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geo environmental



Earthworks Specification: Parcel 2

Hook Lane, Pagham

Bellway Homes Ltd.

Report No. MAN.1668.019.GE.R.2.A

'Experience and expertise working in union'

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ARUN DISTRICT COUNCIL P/68/22/DOC

Contact Details:

Enzygo Geoenvironmental Ltd.
215 Ducie House
Ducie Street
Manchester
M1 2JW

[redacted]

Earthwork Specification: Parcel 2

Project:	MAN.1668.019.GE.R2
For:	Bellway Homes Ltd.
Status:	Revision A.
Date:	December 2021
Author:	Nigel Ramsumair - MGeo (Hons.), **Senior Geo-Environmental Engineer**
Reviewer:	David Frayne - BSc (Hons.), C.Geol, FGS, UKRoGEP, **Associate Director**

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1.0 INTRODUCTION

1.1 Background

1.1.1 Enzygo Geoenvironmental Limited [Enzygo] has been commissioned by Bellway Homes Limited [client] to prepare an Earthworks Specification for a proposed residential housing development at Hook Lane, Rose Green, Bognor Regis, PO21 3TE.

1.2 Site Description

1.2.1 The site currently consists of an open field with a culvert within the norther section of the site that borders the majority of Parcel one. The remainder of the site is bordered by hedgerow and mature trees with exception of a few residential dwelling's northwest of site. The site is accessible via Hook Lane and Sefter Road.

1.2.2 The site is divided into two parcels.

1.2.3 This report details requirements for parcel two only

1.3 Proposed Development

1.3.1 The proposed development comprises of residential housing and associated infrastructure. The site layout DWG is presented in Appendix A, with the site boundary highlighted in red. Levels are proposed to be raised to allow for overland flow of water across the site.

1.4 Objectives

1.4.1 The objectives of the study are to:

- Outline requirements for general testing, methods for handling, placement and compaction of imported soils or site won arisings for re-use when infilling and / or raising levels across the site.

1.5 Existing Reporting

1.5.1 The following existing report have been used to produce this report.

- Geo Environmental Group [GEG] 'Phase I Review & Phase II Geo-Environmental Assessment' for Land West of Hook Lane [Report Ref: GEG-19-623] dated, December 2019.

- Enzygo, Geo-environmental Letter Report, MAN.1668.019.L.001, dated October 2021.

1.6 Proposed Earthworks

1.6.1 As part of the development works site regrading will be undertaken. Topsoil will be stripped with soils imported and compacted to create a suitable development platform. This will comprise the 'bulk earthworks' fill. Earthworks drawings were not available at the time of writing this report.

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2.0 ENGINERED FILL

2.1 General

2.1.1 Engineered fill is defined as material which is specifically selected, placed and compacted to an appropriate specification so that it will exhibit the required engineering performance.

2.1.2 This document has been defined in accordance with the Manual of Contract Documents for Highway Works, (MCHW) Volume 1 Specification for Highway Works, Series 600: Earthworks.

2.1.3 Clause 601 of the MCHW requires the use of Acceptable Materials within permanent works. Fill shall be classified as follows:-

- Unsuitable fill (MCHW Volume 1 Classification - U1 and U2);
- General fill (MCHW Volume 1 Classification – 1 (A, B and C) and 2 (A, B, C and D); and
- Class 5A, Topsoil.

2.2 Unacceptable Material

2.2.1 Unsuitable fill (U1) shall comprise any material so designated by the Engineer and shall include:-

- Cohesive soils having a Liquid Limit in excess of 90% or Plasticity Index in excess of 65%.
- Chalk having a fine faction (<400μm) in excess of 10% at the borrow pit.
- Any material containing topsoil, wood, peat or lignite.
- Any material with a biodegradable content.
- Any materials containing scrap metal.
- Frozen or waterlogged substances.
- Material which, by virtue of its particle size or shape, cannot be properly and effectively compacted (e.g. oversize material, gravels which are tabular and some slate wastes).
- Expansive steel slag.

