.0001 %		<**LOD**
13	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
15		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
16		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
17		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
18		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
19		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
20		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
21		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
22		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
23		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
24		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
25		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
26		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
27		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
28		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
										Total:	0.025 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP112

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:	LoW Code:
TP112	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	
0.00 - 0.30 m	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		22.7 mg/kg	1.32	29.971 mg/kg	0.003 %	✓	
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.5 mg/kg	1.285	<0.643 mg/kg	<0.00005 %		<**LOD**
3	chromium { chromium(III) oxide }		215-160-9	1308-38-9		39.1 mg/kg	1.462	57.147 mg/kg	0.00571 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		14.7 mg/kg	1.126	16.551 mg/kg	0.00166 %	✓	
5	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	28.4 mg/kg		28.4 mg/kg	0.00284 %	✓	
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.5 mg/kg	1.353	<0.677 mg/kg	<0.0000677 %		<**LOD**
7	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		26.8 mg/kg	1.579	42.331 mg/kg	0.00423 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
9	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		67.5 mg/kg	2.469	166.678 mg/kg	0.0167 %	✓	
10	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		1.2 mg/kg	13.43	16.116 mg/kg	0.00161 %	✓	
11	pH			PH		7.8 pH		7.8 pH	7.8 pH		
12	phenol	604-001-00-2	203-632-7	108-95-2		<1 mg/kg		<1 mg/kg	<0.0001 %		<**LOD**
13	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
15		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
16		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
17		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
18		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
19		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
20		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
21		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
22		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
23		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
24		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
25		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
26		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
27		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
28		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
										Total:	0.0364 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP112[1]

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:	LoW Code:
TP112[1]	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	
0.30 - 0.60 m	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12 mg/kg	1.32	15.844 mg/kg	0.00158 %	✓	
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.5 mg/kg	1.285	<0.643 mg/kg	<0.00005 %		<**LOD**
3	chromium { chromium(III) oxide }		215-160-9	1308-38-9		20.6 mg/kg	1.462	30.108 mg/kg	0.00301 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		9.6 mg/kg	1.126	10.809 mg/kg	0.00108 %	✓	
5	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	11.6 mg/kg		11.6 mg/kg	0.00116 %	✓	
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.5 mg/kg	1.353	<0.677 mg/kg	<0.0000677 %		<**LOD**
7	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		14.2 mg/kg	1.579	22.429 mg/kg	0.00224 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
9	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		19.7 mg/kg	2.469	48.645 mg/kg	0.00486 %	✓	
10	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		<0.5 mg/kg	13.43	<6.715 mg/kg	<0.000672 %		<**LOD**
11	pH			PH		8.2 pH		8.2 pH	8.2 pH		
12	phenol	604-001-00-2	203-632-7	108-95-2		<1 mg/kg		<1 mg/kg	<0.0001 %		<**LOD**
13	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
15		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
16		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
17		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
18		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
19		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
20		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
21		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
22		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
23		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
24		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
25		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
26		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
27		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
28		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
										Total:	0.0152 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP113

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample Name:	LoW Code:
TP113	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	
0.00 - 0.35 m	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Dry Weight Moisture Correction applied (MC)

#	Determinand	CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		16.5 mg/kg	1.32	21.785 mg/kg	0.00218 %	✓	
2	cadmium { cadmium sulfide }	048-010-00-4	215-147-8	1306-23-6	1	<0.5 mg/kg	1.285	<0.643 mg/kg	<0.00005 %		<**LOD**
3	chromium { chromium(III) oxide }		215-160-9	1308-38-9		25.1 mg/kg	1.462	36.685 mg/kg	0.00367 %	✓	
4	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		10 mg/kg	1.126	11.259 mg/kg	0.00113 %	✓	
5	lead { lead compounds with the exception of those specified elsewhere in this Annex }	082-001-00-6			1	19.5 mg/kg		19.5 mg/kg	0.00195 %	✓	
6	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.5 mg/kg	1.353	<0.677 mg/kg	<0.0000677 %		<**LOD**
7	nickel { nickel dihydroxide }	028-008-00-X	235-008-5 [1] 234-348-1 [2]	12054-48-7 [1] 11113-74-9 [2]		17.2 mg/kg	1.579	27.167 mg/kg	0.00272 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<**LOD**
9	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		43.7 mg/kg	2.469	107.908 mg/kg	0.0108 %	✓	
10	boron { boron tribromide/trichloride/trifluoride (combined) }			10294-33-4, 10294-34-5, 7637-07-2		0.8 mg/kg	13.43	10.744 mg/kg	0.00107 %	✓	
11	pH			PH		7.9 pH		7.9 pH	7.9 pH		
12	phenol	604-001-00-2	203-632-7	108-95-2		<1 mg/kg		<1 mg/kg	<0.0001 %		<**LOD**
13	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		CLP index number	EC Number	CAS Number									
14		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-917-1	208-96-8									
15		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-469-6	83-32-9									
16		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-695-5	86-73-7									
17		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			201-581-5	85-01-8									
18		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
19		fluoranthene				0.2	mg/kg		0.2	mg/kg	0.00002 %	✓	
			205-912-4	206-44-0									
20		pyrene				0.2	mg/kg		0.2	mg/kg	0.00002 %	✓	
			204-927-3	129-00-0									
21		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
22		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
23		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
24		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
25		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
26		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
27		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
28		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
										Total:	0.0242 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non CLP determinands

chromium(III) oxide (EC Number: 215-160-9, CAS Number: 1308-38-9)

Conversion factor: 1.462
Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Repr. 1B H360FD , Skin Sens. 1 H317 , Resp. Sens. 1 H334 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302 , Acute Tox. 4 H332

lead compounds with the exception of those specified elsewhere in this Annex

CLP index number: 082-001-00-6
Description/Comments: Least-worst case: Lead REACH Consortium considers some lead compounds Carcinogenic category 2B
Data source: Regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures. (CLP)
Additional Hazard Statement(s): Carc. 2 H351
Reason for additional Hazards Statement(s)/Risk Phrase(s):
03 Jun 2015 - Carc. 2 H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

boron tribromide/trichloride/trifluoride (combined) (CAS Number: 10294-33-4, 10294-34-5, 7637-07-2)

Conversion factor: 13.43
Description/Comments: Combines the hazard statements and the average of the conversion factors for boron tribromide, boron trichloride and boron trifluoride
Data source: N/A
Data source date: 06 Aug 2015
Hazard Statements: Skin Corr. 1B H314 , Skin Corr. 1A H314 , Acute Tox. 2 H300 , Acute Tox. 2 H330 , EUH014

pH (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 1 H310 , Acute Tox. 1 H330 , Acute Tox. 4 H302

acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 2 H411 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Skin Irrit. 2 H315 , Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Carc. 2 H351 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Acute Tox. 4 H302

anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Skin Sens. 1 H317 , Skin Irrit. 2 H315 , STOT SE 3 H335 , Eye Irrit. 2 H319

- **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , Acute Tox. 4 H302

- **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400 , STOT SE 3 H335 , Eye Irrit. 2 H319 , Skin Irrit. 2 H315

- **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2 H351

- **benzo[ghi]perylene** (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Chronic 1 H410 , Aquatic Acute 1 H400

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Worst case species based on risk phrases

cadmium {cadmium sulfide}

Worst case species based on risk phrases

chromium {chromium(III) oxide}

Total Chromium excluding Chromium VI

copper {dicopper oxide; copper (I) oxide}

Most likely common species

lead {lead compounds with the exception of those specified elsewhere in this Annex}

Chromium VI below detection

mercury {mercury dichloride}

Worst case species based on risk phrases

nickel {nickel dihydroxide}

Worst case species based on risk phrases

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

Worst case species based on risk phrases

zinc {zinc sulphate}

Chromium VI below detection levels so insufficient to form compound zinc chromate

boron {boron tribromide/trichloride/trifluoride (combined)}

Worst case species based on risk phrases

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.1, May 2018
HazWasteOnline Classification Engine Version: 2019.44.3788.7742 (13 Feb 2019)
HazWasteOnline Database: 2019.44.3788.7742 (13 Feb 2019)

