

Site Investigation Report for land off
Gatewen Road, Wrexham

Appendix 14

CDM Information

Client : Bellway Homes, North West
 Project : Gatewen Road, Wrexham
 Project No : 7791

DESIGN RISK ASSESSMENTS FOR FOUNDATION OPTIONS

ACTIVITY/ELEMENT OF DESIGN	HAZARD (ie slips, trips, falls, manual handling, use of mobile plant, chemicals etc.)	RISK ASSESSMENT								HAZARD AVOIDANCE MEASURES (specify measures required to avoid or minimize risk using hierarchy of controls)
		Construction Phase				Operational/Maintenance Phase				
		High	Med	Low	N/A	High	Med	Low	N/A	
Foundations <1200mm deep and House Drainage (ie Traditional & Nominally Reinforced Strip Footings)	Falls/slips/trips		✓						✓	Provide information and training on working in excavations. Use daily inspections by competent person prior to entry into trench and recording on Excavation Register
	Trench Collapse			✓					✓	Ensure excavation sides battered back to a safe angle of repose. Provide information and training on working in excavations. Use daily inspections by competent person.
Breaking out existing foundations	Noise /vibration		✓						✓	Identify existing foundations and dig out using mechanical excavator. If not possible break out using hand held breakers. Minimise vibration in breakers by maintenance. Ensure use of thick gloves/appropriate PPE
	Contamination			✓					✓	Removal of contaminated material to a licensed landfill site or use of inert cover over contaminated strata . Use of PPE by groundworkers. Enforcement of good hygiene rules and provision of welfare facilities.
Handling of blocks/bricks and steel mesh	Musculo-Skeletal Injury		✓						✓	Use of mechanical handling plus manual handling risk assessment. Certificate required for mechanical handling. Designer to specify use of blocks/bricks and mesh of suitable unit weight for manual handling. Contractor to ensure mesh lengths take into account manual handling. Mechanical handling where possible.
Concrete pouring/mortars	Skin Irritation/Eczema		✓						✓	Contractor to ensure proper use of barrier cream/PPE. Designer to ensure suitable mortar additives. Contractor to carry out COSHH assessments.
	Existing services		✓						✓	Contact utilities management companies to confirm existence or absence of live services. Provide utilities plans to Contractor. Use of Cat and Genny during excavation and proceed with care. Hand dug excavations where necessary.
Foundations >1200mm deep and Drains/Services (ie Deep Strip footings or Mass Concrete Trench Fill	Trench collapse	✓							✓	Ensure excavation sides supported by propping/trench sheeting, or battered back to a safe angle of repose. Provide information and training on working in excavations. Use daily inspections by competent person. Added risk in areas of groundwater. Ensure that excavation pumped dry at all times.
	Slips/trips/falls	✓							✓	Provide information and training on working in excavations. Use daily inspections by competent person prior to entry into trench and recording on Excavation Register
	Contamination			✓					✓	Removal of contaminated material to a licensed landfill site or use of inert cover over contaminated strata. Use of PPE by groundworkers. Enforcement of good hygiene rules and provision of welfare facilities.
	Existing Services			✓					✓	Contact utilities management companies to confirm existence or absence of live services. Provide utilities plans to Contractor. Use of Cat and Genny during excavation and proceed with care. Hand dug excavations where necessary.