2.2.2 Unsuitable fill (U2) shall comprise any material so designated by the Engineer and shall include material defined as unsuitable by the Engineer because of its type or level of contamination.

2.2.3 The ground investigations undertaken to-date has not identified any visual or olfactory contamination of soils.

2.2.4 Therefore, it is considered that soils re-used as general fill material within the proposed bulk earthworks should not generally constitute Class U2 material.

2.2.5 The Contractors attention is drawn to paragraph 8.35 of the existing Assessment as this defines requirements for 'Unforeseen Contamination' which may be encountered during the site preparation works and bulk earthworks operation.

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2.2.6 Should Unforeseen Contamination be identified this material is to be sampled and tested as defined by the overseeing Engineer. This assessment may identify soils which cannot be retained on site and which will be designated as Class U2 by the Engineer.

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3.0 GROUND AND GROUNDWATER CONDITIONS

3.1 Summary of Ground and Groundwater Conditions

3.1.1 Ground and groundwater conditions have been assessed in the Enzygo Geo-environmental Letter Report [Ref: MAN.1668.019.L.001, dated October 2021] identifying the following strata:

Table 3.1 Ground and groundwater conditions

Strata	Summary Description	Thickness (m)
Made Ground	Brown clayey sandy Topsoil or reworked River Terrace deposits.	0.30 to 0.80.
River Terrace Deposits	soft to stiff orange-brown, brown or cream slightly silty sandy gravelly Clay; medium dense brown Sand & Gravel; medium dense grey and brown fine to medium Sand; and medium dense cream and brown clayey gravelly Sand.	2.40 to >3.30.
London Clay	firm to stiff brown and/or grey silty Clay.	>0.90.
Groundwater	Seepages.	1.70m to 3.50m bgl.

3.2 Evidence of Contamination

3.2.1 No evidence of significant contamination was encountered during the site works.

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4.0 CLASSIFICATION OF ENGINEERING MATERIALS

4.1 General

4.1.1 Soil samples recovered during the ground investigation included laboratory testing for the following analysis:

- Dry Density / Moisture Content Relationship Light Compaction Tests
- Atterberg Limits;
- Moisture contents: and
- Particle Size Distributions

4.2 Topsoil

4.2.1 Where site won Topsoil is proposed to be re-used or imported to site; soils must be deemed Class 5A-B material in accordance with Clause 618 of Series 600 of the MCHW. Requirements for handling and placement of imported Topsoil given in Series 600 of the MCHW

4.3 Imported General Fill

4.3.1 Where imported material is to be used as General Engineered Fill, the material is to be sampled and tested to confirm acceptability and classification.

4.3.2 An assessment of the suitability of soils for General Engineering Fill should be made in accordance with Series 600 of the MCHW. Results of the laboratory testing should be provided to the Engineer for approval prior to the materials being used.

4.3.3 Acceptable earthworks materials shall comprise Class 1A, 1B, 2A, 2B, 2C and 2D materials for use as general fill. Preferred material shall be class 1A, 2B, or 2C.

4.3.4 Control testing is to be performed by the Contractor throughout the fill and at such locations as necessary. Soils shall be controlled by in situ and laboratory testing as follows:-

Test	Frequency	Lower limit	Upper limit
Moisture Content	2 per 1000m^3	PL-4%	95% maximum dry density
Grading	1 per 1000m^3	Table 6/2	Table 6/2
Liquid and Plastic Limit	2 per 1000m^3	-	LL>90% & PI >65%
Shear Vane	2 per 1000m^3	40kN/m^2	150 kN/m^2
Compaction Test (2.5kg rammer method)	1 per 1000m^3	-	5% air voids.

4.3.5 Should soils fail the acceptability limits the Contractor shall provide the Employer with a methodology for rectifying the existing situation, including any post rectification testing.

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5.0 METHOD SPECIFICATION

5.1 General

5.1.1 Earthwork testing has been undertaken to provide information on which to define acceptable limit [compaction curves] ranges for re-use. Lab testing results are available within Appendix 2.