This classification utilises the following guidance and legislation:
WM3 v1.1 - Waste Classification - 1st Edition v1.1 - May 2018
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Wastes 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
POPs Regulation 2004 - Regulation 850/2004/EC of 29 April 2004
1st ATP to POPs Regulation - Regulation 756/2010/EU of 24 August 2010
2nd ATP to POPs Regulation - Regulation 757/2010/EU of 24 August 2010

Appendix H – Infiltration Test Results

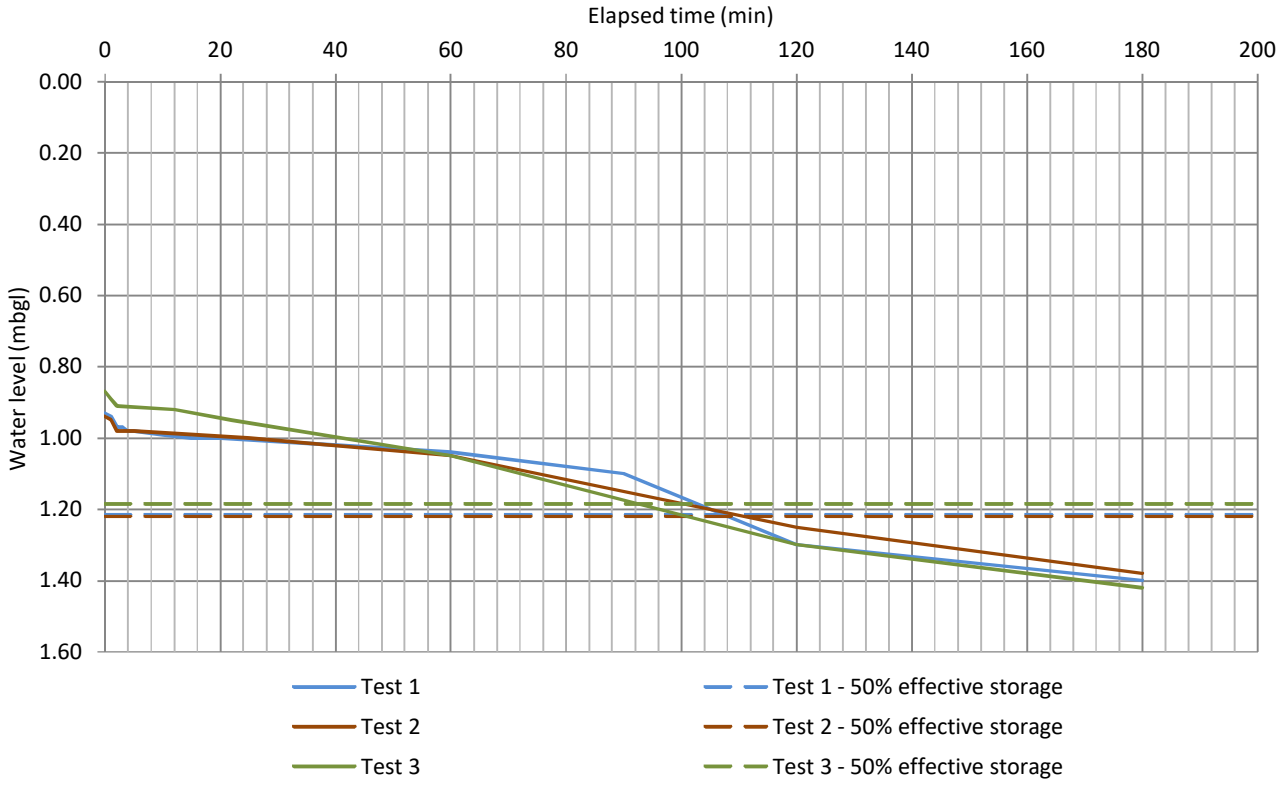
Infiltration Test Results in Accordance with BRE Digest 365:2016

Project Name:	Camp Road	Project ID	CAM2362
Client:	Pye Homes		
Hole ID:	TP101	Test Date: 23-24/01/19	Logged: NC / Checked: JF

Test 1		Test 2		Test 3	
Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
0	0.93	0	0.94	0	0.87
1	0.94	1	0.95	1	0.89
2	0.97	2	0.98	2	0.91
3	0.97	5	0.98	12	0.92
4	0.98	25	1.00	22	0.95
5	0.98	60	1.05	60	1.05
10	0.99	120	1.25	120	1.30
15	1.00	180	1.38	180	1.42
20	1.00				
60	1.04				
90	1.10				
120	1.30				
180	1.40				

Soakaway Dimensions:	
Length (m)	2.40
Width (m)	0.60
Test 1 - Depth (m)	1.50
Test 2 - Depth (m)	1.50
Test 3 - Depth (m)	1.50

	Test 1	Test 2	Test 3
Depth to water at start of test (m)	0.93	0.94	0.87
Depth to water at end of test (m)	1.40	1.38	1.42
Total head drop (m)	0.47	0.44	0.55
Depth to water at 75% level (m)	1.07	1.08	1.03
Depth to water at 50% level (m)	1.22	1.22	1.19
Depth to water at 25% level (m)	1.36	1.36	1.34
Base area of pit (m^2)	1.44	1.44	1.44
Computed Internal Surface Area A_{p50} (m^2)	3.15	3.12	3.33
Effective Storage Volume V_{p75-25} (m^3)	0.41	0.40	0.45
Elapsed time at 75% level (mins)	76	69	51
Elapsed time at 25% level (mins)	155	171	141
50% discharge in 24 Hours	Yes	Yes	Yes
Soil infiltration rate *f* (m/s)	2.77E-05	2.12E-05	2.53E-05
Design soil infiltration rate *f* (m/s)		**2.12E-05**	



Remarks:

Where highlighted in red, calculations have been inferred from the graph.

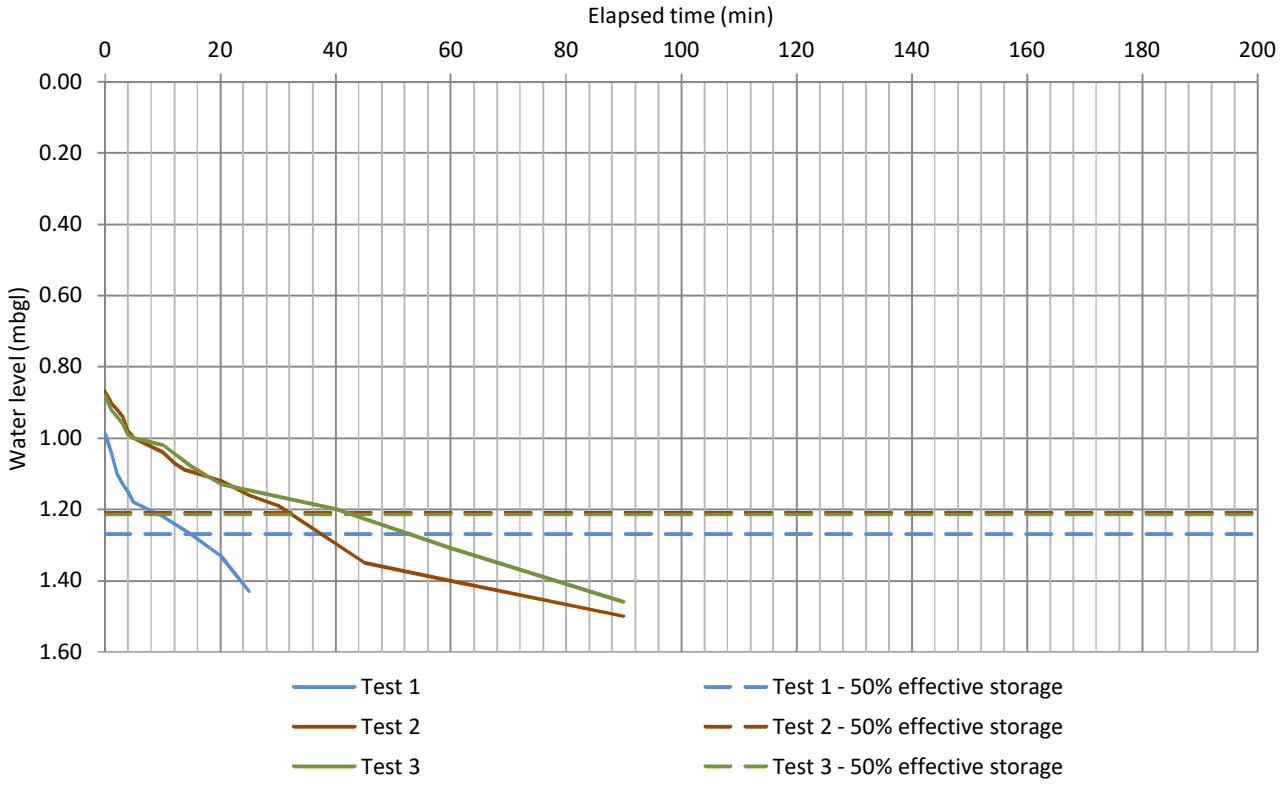
Infiltration Test Results in Accordance with BRE Digest 365:2016