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		Construction Phase				Operational/Maintenance Phase				
		High	Med	Low	N/A	High	Med	Low	N/A	
<u>Foundations</u> <u>>1200mm deep and Drains/Services</u>	Continued									
Installation of polystyrene sheets for heave protection requiring manned entry to unsupported excavations	Trench collapse Slips/trips/falls	✓							✓	Install inaccordance with approved method statement and to include edge protection and adequate cross over points. Alternatively consider integral raft foundation with stone blanket.
Concrete pouring/mortars	Skin Irritation/Eczema	✓							✓	Contractor to ensure proper use of barrier cream/PPE. Designer to ensure suitable mortar additives. Contractor to carry out COSHH assessments.
Handling of blocks/bricks and steel mesh	Musculo-Skeletal injury		✓						✓	Use of mechanical handling plus manual handling risk assessment. Certificate required for mechanical handling. Designer to specify use of blocks/bricks and mesh of suitable unit weight for manual handling. Contractor to ensure mesh lengths take into account manual handling. Mechanical handling where possible.
	Asphyxia and confirmed space working	✓							✓	Confined space procedures for working in deep excavations/manholes. Ensure fumes from mechanical plant, such as pumps, are well controlled.
Breaking out existing foundations	Noise/Vibration			✓					✓	Identify existing foundations and dig out using mechanical excavator. If not possible break out using hand held breakers. Minimise vibration in breakers by maintenance. Ensure use of thick gloves/appropriate PPE
<u>Raft Foundations with Integral floor slab</u>	Slips/trips/falls		✓						✓	Provide information and training on working in excavations. Use daily inspections by competent person prior to entry into trench and recording on Excavation Register
Strip existing fill material and remove to approved bearing strata. Backfill with approved consolidated granular fill.	Trench collapse	✓							✓	Ensure excavation sides supported by propping/trench sheeting, or battered back to a safe angle of repose. Provide information and training on working in excavations. Use daily inspections by competent person. Added risk in areas of groundwater. Ensure that excavation pumped dry at all times.
	Contamination			✓					✓	Removal of contaminated material to a licensed landfill site or use of inert cover over contaminated strata. Use of PPE by groundworkers. Enforcement of good hygiene rules and provision of welfare facilities.

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DESIGN RISK ASSESSMENTS FOR FOUNDATION OPTIONS

ACTIVITY/ELEMENT OF DESIGN	HAZARD (ie slips, trips, falls, manual handling, use of mobile plant, chemicals etc.)	RISK ASSESSMENT								HAZARD AVOIDANCE MEASURES (specify measures required to avoid or minimize risk using hierarchy of controls)
		Construction Phase				Operational/Maintenance Phase				
		High	Med	Low	N/A	High	Med	Low	N/A	
<u>Raft Foundations with Integral floor slab</u>	Continued									
Construction of granular blanket beneath raft for heave precautions, depth <1200mm.	Trench collapse Slips/trips/falls			✓					✓	Ensure excavation sides battered back to a safe angle of repose. Provide information and training on working in excavations. Use daily inspections by competent person. Use daily inspections by competent person prior to entry into trench and recording on Excavation Register.
Breaking out existing foundations	Noise/Vibration			✓					✓	Identify existing foundations and dig out using mechanical excavator. If not possible break out using hand held breakers. Minimise vibration in breakers by maintenance. Ensure use of thick gloves/appropriate PPE
	Existing Services			✓					✓	Contact utilities management companies to confirm existence or absence of live services. Provide utilities plans to Contractor. Use of Cat and Genny during excavation and proceed with care. Hand dug excavations where necessary.
	Backfilling			✓					✓	Use mechanical excavators to place approved granular fill in layers and lightly compact. Geotextile wrap fills in 1m max. lift heights and use graded granular material with good self compacting properties. Compaction with plant only when excavation depth <1200mm deep.
Steel Fixing	Musculo-Skeletal injury		✓						✓	Designer to schedule bars to take into account manual handling. Avoid long large diameter bars. Use of mechanical handling where possible plus manual handling risk assessment. Certificate required for machanical handling
Concrete pouring/mortars	Skin Irritation/Eczema	✓							✓	Contractor to ensure proper use of barrier cream/PPE. Designer to ensure suitable mortar additives. Contractor to carry out COSHH assessments.
<u>Foundations-piled</u>										
Mobilisation of plant	Sequencing of piling work with other construction to avoid unsafe conditions		✓						✓	Tender documents to include site investigation report and current services information. Contractor to plan site access. Provision of stone support blanket where required to protect buried services. Design of piling platform to BR470. Agree working clearances with highway authority
	Damage to buried services		✓						✓	
	Rig overturning		✓						✓	