5.1.2 The following limits are given below for guidance on Class 1 and Class 2 Fill:

Test	Lower Limit	Upper Limit
Moisture Content	PL-4%	95% maximum dry density.
Grading	Table 6/2	Table 6/2
Liquid and Plastic Limit	-	LL>90% & PI >65%
Shear Vane	50kN/m^2	150 kN/m^2
Compaction Test (2.5kg rammer method)	-	5% air voids.

5.1.3 The Contractor is to identify the number and locations of tests appropriate to satisfy themselves of the suitability of soils. Should moisture content of the soils fall outside of the acceptability limits the Contractor shall provide proposal for treatment and management to the Employer.

5.1.4 There is a nett import of fill material to achieve the bulk earthworks fill. Imported general fill material is to be tested for the properties and general acceptability limits identified in the table above. The Contractor shall ensure that sufficient testing is undertaken to satisfy themselves of the materials prior to importation.

5.2 Compaction Method

5.2.1 It is considered that a Method Specification is used and based on the soil properties it is proposed that Method 1 of Table 6/4 is used. Details of the method compaction are included in Appendix A.

5.2.2 Fill shall be placed and compacted in the near-horizontal layers of the thickness required to achieve the specified end-product or in accordance with the approved method specification, and shall, as far as practicable, be brought up at a uniform rate so that all parts of the site or particular sections of the site reach finished (formation) level at the same time. No granular starter layer or geotextile separator is required at the base of the bulk earthworks fill.

5.2.3 The compaction plant selected, the number of passes made and the fill layer thickness and moisture content used shall meet the requirements of Method 1.

5.2.4 Where several different types of fill material are to be employed, they shall be deposited in such a way that all parts or particular sections of the site receive roughly equal amounts of a given material, in roughly the same sequence, thus ensuring a uniform distribution of fill types over the whole fill thickness.

5.2.5 The Contractor shall take all necessary steps to ensure that the fill is placed at the moisture content necessary to achieve the specified level of compaction and shall, where necessary, add water to or dry the fill, in order to obtain this value. Where it is necessary to add water, this shall be done as a fine spray and in such a way that there is time for the water to be absorbed into the fill before being rolled by the plant.

5.2.6 Cobbles, boulders, rock or waste fragments, the largest dimension of which is greater than two-thirds of the compacted layer thickness, shall not be incorporated into the fill.

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5.2.7 No fill shall be placed and left uncompacted at the end of the working day. Compacted fill shall be graded to falls to ensure free run-off of rainwater without ponding. Any ruts within the fill shall be cut back prior to placement of the next layer.

5.2.8 Compaction plant and compaction method shall be selected having regard to the proximity of existing trenches, excavations, retaining walls or other structures and all work shall be performed in such a way as to ensure that their existing stability is not impaired.

5.2.9 If weather conditions are such that the specified moisture content and density values cannot be achieved, the Contractor shall cease work, until such time as the fill can be placed and compacted to meet specification requirements.

5.2.10 If the results of control tests indicate that the fill is being placed and compacted in such a way that the desired level of compaction is not being achieved, the Contractor shall further compact or, if necessary, shall excavate the affected work and replace with new fill, compacted to meet the specification requirements.

5.2.11 If the results of control tests indicate that antecedent weather conditions (such as frost or heavy rain) have caused the deterioration of finished work such that the work no longer meets with the specification, the Contractor shall, at his or her own cost, take such steps as are necessary to bring the fill to specification requirements.

5.3 Preparation

5.3.1 The site shall be cleared and any vegetation and residual topsoil below areas of proposed fill in accordance with Series 200 of the MCHW. This should include:

- Excavation of existing topsoil and pavement areas for disposal off-site;
- Excavation of any tree root balls; and
- Any redundant services should be sealed off and grubbed out and replaced with suitable compacted engineered fill.

5.3.2 The area to be filled, whether an existing excavation or otherwise undisturbed ground, shall be graded to falls, and sump pumping or other suitable dewatering facilities shall be provided as necessary by the Contractor to keep the base of the excavation dry at all times.