Project Name:	Camp Road	Project ID	CAM2362
Client:	Pye Homes		
Hole ID:	TP103	Test Date: 23-24/01/19	Logged: NC / Checked: JF

Test 1		Test 2		Test 3	
Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
0	0.99	0	0.87	0	0.88
1	1.04	1	0.90	1	0.92
2	1.10	2	0.92	2	0.94
3	1.13	3	0.94	3	0.96
4	1.15	4	0.98	4	0.99
5	1.18	5	1.00	5	1.00
10	1.22	10	1.04	10	1.02
15	1.27	12	1.07	15	1.08
20	1.33	14	1.09	20	1.13
25	1.43	20	1.12	40	1.20
		25	1.16	60	1.31
		30	1.19	90	1.46
		45	1.35		
		60	1.40		
		90	1.50		

Soakaway Dimensions:	
Length (m)	2.50
Width (m)	0.60
Test 1 - Depth (m)	1.55
Test 2 - Depth (m)	1.55
Test 3 - Depth (m)	1.55

	Test 1	Test 2	Test 3
Depth to water at start of test (m)	0.99	0.87	0.88
Depth to water at end of test (m)	1.43	1.50	1.46
Total head drop (m)	0.44	0.63	0.58
Depth to water at 75% level (m)	1.13	1.04	1.05
Depth to water at 50% level (m)	1.27	1.21	1.22
Depth to water at 25% level (m)	1.41	1.38	1.38
Base area of pit (m^2)	1.50	1.50	1.50
Computed Internal Surface Area A_{p50} (m^2)	3.24	3.61	3.58
Effective Storage Volume V_{p75-25} (m^3)	0.42	0.51	0.50
Elapsed time at 75% level (mins)	3	10	12
Elapsed time at 25% level (mins)	24	54	75
50% discharge in 24 Hours	Yes	Yes	Yes
Soil infiltration rate *f* (m/s)	1.03E-04	5.35E-05	3.76E-05
Design soil infiltration rate *f* (m/s)	**3.76E-05**		



Remarks:

Where highlighted in red, calculations have been inferred from the graph.

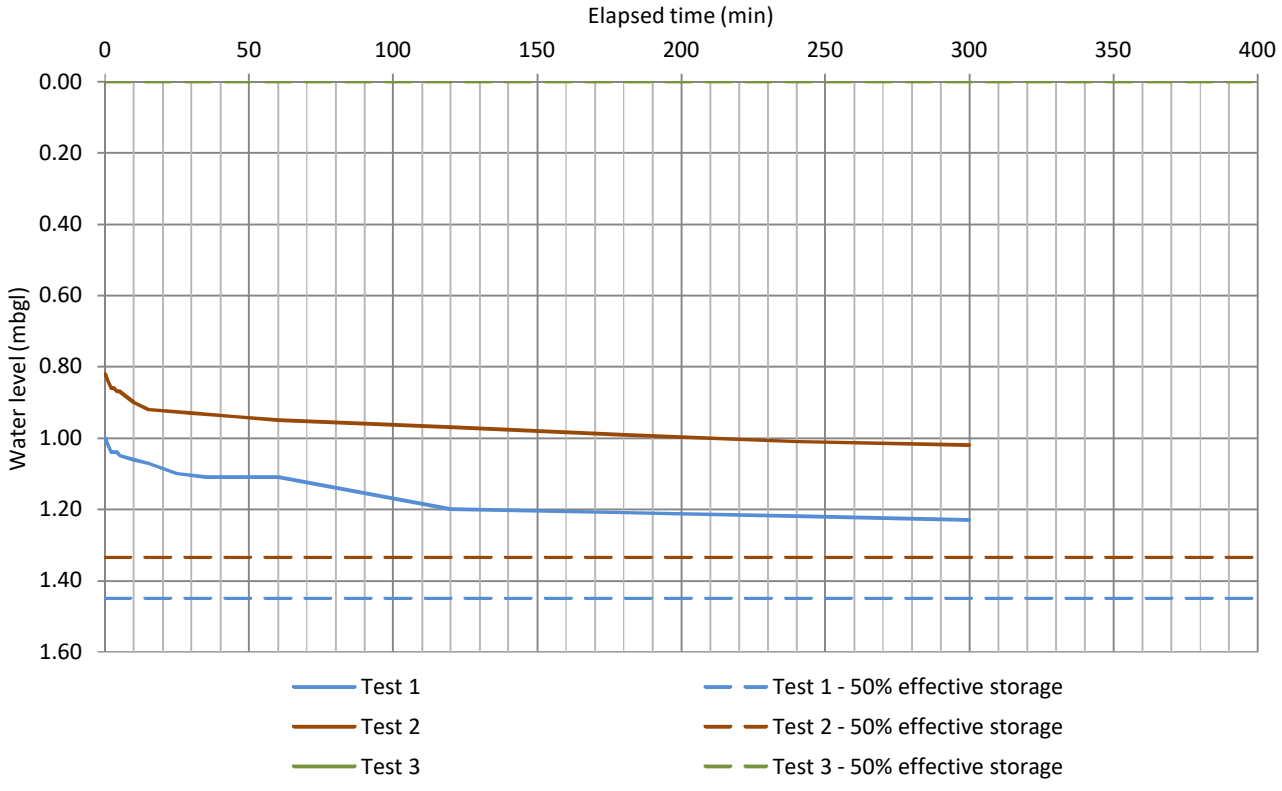
Infiltration Test Results in Accordance with BRE Digest 365:2016

Project Name:	Camp Road			Project ID	CAM2362
Client:	Pye Homes				
Hole ID:	TP104	Test Date:	23-24/01/19	Logged:	NC	Checked:	JF

Test 1		Test 2		Test 3	
Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
0	1.00	0	0.82		
1	1.02	1	0.84		
2	1.04	2	0.86		
3	1.04	3	0.86		
4	1.04	4	0.87		
5	1.05	5	0.87		
10	1.06	10	0.90		
15	1.07	15	0.92		
25	1.10	30	0.93		
35	1.11	45	0.94		
60	1.11	60	0.95		
120	1.20	120	0.97		
180	1.21	180	0.99		
240	1.22	240	1.01		
300	1.23	300	1.02		

Soakaway Dimensions:	
Length (m)	2.40
Width (m)	0.50
Test 1 - Depth (m)	1.90
Test 2 - Depth (m)	1.85
Test 3 - Depth (m)	

	Test 1	Test 2	Test 3
Depth to water at start of test (m)	1.00	0.82	
Depth to water at end of test (m)	1.23	1.02	
Total head drop (m)	0.23	0.20	
Depth to water at 75% level (m)	1.23	1.08	
Depth to water at 50% level (m)	1.45	1.34	
Depth to water at 25% level (m)	1.68	1.59	
Base area of pit (m^2)	1.20	1.20	
Computed Internal Surface Area A_{p50} (m^2)	3.81	4.19	
Effective Storage Volume V_{p75-25} (m^3)	0.54	0.62	
Elapsed time at 75% level (mins)	270	386	
Elapsed time at 25% level (mins)	934	1251	
50% discharge in 24 Hours	Yes	Yes	
Soil infiltration rate *f* (m/s)	3.56E-06	2.84E-06	
Design soil infiltration rate *f* (m/s)	**n/a (not BRE365 compliant)**		



Remarks:

Where highlighted in red, calculations have been inferred from the graph.