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		Construction Phase				Operational/Maintenance Phase				
		High	Med	Low	N/A	High	Med	Low	N/A	
<u>Foundations-piled</u>	Continued									
Pile driving - CFA	Hearing loss		✓						✓	Contractor to establish closed working zone inside which PPE to be mandatory (ear defenders, etc)
	Contamination		✓						✓	Any arisings from pile excavation to be segregated and disposed of as controlled waste. Operatives to be provided with adequate welfare provisions for washing and eating.
-CFA auger changes	Musculo-skeletal injury		✓						✓	Limit number of pile sizes to struicture.
- Steel fixing	Musculo-skeletal injury		✓						✓	Schedule bars to take into account manual handling. Avoid long large diameter bars whose weight would exceed 20kgs. Consider automated cage reinforcement equipment.
-Reinforcement lifting	Injury from falling steel bars		✓						✓	Design of reinforcement cages to be robust enough for lifting.
- Concrete pouring	Skin irritation/ eczema		✓						✓	
Pile driving - precast concrete segmental	Hearing loss	✓							✓	Contractor to establish closed working zone inside which PPE to be mandatory (ear defenders, etc)
	Musculo-skeletal injury Trapping/ crushing	✓							✓	Contractor to prepare Method Statement. Provide information and training in handling and jointing piles. COSHH assessment of adhesives used in pile jointing.. Use of PPE.
Pile trimming to cut-off level and expose reinforcement. - Scabbling pile surface	Noise/Vibration Musculo-skeletal injury Trapping/ crushing Cuts & abrasions		✓						✓	Correct use of mechanical pile croppers or other means of trimming that do not involve excessive use of hand held tools. Minimise vibration in hand held breakers by maintenance. Ensure use of thick gloves/appropriate PPE. Use protection caps on exposed bars after trimming.
<u>Ground Beams</u>										
Retained ground "fill": excavation < 1.2m	Trench collapse		✓						✓	Ensure excavation sides battered back to angle of safe repose. Provide information and training on working in excavations. Use "permit to work" system and daily inspections by competent person.
Retained ground "fill": excavation > 1.2m	Trench collapse/ trips/ falls	✓							✓	Ensure excavation sides supported by propping/ trench sheeting, or battered back to angle of safe repose. Provide information and training on working in excavations. Use "permit to work" system and daily inspections by competent person.
Steel fixing	Musculo-skeletal injury		✓						✓	Schedule bars to take into account manual handling. Avoid long large diameter bars whose weight would exceed 20kgs.
Concrete pouring	Skin irritation/ eczema		✓						✓	Contractor to ensure proper use of barrier cream/ PPE

Site Investigation Report for land off
Gatewen Road, Wrexham

Appendix 15

Reference Drawings

<u>Reference</u>	<u>Rev</u>	<u>Title</u>
7791/L1	-	Site Location Plan
7791/AP	-	Aerial Photograph
7791/01	B	Site Plan
7791/500/01	A	Cut and Fill Assessment – Sheet 1 of 3
7791/500/02	A	Cut and Fill Assessment – Sheet 2 of 3
7791/500/03	A	Cut and Fill Assessment – Sheet 3 of 3
7791/FDZ	A	Foundation Zone Plan
7791/Rn/01	-	Typical Details for Nominally Reinforced Footing with Precast Slab
7791/Tf/01	-	Typical Details for Trenchfill Foundation
7791/TfH/01	-	Typical Details for Trenchfill Foundation with Heave Precautions
7791/VD/01	-	Typical Foundation Details for Doubly Reinforced Footing on Vibro-Stabilised Fill
7791/PH/Typ/01	-	Typical Pile & Ground Beam Details Requiring Heave Precautions
7791/FR/PC/01	-	Typical Gas Precaution Details to a Precast Concrete Slab and a Vented Sub-floor Void for Full Radon Mitigation

SCALE	1:25000@A4
DATE	18.05.21
DRAWN	AH
CHEK'D	BH

Gatewen Road,
Wrexham.