5.3.3 Where the area to be filled comprises an existing excavation, the excavation shall be inspected and subsequently monitored by the Contractor, to ensure that there is no danger of collapse during the works with consequences for safety, for existing buildings or for other construction adjoining.

5.3.4 All soft and compressible soils or existing fill shall be removed and run to spoil in dumps provided by the Contractor and agreed by the Engineer. The works shall be accomplished in such a way that there is no undercutting of the sides of existing excavations.

5.3.5 The base of the area to be filled shall be proof rolled with a dead weight roller and all soft materials replaced with compacted fill. Where unsuitable material has been excavated, the underlying natural ground shall be compacted to the same specification as adopted for subsequent compaction works.

5.3.6 Where construction is required upon fill placed over sloping natural ground, and where fill thickness is less than 5m, the adjacent ground shall be benched, with the maximum vertical

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height of each bench not exceeding 500mm and providing that the fill depth below any building does not vary by more than 15%.

5.3.7 Where, because of the current method of working, previously engineered fill placed during the current works has to be benched as above to allow new fill to be placed adjacent to it, then the benches only require to be 0.5m high by 1.0m wide, even where these occur beneath plots providing that the fill is the same material throughout the plot.

5.3.8 Where a development contains landscaped areas on which no structures are proposed, the underlying fill shall be selected, placed and compacted in the same way as the engineered fill, unless otherwise directed by the Engineer. Where some relaxation of the specification for fill compaction underlying landscaped areas is permitted, there shall be a transition zone between the fill underlying the landscaped area and the fill underlying the structure. The dimensions of the transition zone will depend on the degree to which fill compaction was relaxed for the fill in the landscaped area. The location and extent of fill placed to a reduced standard of compaction shall be recorded.

5.3.9 The Contractor is reminded of the requirement to identify Unforeseen Contamination as described within the approved Contamination Assessment and Remedial Methodology. Should Unforeseen Contamination be encountered work should stop within this area until an Environmental Consultant has visit site to undertake further assessment.

5.4 Excavation

5.4.1 Following site preparation works soils will be excavated from the area of the reduced level excavation and also from substructure excavations. These materials maybe deposited directly within areas of proposed fill, or where necessary stockpiled until space becomes available. Separate stockpiles are to be used for different classes of fill.

5.4.2 Should soils be encountered which are deemed Unacceptable Class U2 or unsuitable due to soft consistent or high moisture content, these soils are to de stockpiled separately awaiting instruction from the Engineer.

5.4.3 No Class U1 material is expected. If materials are encountered which are considered to potentially be Class U1 Unacceptable Material, these shall be separately stockpiled awaiting instruction from the Engineer, or shall be discarded off-site where instructed by the Client.

5.5 Groundwater

5.5.1 The Contractor shall be responsible for management of groundwater and also ingress of any surface water into excavations.

5.5.2 Water arising from dewatering processes shall be discharged under a suitable Trade Effluent Discharge obtained by the Contractor.

5.6 Special Measures for Class U2 Material

5.6.1 Should unforeseen contamination be encountered an Environmental Consultant shall be called out to undertake an assessment. Subject to agreement by the Environmental Consultant Class U2 materials maybe excavated and stockpiled awaiting assessment.

5.6.2 Any Class U2 material temporarily stockpiled shall be placed on plastic sheeting and shall be covered.

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5.6.3 If the Environmental Consultant deems that stockpiling of Class U2 material poses too high a risk the material will either be temporarily covered on site awaiting classification or be discarded off site. This will be determined by the Environmental Consultant and the Employer.

5.6.4 The Contractor shall ensure that all materials removed from site are taken to a suitable licensed waste facility and shall provide copies of the appropriate Waste Transfer Notes. The Contractor shall undertake any testing necessary to confirm the waste classification as required by the receiving facility.

5.7 Pavement Construction

5.7.1 The sub-formation is to be proof rolled with any soft materials being excavated and replaced with suitable compacted capping.