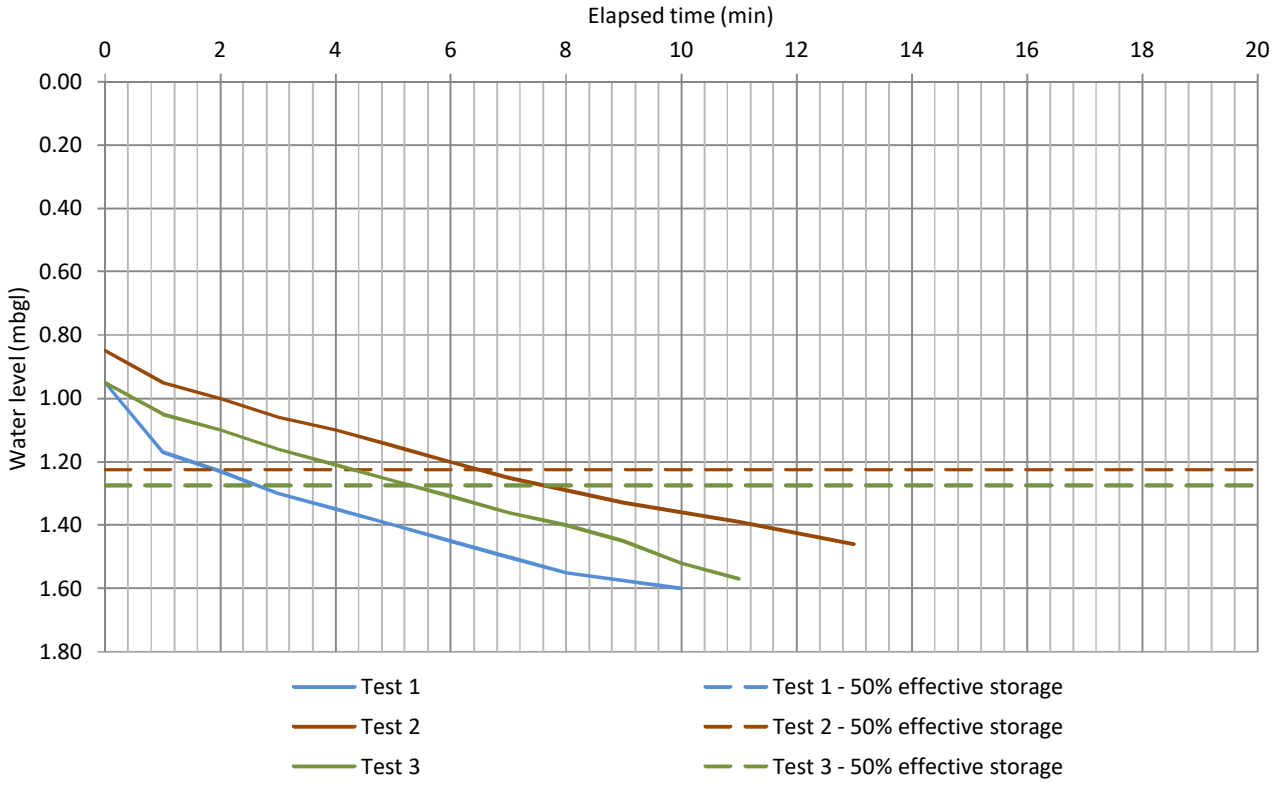
Infiltration Test Results in Accordance with BRE Digest 365:2016

Project Name:	Camp Road	Project ID	CAM2362
Client:	Pye Homes		
Hole ID:	TP106	Test Date: 23-24/01/19	Logged: NC / Checked: JF

Test 1		Test 2		Test 3	
Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
0	0.95	0	0.85	0	0.95
1	1.17	1	0.95	1	1.05
2	1.23	2	1.00	2	1.10
3	1.30	3	1.06	3	1.16
4	1.35	4	1.10	4	1.21
5	1.40	5	1.15	5	1.26
6	1.45	6	1.20	6	1.31
7	1.50	7	1.25	7	1.36
8	1.55	9	1.33	8	1.40
10	1.60	11	1.39	9	1.45
		13	1.46	10	1.52
				11	1.57

Soakaway Dimensions:	
Length (m)	2.40
Width (m)	0.48
Test 1 - Depth (m)	1.60
Test 2 - Depth (m)	1.60
Test 3 - Depth (m)	1.60

	Test 1	Test 2	Test 3
Depth to water at start of test (m)	0.95	0.85	0.95
Depth to water at end of test (m)	1.60	1.46	1.57
Total head drop (m)	0.65	0.61	0.62
Depth to water at 75% level (m)	1.11	1.04	1.11
Depth to water at 50% level (m)	1.28	1.23	1.28
Depth to water at 25% level (m)	1.44	1.41	1.44
Base area of pit (m^2)	1.15	1.15	1.15
Computed Internal Surface Area A_{p50} (m^2)	3.02	3.31	3.02
Effective Storage Volume V_{p75-25} (m^3)	0.37	0.43	0.37
Elapsed time at 75% level (mins)	1	3	2
Elapsed time at 25% level (mins)	6	12	9
50% discharge in 24 Hours	Yes	Yes	Yes
Soil infiltration rate *f* (m/s)	4.12E-04	2.41E-04	3.15E-04
Design soil infiltration rate *f* (m/s)	**2.41E-04**		



Remarks:

Where highlighted in red, calculations have been inferred from the graph.

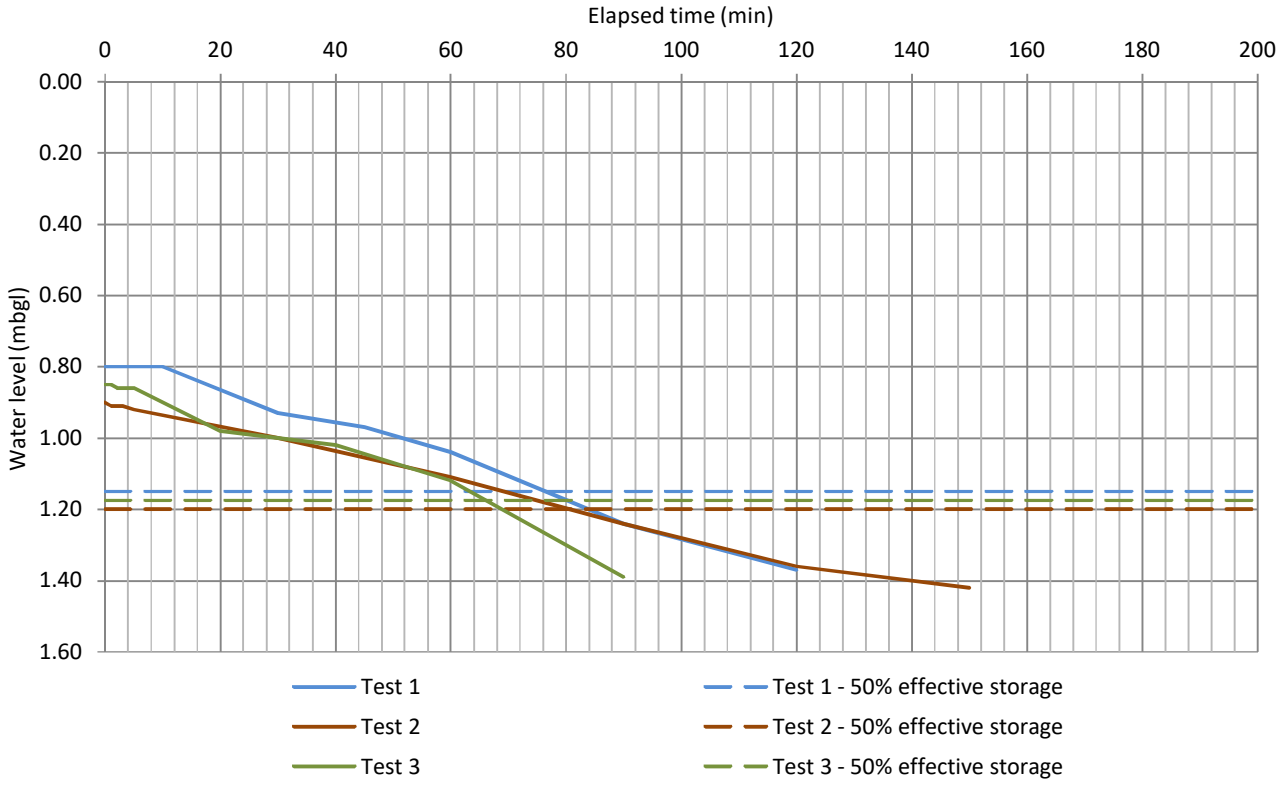
Infiltration Test Results in Accordance with BRE Digest 365:2016