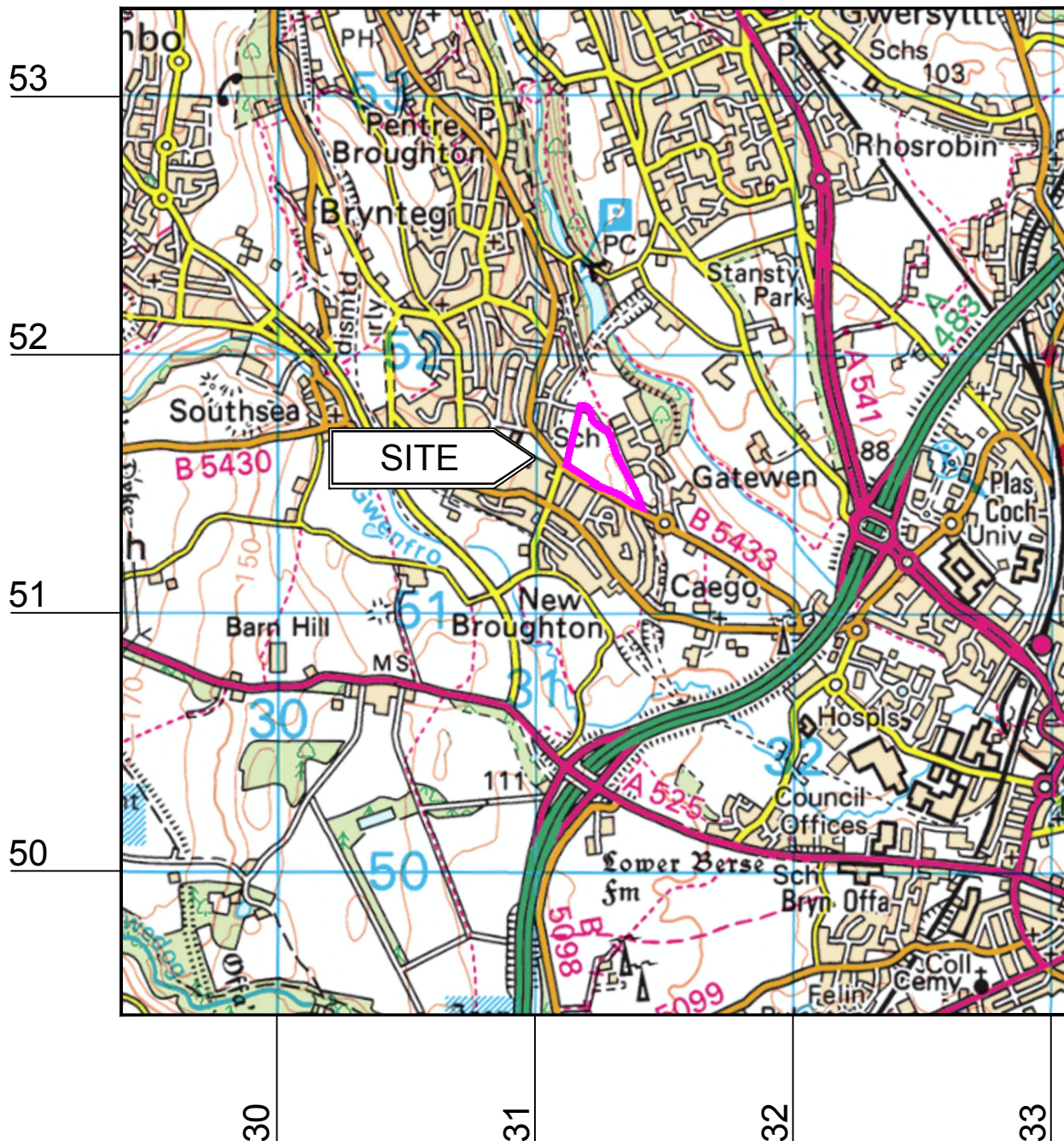
SITE LOCATION PLAN

Drg No: 7791 / L1



National Grid reference
of the proposed site.