5.7.2 Capping is to be placed above sub-formation following proof rolling and will comprise acceptable Class 6F5. Capping will be tested to determine classification and acceptability limits.

5.7.3 Capping will be placed and compacted in accordance with Method 6 of Table 6/4 of the MCHW. Capping shall be controlled by in situ and laboratory testing as follows:-

Test	Frequency
Moisture Content	Daily
Grading	1 per 400m^3
Liquid and Plastic Limit	Daily
Loss Angeles Coefficient	As required or weekly
Compaction Test (2.5kg rammer method)	1 per 400m^3

5.7.4 Thickness of the capping will be determined by the Highways Engineer.

5.8 Topsoil

5.8.1 Imported Topsoil (Class 5B of the MCHW) will be stockpiled and placed in accordance with landscaping drawings. Delivery [transfer notes] notes for the imported Topsoil and any other clean cover soils will be retained by the Contractor and provided to the Employer.

5.8.2 Topsoil and Subsoil are not to be mixed. Furthermore, care must be taken to prevent contamination of the Topsoil or Subsoil with stones, hard-core, rubbish or materials from demolition works.

5.8.3 Topsoil is not to be handled during driest conditions possible and is not to be handled during or after heavy rainfall or when wetter than the plastic limit as defined by BS3882, Annex N2.

5.8.4 Plant used for the placement and spreading of Topsoil and also Subsoil is to be selected based on minimising disturbance, trafficking and compaction. In order to retain a friable texture Topsoil is not to be compacted but shall be gently firmed.

5.8.5 Topsoil is to be tipped and graded to approximate levels in one operation with minimum of trafficking by plant. Topsoil is to be placed in 150mm layers.

5.9 Safety Health and Environmental (SHE) Requirements

5.9.1 The Contactor is to apply reasonable measures to manage generation of dust and noise impacts and nuisance associated with their works. Details of these measures are to be included within a method statement provided to the Principal Contractor.

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5.9.2 Asbestos fibres have been identified within some shallow soils and the Contractor is to comply with an asbestos management strategy prepared by the Principal Contractor as set out in the approved Contamination Assessment and Remedial Methodology. The Contractor shall provide method statements detailing how they will manage asbestos impacted materials as required by the Principal Contractor.

5.9.3 The Contractor is to comply with all Health and Safety requirements of the Principal Contractor and shall provide method statements and risk assessments as requested by the Principal Contractor.

5.10 Monitoring

5.10.1 The Contactor shall undertake levelling of the works to ensure that the levels meet those shown on relevant contract drawings. The Contractor shall provide proposals for the frequency and spacing of the levelling points for approval by the Employer.

5.10.2 Any dust or asbestos monitoring required by the Principal Contractor shall be undertaken and will be incorporate into the Contractors method statements.

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A1



Romsey Office
Building 300, The Grange,
Romsey Road,
Michelmersh,Romsey,
Hampshire, SO51 0AE
T:01794 367703 F:01794 367276

Portishead Office
Unit 5, Middle Bridge Business Park,
Bristol Road,
Portishead
Bristol, BS20 6PN
T:01275 407060 F:01794 367276