Project Name:	Camp Road			Project ID	CAM2362
Client:	Pye Homes				
Hole ID:	TP111	Test Date:	23-24/01/19	Logged:	NC	Checked:	JF

Test 1		Test 2		Test 3	
Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
0	0.80	0	0.90	0	0.85
1	0.80	1	0.91	1	0.85
2	0.80	2	0.91	2	0.86
3	0.80	3	0.91	3	0.86
4	0.80	5	0.92	4	0.86
5	0.80	30	1.00	5	0.86
10	0.80	60	1.11	20	0.98
30	0.93	90	1.24	40	1.02
45	0.97	120	1.36	60	1.12
60	1.04	150	1.42	90	1.39
90	1.24				
120	1.37				

Soakaway Dimensions:	
Length (m)	2.00
Width (m)	0.50
Test 1 - Depth (m)	1.50
Test 2 - Depth (m)	1.50
Test 3 - Depth (m)	1.50

	Test 1	Test 2	Test 3
Depth to water at start of test (m)	0.80	0.90	0.85
Depth to water at end of test (m)	1.37	1.42	1.39
Total head drop (m)	0.57	0.52	0.54
Depth to water at 75% level (m)	0.98	1.05	1.01
Depth to water at 50% level (m)	1.15	1.20	1.18
Depth to water at 25% level (m)	1.33	1.35	1.34
Base area of pit (m^2)	1.00	1.00	1.00
Computed Internal Surface Area A_{p50} (m^2)	2.75	2.50	2.63
Effective Storage Volume V_{p75-25} (m^3)	0.35	0.30	0.33
Elapsed time at 75% level (mins)	46	44	36
Elapsed time at 25% level (mins)	110	118	84
50% discharge in 24 Hours	Yes	Yes	Yes
Soil infiltration rate *f* (m/s)	3.34E-05	2.71E-05	4.31E-05
Design soil infiltration rate *f* (m/s)	**2.71E-05**		



Remarks:

Where highlighted in red, calculations have been inferred from the graph.

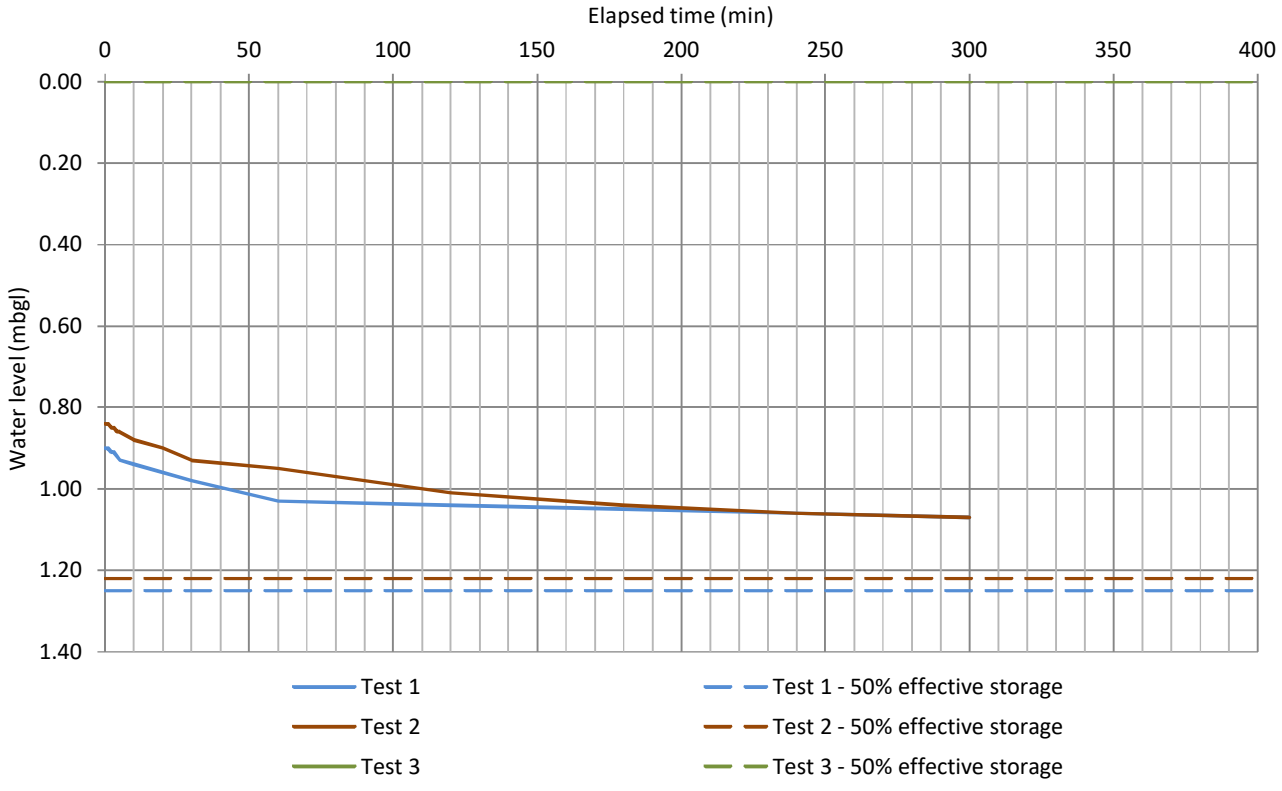
Infiltration Test Results in Accordance with BRE Digest 365:2016

Project Name:	Camp Road			Project ID	CAM2362
Client:	Pye Homes				
Hole ID:	TP112	Test Date:	23-24/01/19	Logged:	NC	Checked:	JF

Test 1		Test 2		Test 3	
Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
0	0.90	0	0.84		
1	0.90	1	0.84		
2	0.91	2	0.85		
3	0.91	3	0.85		
4	0.92	4	0.86		
5	0.93	5	0.86		
10	0.94	10	0.88		
30	0.98	20	0.90		
60	1.03	30	0.93		
120	1.04	60	0.95		
180	1.05	120	1.01		
240	1.06	180	1.04		
300	1.07	240	1.06		
		300	1.07		

Soakaway Dimensions:	
Length (m)	2.00
Width (m)	0.60
Test 1 - Depth (m)	1.60
Test 2 - Depth (m)	1.60
Test 3 - Depth (m)	

	Test 1	Test 2	Test 3
Depth to water at start of test (m)	0.90	0.84	
Depth to water at end of test (m)	1.07	1.07	
Total head drop (m)	0.17	0.23	
Depth to water at 75% level (m)	1.08	1.03	
Depth to water at 50% level (m)	1.25	1.22	
Depth to water at 25% level (m)	1.43	1.41	
Base area of pit (m^2)	1.20	1.20	
Computed Internal Surface Area A_{p50} (m^2)	3.02	3.18	
Effective Storage Volume V_{p75-25} (m^3)	0.42	0.46	
Elapsed time at 75% level (mins)	309	160	
Elapsed time at 25% level (mins)	926	743	
50% discharge in 24 Hours	Yes	Yes	
Soil infiltration rate *f* (m/s)	3.75E-06	4.10E-06	
Design soil infiltration rate *f* (m/s)	**n/a (not BRE365 compliant)**		



Remarks:

Where highlighted in red, calculations have been inferred from the graph.

Phase I - II
Geo-Environmental Site Assessment

Land at Letchmere Farm, Camp Road, Upper Heyford, OX25 5LS

Prepared for:
Edward Smith
Norgate House
Tealgate
Charnham Park
Hungerford
Berkshire
RG17 0YT

January 2022

Omnia ref: A11754/1.0 Draft

Quality Assurance

Project Number: A11754

January 2022

Geo-Environmental

Phase I-II Geo-Environmental Assessment

Prepared by:	T.Holloway	**Date:**	21/01/22	**Signature:**
Checked by:	J.Cook	**Date:**	21/01/22	**Signature:**
Authorised by:	A.King	**Date:**	03/02/22	**Signature:**

Geotechnical

Geotechnical Ref:

Prepared by:	T.Holloway	**Date:**	21/01/22	**Signature:**
Checked by:	J.Cook	**Date:**	21/01/22	**Signature:**
Authorised by:	A.King	**Date:**	03/02/22	**Signature:**

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9 GROUND AND GROUNDWATER CONDITIONS

This section covers both the Phase 1 and Phase 2 areas and summarises the findings of the site investigation summarised in Section 7.

9.1 Summary of Ground Conditions

Geology encountered within the Phase 1 and Phase 2 areas of site generally corresponds with that shown on BGS Mapping and the findings have been outlined below.

9.1.1 Made Ground

Made Ground was encountered in HP101 and HP102, in the Phase 1 area, to a maximum depth of 0.60m bgl. Made Ground was encountered in areas where bonfires had previously been lit had consisted of firm brown slightly sandy CLAY with frequent ash and rare medium sand sized brick fragments. No Made Ground was encountered within the previous T&P report locations TP101-115 (ref: 2019Mar_CAM2362_DSG).

Made Ground was not encountered in the Phase 2 area.

9.1.2 Topsoil

Topsoil was encountered in all intrusive locations across the Phase 1 (WS107-114) and Phase 2 (WS101-106, SA101-104, TP101-104) area, with the exception of HP101 and HP102 to a maximum depth of 0.80m bgl (WS105). It was generally encountered as soft brown slightly sandy (slightly gravelly) CLAY with frequent rootlets. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse limestone.

Topsoil was encountered within all the previous T&P report locations (TP101-115) (ref: 2019Mar_CAM2362_DSG), comprising a firm, gravelly CLAY with a typical thickness of 0.20-0.50m.

9.1.3 Superficial Deposits

Superficial deposits were not encountered in the Phase 1 or Phase 2 areas within the current phase or the previous phases of investigation undertaken by T&P. This confirms published BGS mapping.

9.1.4 Bedrock Geology

9.1.4.1 White Limestone Formation

Bedrock geology attributed to the White Limestone Formation were encountered across the site at depths ranging from 0.30-2.0mbgl, across all intrusive locations. The bedrock generally comprised of brown and light grey subrounded limestone COBBLES with a firm orangish brown slightly sandy slightly gravelly CLAY infill. Gravel is subangular to subrounded fine to coarse limestone. Locally it also consisted of orangeish, yellowish, brownish sandy gravelly CLAY and light yellow slightly sandy clayey subangular to subrounded fine to coarse GRAVEL. Gravel is subangular to subrounded fine to coarse limestone. Clays were locally noted as being friable (WS112).

Bedrock geology was encountered within all the previous T&P report locations (TP101-115) (ref: 2019Mar_CAM2362_DSG) underlying the topsoil comprising a firm to stiff, gravelly CLAY with gravels encountered from 0.60 to 1.55m bgl. Competent limestone bedrock was noted at depths ranging 1.50-2.10m bgl, which prevented further excavation.

A summary of encountered limestone rockhead, where borehole refusals were encountered due to slow or no progression, is summarised in the table below.

Table 9-1 Summary of shallow rock encountered

Phase	Locations	Depth (m bgl)
Omnia GI		
1	WS101	1.80
	WS102	1.80
	WS103	0.45
	WS104	1.75
	WS105	2.00
	WS106	1.60
2	WS107	1.50
	WS108	2.00
	WS109	1.75
	WS110	1.80
	WS111	1.00
	WS112	1.65
	WS113	1.30
	WS114	1.20
	WS115	1.80
	SA102	1.60
	SA103	1.70
	SA104	1.90
	TP101	1.35
	TP102	1.60
	TP103	1.90
	TP104	1.60
T&P Regen GI		
1	TP101	1.50
	TP102	1.70
	T103	1.55
	TP104	1.90
	TP105	1.75
	TP106	1.60
	TP107	2.05
	TP108	1.50
	TP109	1.80
	TP110	1.80
	TP111	1.60
	TP112	1.80
	TP113	2.10
	TP114	1.80
	TP115	1.60

9.1.5 Groundwater Conditions

Groundwater was encountered in a number of locations during site investigation and the T&P site investigation, as summarised in Table 9-2.

Table 9-2 Summary of Groundwater Conditions

Location	Depth (m bgl)	Strata	Type of Water Strike
Phase 1 area (Omnia GI)			
WS107	1.45	Sand	Seepage
WS108	1.50	Clay	Seepage
WS109	1.50 rising to 0.90	Limestone	Strike
WS110	1.75 rising to1.50	Clay	Strike
WS115	1.75	Limestone	Strike
Phase 2 area (Omnia GI)			
WS105	1.80 rising to 0.90	Clay	Strike
WS106	1.10	Clay	Strike
SA101	1.80 rising to 1.10 after 20 minutes	Clay	Strike
SA102	1.60	Clay	Seepage
SA103	1.70	Clay	Seepage
SA104	1.80	Limestone cobbles	Seepage
TP103 (SA)	1.80	Clay	Strike
TP104	1.60 rising to 1.0	Clay	Strike
TP109	1.20	Clay	Seepage
Phase 1 area (T&P GI)			
TP102	1.60 rising to 1.40	Gravelly Clay	Strike
TP105	1.75 rising to 1.60	Silty Clay	Strike
TP109	1.80 rising to 1.50	Silty Clay	Strike
TP110	1.80 rising to 1.60	Silty Clay	Strike

Groundwater was generally encountered in the east of the site in proximity to a stream running down the east boundary of the site. It is therefore considered likely that shallow groundwater in the eastern area of the site is in hydraulic continuity with the surface watercourse. The presence of shallow groundwater may impact drainage design and it is recommended that consultation with a drainage engineer is undertaken.

The influence of ground water is further discussed in Section 12.5.

9.2 Laboratory Classification Analysis

Soil classification testing, including Atterberg Limits, Moisture Content, Particle Size Distribution and pH and Sulphate results are summarised in Table 9-3 – Table 9-7 with analysis certificates presented in Appendix VII and Appendix VIII.

9.2.1 Soil Plasticity

Five (5no.) samples, from the Phase 2 area, taken from cohesive deposits across the site were submitted to the laboratory for laboratory plasticity analysis. The results of this analysis have been summarised in Table 9-3 below.

Table 9-3 Summary of Soil Plasticity

Location	Depth (m bgl)	Geology	Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Percentage passing 425µm sieve (%)	Modified Plasticity Index	Plasticity	Volume Change Potential
Phase 2 area: Omnia Ground Investigation, A11754/1.0										
WS101	1.20-1.40	Yellowish Brown CLAY	26	64	22	42	100	42	High	High
WS101	1.50-1.70	Yellowish brown very sandy CLAY	12	30	16	14	100	14	Low	Low
WS102	1.50-1.60	Yellowish brown CLAY	29	74	27	47	100	47	Very High	High
WS104	0.70-1.00	Brown slightly gravelly very sandy CLAY	19	32	18	14	92	13	Low	Low
TP104	0.80-1.00	Cream colour gravelly sandy very clayey SILT	15	26	14	12	83	10	Low	Low
Phase 1 area: T&P Ground investigation, 2019Mar_CAM2362_DSGI										
TP102	0.80-1.00	Yellow brown and light grey very clayey very sandy GRAVEL	10	29	16	13	39	5	Low	Negligible
TP102	1.20-1.40	Yellowish brown slightly gravelly slightly sandy silty CLAY	14	30	17	13	74	10	Low	Low
TP103	0.90-1.10	Yellowish brown slightly gravelly sandy CLAY	15	33	13	20	79	16	Low	Low
TP105	0.80-1.00	Yellowish brown slightly gravelly sandy CLAY	17	38	15	23	75	17	Medium	Low
TP105	1.50-1.70	Light grey and yellowish brown slightly gravelly	16	39	15	24	66	16	Medium	Low