www.thrivearchitects.co.uk

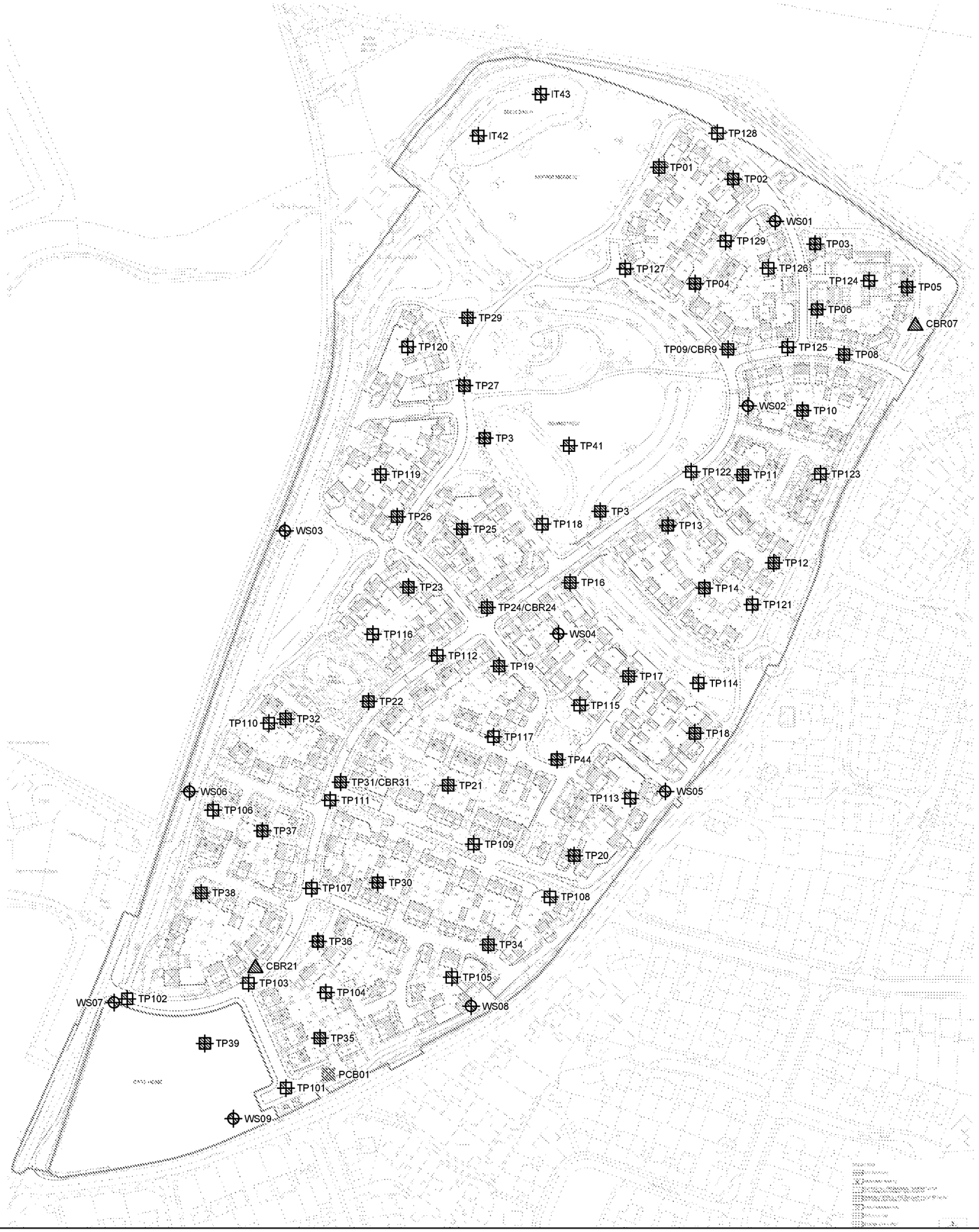
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Rev	Description	Date	Au	Ch
A	Issued for Planning.	07.12.20	MWB	CAW
B	Major amendments to dwellings positions, trees added.	20.04.21	AS	CAW
C	Parking to plots 209-211, 212-213 gardens, plots 152, 154 & 165 nudged back, bin store, sheds updated.	08/05/21	CAW	CAW
D	Plots 14-30, 141-148 gardens revised.	11/05/21	AS	CAW
E	Landscape proposals added in, minor amendments to paths, Plot 5 moved forward cm.	14/05/21	AS	CAW
F	Minor amendments to road positions and bin collection points due to vehicle tracking received, SS and GGs added.	21/05/21	AS	CAW

scale 1:1000
0 20 40 60m

Project	Hook Lane, Pagham				
Drawing	Site Layout				
Client	Hallam Land				
Job no.	HALL200505			Date	June 2020
Dwg no.	SL.01			Revision	F
Author	AS	Checked	CR/CW	Scale	1:1000 at A1
Status	PLANNING			Office	Romsey
Client ref.					