APPENDIX D

Impermeable Catchments Plan

N

AREA WITH 10% URBAN CREEP = 374m²

PP1

AREA WITH 10% URBAN CREEP = 1955m²

AREA = 77m²

AREA WITH 10% URBAN CREEP = 219m²

AREA WITH 10% URBAN CREEP = 708m²

PP2

AREA WITH 10% URBAN CREEP = 928m²

PP - PARKING NORTHERN CATCHMENT

AREA WITH 10% URBAN CREEP = 541m²

AREA WITH 10% URBAN CREEP = 636m²

AREA WITH 10% URBAN CREEP = 274m²

AREA WITH 10% URBAN CREEP = 1205m²

AREA WITH 10% URBAN CREEP = 355m²

AREA WITH 10% URBAN CREEP = 312m²

AREA WITH 10% URBAN CREEP = 316m²

AREA WITH 10% URBAN CREEP = 1623m²

AREA WITH 10% URBAN CREEP = 554m²

AREA WITH 10% URBAN CREEP = 316m²

PP3

480m² x 1.6m DEEP

PP - PARKING SOUTHERN CATCHMENT

AREA WITH 10% URBAN CREEP = 438m²

AREA = 79m²

AREA = 81m²

AREA = 55m²

AREA WITH 10% URBAN CREEP = 406m²

AREA = 128m²

AREA = 262m²

AREA = 77m²

PP5

AREA WITH 10% URBAN CREEP = 899m²

AREA WITH 10% URBAN CREEP = 1478m²

AREA WITH 10% URBAN CREEP = 429m²

220m² x 1.6m DEEP

AREA WITH 10% URBAN CREEP = 1588m²

AREA = 252m²

AREA WITH 10% URBAN CREEP = 452m²

PP6

128m² x 0.4m DEEP

AREA = 248m²

AREA = 204m²

85m² x 1.2m DEEP

AREA WITH 10% URBAN CREEP = 1745m²

AREA = 262m²

AREA WITH 10% URBAN CREEP = 671m²

PP7

AREA WITH 10% URBAN CREEP = 640m²

PP8

AREA = 128m²

EXISTING 900mm Ø CULVERT (TBC)

INTERPOLATED CULVERT CONNECTION INVERT 'SOFFIT TO SOFFIT' 114.479m AOD (TBC)

LARSEN ROAD

CHARD CIRCLE

Sub Sta

Ponds

Track

Sewage Works

ETL

ETL

9.1m

15.8m

Scale 1 : 500

0 5 10 15 20 25 30 35 40 45 50m

NOTES

1. ALL DIMENSIONS SHOWN ON THIS DRAWING ARE IN METRES.
2. SITE LAYOUT HAS BEEN PROVIDED BY FOCUS DP, DRAWING REF. 0778-102. DATED 14.09.2023.

LEGEND

- PROPOSED SITE BOUNDARY
- PROPOSED DRY SWALE (EFFECTIVE DEPTH OF GRANULAR SUB-BASE 0.4m-0.8m)
- PROPOSED SURFACE WATER PIPEWORK AND MANHOLE
- PROPOSED FOUL WATER PIPEWORK AND MANHOLE
- PROPOSED PERMEABLE PAVING (EFFECTIVE DEPTH OF GRANULAR SUB-BASE 0.7m-0.9m)
- PROPOSED DIFFUSER UNIT
- PROPOSED FLOW CONTROL
- PROPOSED ATTENUATION TANK
- PROPOSED INFILTRATING PERMEABLE PAVING (EFFECTIVE DEPTH OF GRANULAR SUB-BASE 0.2m)
- AREA EXCLUDED FROM NETWORK

Rev	Amendments	Drn	Chk	App	Date
A	UPDATED TO SUIT REVISED SITE LAYOUT	HM	GG	GG	15.09.23

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W: www.odysseyconsult.co.uk

Job Title: LAND OFF CAMP ROAD, UPPER HEYFORD

Drawing Title: CATCHMENT PLAN

Client: DAVID WILSON HOMES SOUTHERN

Scale	Date	Designed
1:500 @A1	DEC 22	HM
Drawn	Checked	Approved
HM	NA	GG
Job No	Drawing No	Rev
22-192	22-192-108	A

P:\22-192 - Land off Camp Road, Upper Heyford\Tech\Acad\Drawings\100 Series\22-192-108 Catchment Plan.dwg

APPENDIX E

Exceedance Flow Route Drawing

N

NOTES

1. ALL DIMENSIONS SHOWN ON THIS DRAWING ARE IN METRES.
2. TOPOGRAPHICAL SURVEY IS BASED ON A DRAWING BY PYE HOMES. DATED JUNE 2019.
3. SITE LAYOUT HAS BEEN PROVIDED BY FOCUS DP, DRAWING REF. 0778-102. DATED 14.09.2023.

LEGEND

PROPOSED SITE BOUNDARY

PROPOSED EXCEEDANCE FLOW ROUTE

FOR PLANNING PURPOSES ONLY

Rev	Amendments	Drn	Chk	App	Date
A	UPDATED TO SUIT REVISED SITE LAYOUT	HM	GG	GG	15.09.23

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Job Title

LAND OFF CAMP ROAD, UPPER HEYFORD

Drawing Title

PRELIMINARY EXCEEDANCE FLOW ROUTES

Client

DAVID WILSON HOMES SOUTHERN

Scale	Date	Designed
1:500 @A1	AUG 23	HM
Drawn	**Checked**	**Approved**
HM	NA	RA
Job No	**Drawing No**	**Rev**
22-192	22-192-107	A

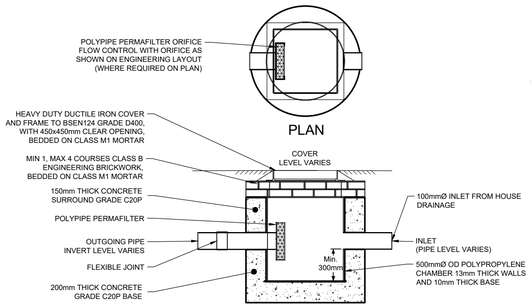
Scale 1 : 500

0 5 10 15 20 25 30 35 40 45 50m

P:\22-192 - Land off Camp Road, Upper Heyford\Tech\Acad\Drawings\100 Series\22-192-107 Exceedance Flow Routes.dwg

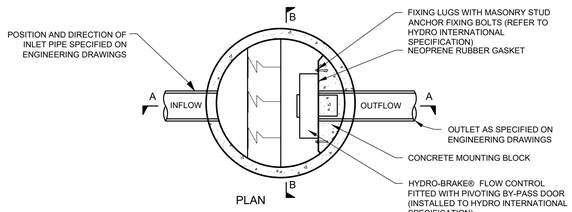
APPENDIX F

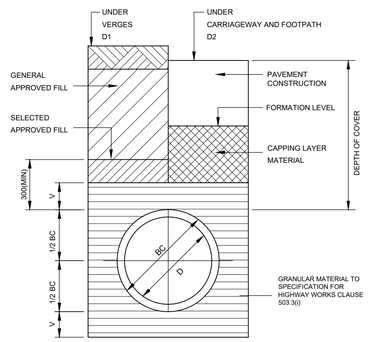
Standard SuDS Details



POLYPIPE CATCHPIT INSPECTION CHAMBER
INCORPORATING FLOW CONTROL AND DEBRIS DEVICE
(OR SIMILAR APPROVED)

TYPICAL HYDRO-BRAKE FLOW CONTROL CHAMBER DETAIL
(INSTALLED TO MANUFACTURERS RECOMMENDATIONS)