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Notes:

1. Do not scale from this drawing.
2. This drawing is to be read in conjunction with all relevant documentation.
3. All surveyed information is provided by others.
4. All existing and proposed dimensions, levels and locations to be checked and verified by the main contractor on site prior to the commencement of the works and any anomalies reported to the engineer.

Key:

- ENZYGO Trial Pit Location (TP101 - TP129)
- GEG Trial Pit Location (TP)
- GEG CBR Test Location (CBR)
- GEG Window Sampler Location (WS)
- GEG Infiltration Test Location (IT)
- GEG Hand Dug Surface Sample (PCB)

enzygo environmental consultants

Samuel House, 6 Fox Valley Way, Stocksbridge, Sheffield, S36 2AA

CLIENT: Bellway Home Limited (Wessex)

SCALE: NTS

PROJECT REF: MAN.1668.019

DRAWN: MG

CHECKED: NR

DATE: Oct 2021

PROJECT: Hook Lane, Pagham

TITLE: Exploratory Hole Location Plan

FIGURE NO: MAN.1668.019.GE.D.001

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A1



Romsey Office
Building 300, The Grange,
Romsey Road,
Michelmersh,Romsey,
Hampshire, SO51 0AE
T:01794 367703 F:01794 367276

Portishead Office
Unit 5, Middle Bridge Business Park,
Bristol Road,
Portishead
Bristol, BS20 6PN
T:01275 407900 F:01794 367276

www.thrivearchitects.co.uk

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Rev	Description	Date	Au	Ch
A	Issued for Planning.	17.12.20	MWP	CAW
B	Major amendments to dwellings positions, trees added.	20.04.21	AS	CAW
C	Parking to plots 279-283, 212-213 gardens, plots 152, 164 & 165 nudged back. Bin store, sheds updated.	05/05/05	CAW	CAW
D	Plots 14-30, 141-148 gardens revised.	11/05/05	AS	CAW
F	Minor amendments to road junctions and bin collection points due to vehicle tracking received, SS and GG added.	21/05/21	AS	CAW

scale 1:1000

Project	Hook Lane, Pagham				
Drawing	Coloured Site Layout				
Client	Hallam Land				
Job no.	HALL200505			Date	June 2020
Dwg no.	CSL.01			Revision	F
Author	AS	Checker	GR/CW	Scale	1:1000 at A1
Status	PLANNING			Office	Romsey
Client ref.					

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A1



Romsey Office
Building 300, The Grange,
Romsey Road,
Michelmersh,Romsey,
Hampshire, SO51 0AE
T:01794 367703 F:01794 367276

Portishead Office
Unit 5, Middle Bridge Business Park,
Bristol Road,
Portishead
Bristol, BS20 6PN
T:01275 407000 F:01794 367276

www.thrivearchitects.co.uk

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scale 1:1000
0 20m 40m 60m

Project	**Hook Lane, Pagham**				
Drawing	**Site Layout**				
Client	**Hallam Land**				
Job no.	**HALL200505**			Date	**June 2020**
Dwg no.	**SL.01**			Revision	**F**
Author	**AS**	Checker	**GR/CW**	Scale	**1:1000 at A1**
Status	PLANNING			Office	**Romsey**
Client ref.					

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Notes:

1. GRID AND LEVELS BASED ON EXISTING TOPOGRAPHICAL SURVEY (SHOWN GREY) CARRIED OUT BY INTERLOCK SURVEYS LIMITED. JOB No 150595 3D. DATE: SEPTEMBER 2015
2. PLEASE NOTE WHEN SETTING UP ON ST08 AND SIGHTING ST09, WE FOUND A 91mm ERROR IN DISTANCE WHEN USING THE COORDINATES TAKEN FROM THE EXISTING CONTROL SCHEDULE PROVIDED.