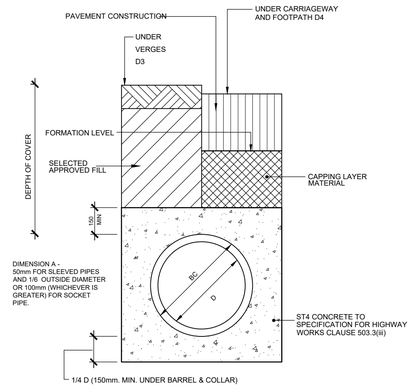


IN UNIFORM SOILS - V = 1/6 BC (150mm. MIN.UNDER BARREL & COLLAR)
IN MIXED SOILS CONTAINING IRREGULAR HARD SPOTS - V = 1/4 BC (200mm. MIN)

DESIGN D1 (UNDER VERGES - >900 COVER)

DESIGN D2 (UNDER CARRIAGEWAYS - >1200 COVER)

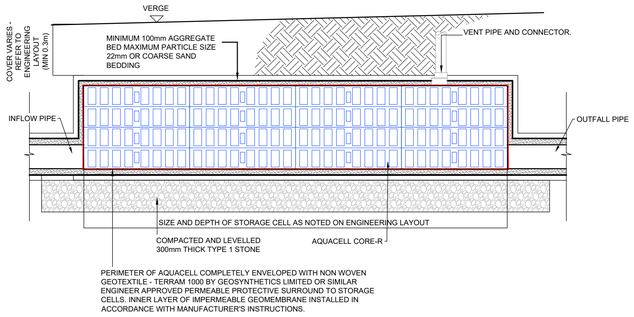
TYPICAL BEDDING DETAIL - CLASS 'S'



DESIGN D3 (UNDER VERGES - <900 COVER)

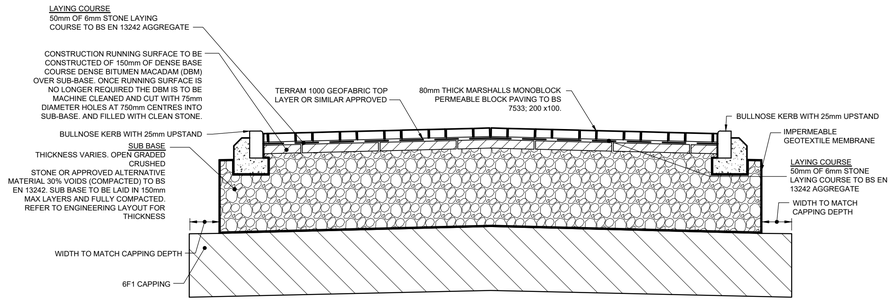
DESIGN D4 (UNDER CARRIAGEWAYS - <1200 COVER)

TYPICAL BEDDING DETAIL - CLASS 'Z'

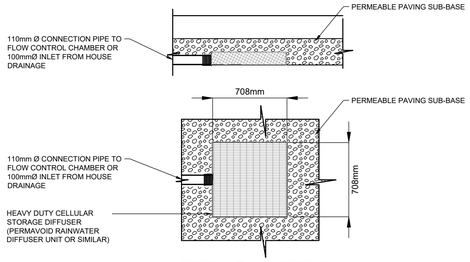


PERIMETER OF AQUACELL COMPLETELY ENVELOPED WITH NON WOVEN GEOTEXTILE - TERRAM 1000 BY GEOSYNTHETICS LIMITED OR SIMILAR ENGINEER APPROVED PERMEABLE PROTECTIVE SURROUND TO STORAGE CELLS. INNER LAYER OF IMPERMEABLE GEOMEMBRANE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

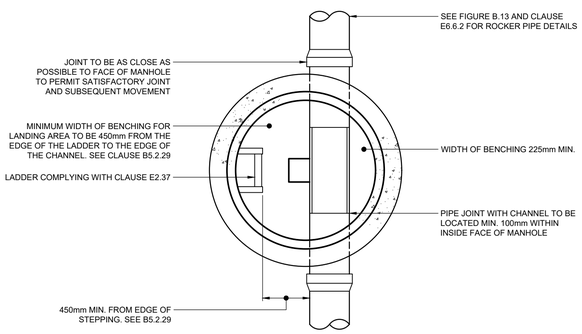
TYPICAL ATTENUATION TANK STORAGE DETAIL



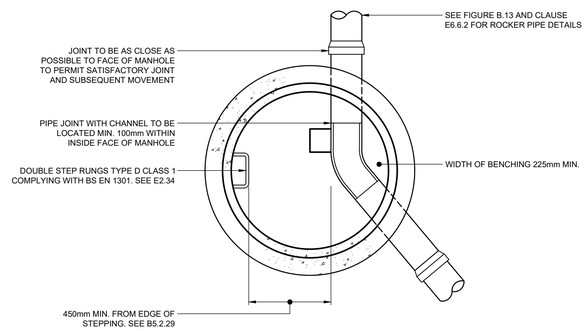
TYPICAL SECTION THROUGH PERMEABLE COURTYARDS AND CARRIAGEWAY
(FULL DEPTH)



TYPICAL PLAN & SECTION
THROUGH DIFFUSER DETAIL
PERMAVOID RAINWATER DIFFUSER
UNIT OR SIMILAR APPROVED



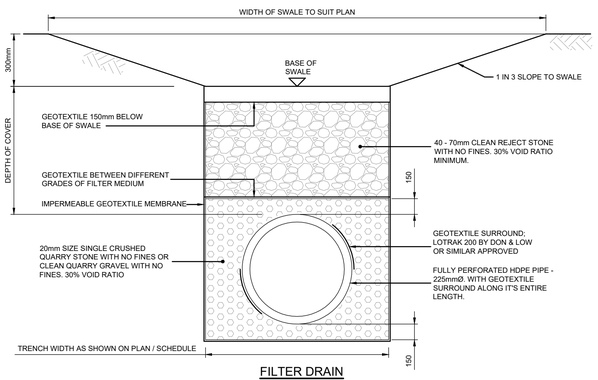
TYPICAL MANHOLE DETAIL CODE FOR ADOPTION
AND CONSTRUCTION GUIDANCE - TYPE A2
DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE 3m TO 6m WITH LADDER
ALTERNATIVE RIGID MATERIAL CONSTRUCTION WITH CONCRETE SURROUND



TYPICAL MANHOLE DETAIL CODE FOR ADOPTION AND
CONSTRUCTION GUIDANCE - TYPE B
DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE 1.5m TO 3m
ALTERNATIVE RIGID MATERIAL CONSTRUCTION WITH CONCRETE SURROUND

TABLE B1

NOMINAL INTERNAL DIAMETER OF LARGEST PIPE IN MANHOLE (mm)	MINIMUM NOMINAL INTERNAL DIMENSION OF MANHOLE (mm)
LESS THAN 375	1200
375 - 450	1350
500 - 700	1500
750 - 900	1800
GREATER THAN 900	PIPE DIAMETER + 900



FILTER DRAIN
ENHANCED SWALE DETAIL

NOTES

1. IF THERE IS ANY AMBIGUITY BETWEEN THE SPECIFICATION AND THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY INFORM THE ENGINEER.
2. DO NOT SCALE FROM THIS DRAWING. WORK FROM FIGURED DIMENSIONS ONLY.
3. ALL DIMENSIONS SHOWN ON THIS DRAWING ARE IN METRES.
4. ALL DIMENSIONS, LEVELS AND SURVEY GRID CO-ORDINATES ARE TO BE CHECKED ON SITE AND THE ENGINEER NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES PRIOR TO THE COMMENCEMENT OF THE WORKS.
5. NO DEVIATION FROM THE DETAILS SHOWN ON THIS DRAWING IS PERMITTED WITHOUT PERMISSION FROM THE ENGINEER.
6. FOR PLANNING PURPOSES ONLY. DESIGN SUBJECT TO CHANGE AT DETAILED DESIGN STAGE.

Rev	Amendments	Drn	Chk	App	Date

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Job Title
LAND OFF CAMP ROAD,
UPPER HEYFORD

Drawing Title
SUDS STANDARD DETAILS

Client
DAVID WILSON HOMES
SOUTHERN

Scale	Date	Designed
NTS @A1	DEC 22	JDW
Drawn	Checked	Approved
JDW	RM	RM
Job No	Drawing No	Rev
22-192	22-192/007	-

P:\22-192 - Land off Camp Road, Upper Heyford\Tech\Acad\Drawings\22-192-007 SuDS Standard Details.dwg