TOPOGRAPHICAL KEY

SURVEY STATION 5
BANKING (TOP / BOTTOM)
HEDGE SPREADS
WOODLAND CANOPY
ARROW ON STEPS / RAMPS INDICATES DIRECTION UPWARDS
TREES (SPREAD & GIRTH SHOWN TO SCALE)
GATE
KERB CHANNEL
ROAD UNKERBED
FOOTPATH
CHANGE IN SURFACE
FENCE
WALL
OVERHEAD ELECTRIC
OVERHEAD TELEDOM
FOUL SEWER
SURFACE SEWER
BACK DROP (EXTERNAL)
BACK DROP (INTERNAL)
BUILDING
OPEN SIDED BUILDING
OVERHANG / CANOPY
GLASSHOUSE
CONTOUR
SPOT LEVEL + 127.13
SIGNAR LEVEL Q 127.13
BORE HOLE BH
TRIAL HOLE TH

GENERAL ABBREVIATIONS

AIR CONDITIONING UNIT	ACU
AIR VALVE	AV
AVERAGE	Av.
BACK DROP	BD
BASE LEVEL	BL
BELISHA BEACON	BB
BOLLARD	BO
BOLLARD LIGHT	BOL
BRICK	BK
BUS STOP	BS
CABLE DUCT	CD
CABLE TV COVER	CATV
CABLES TO GROUND	CTG
CATCH PIT	CP
CONTROL BOX	CB
CROSSOVER LEVEL	-
CROSSING CONTROL BUTTON	CCB
DAMPPROOF COURSE	DPC
DRAINAGE CHANNEL	DCH
DROP KERB	DK
ELECTRICITY POLE	EP
EARTH ROD	ER
ELECTRICITY POINT	EL
FLOOR LEVEL	FL
FOOTPATH	FP
FOUL WATER	FW
GAS RISER	GR
GAS VALVE	GV
GRID	GY
HARD BED	-
INSPECTION COVER	IC
INVERT LEVEL	IL
KERB OUTLET	KO
LAMP POST	LP
MANHOLE	MH
MARKER POST	MK
METER	MT
NO PIPES VISIBLE	NPV
ORDINANCE SURVEY BENCH MARK	OSBM
P-TRAP	PT
POST	PO
POST BOX	PBOX
RODDING EYE	RE
ROAD SIGN	RS
RAIN WATER PIPE	RWP
RETAINING WALL	RW
SOFT BED	SB
STOP COCK	SC
STOP KERB / KERB PLATE	SKP
STOP VALVE	SV
SOIL PIPE	SP
SOIL VENT PIPE	SVP
SURFACE WATER	SW
TACTILE PAVING	TAC
TELEDOM MANHOLE	TM
TELEDOM INSPECTION COVER	TIL
TELEPHONE CALL BOX	TCB
TICKET MACHINE	TM
TOP OF WALL	TOW
TRAFFIC LIGHT	TL
TRAFFIC LIGHT COVER	TLC
THRESHOLD LEVEL	THL
UNABLE TO LOCATE	UTL
UNABLE TO RAISE	UTR
UNABLE TO SURVEY	UTS
VENT PIPE	VP
WATER LEVEL	WL
WATER METER	WM
WASH OUT	WO
WATER RISER	WR
WATER TAP	WT

FENCE ABBREVIATIONS

BARBED WIRE FENCE	BW	IRON RAILINGS	IR
CLOSE BOARDED FENCE	CB	LARCH LAP FENCE	LL
CONCRETE PANEL FENCE	CPL	POST AND RAIL FENCE	PAR
CORRUGATED IRON FENCE	CI	POST AND WIRE FENCE	PAW
CHAIN LINK FENCE	CLL	WIRE MESH FENCE	WM
CHESTNUT PALING	CNP		

Sheet Layout: (Not to Scale)



Revision	Description	Surv. by	Check. by	Appr. by	Date

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mksurveys

Tel 01903 885581 Milton Keynes
Tel 01865 594679 Oxford
Tel 0115 2963521 East Midlands
Tel 01264 404222 West Midlands
Tel 01403 243182 Horsham

www.mksurveys.com
www.surveys4bim.co.uk

Vistry Partnerships

Hook Lane
Pagham
West Sussex

Topographical Survey

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