SJ 313 516



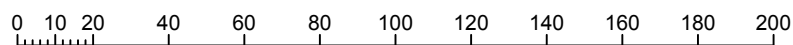
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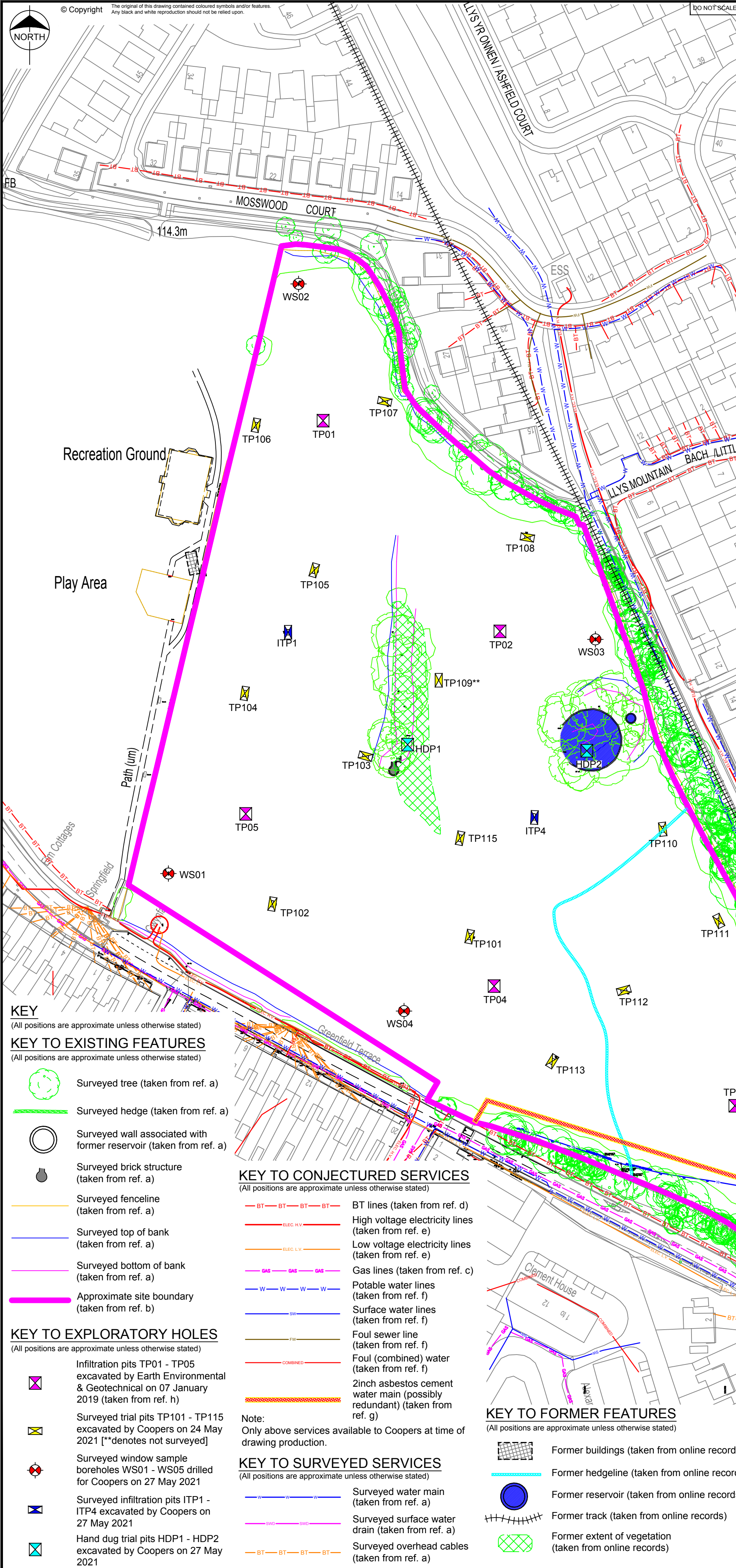


KEY

————— Site boundary



SCALE BAR (m)



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chartered consulting engineers

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Park House
Sandpiper Court
Chester Business Park
Chester
CH4 9QU

Client

Bellway

Project

Gatewen Road,
Wrexham.

Title

SITE PLAN

DRAWING NUMBER		SCALE at A2 1:1000	
7791 / 01		DATE	02.06.21
		DRAWN	AH
		CHECKED	BH / ST
		REVISION	
		B	

B	08.06.21	Drawing updated with latest topographical survey. Exploratory holes updated to suit surveyed locations.	AH	BH/ST
A	07.06.21	Latest Coopers exploratory hole locations added to plan.	AH	ST
Rev	Date	Revision	By	Appd.

This drawing is to be read in conjunction with the following:-

- a) Geomatic Surveys Ltd, Proposed Development, Gatewen Road, Wrexham, Overall Layout, ref. 02639/Services, dated 30 May 2021.
- b) Day Architectural Ltd, Gatewen Road, Existing Site Plan, ref. AL-100-002, rev. P1, dated June 2018.
- c) Wales and West, Gatewen Road, Wrexham, ref. 22131931, dated 17 May 2021.
- d) BT Openreach utilities map, ref. WZH09595T, dated 17 May 2021.
- e) SPEnergy GIS Viewer, search conducted on 17 May 2021.
- f) Futureserv, Wrexham Road Residential Site - Utility Statement, ref. L5350/18/01, dated June 2018.
- g) HM Land Registry, Wrexham, ref. WA857583, dated 19 May 2021.
- h) Scott Hughes, Gatewen Road Residential Site, New Broughton, Wrexham, Flood Consequence Assessment & Drainage Strategy, ref. 3352, dated June 2019.

0 5 10 20 30 40 50 60 70 80 90 100

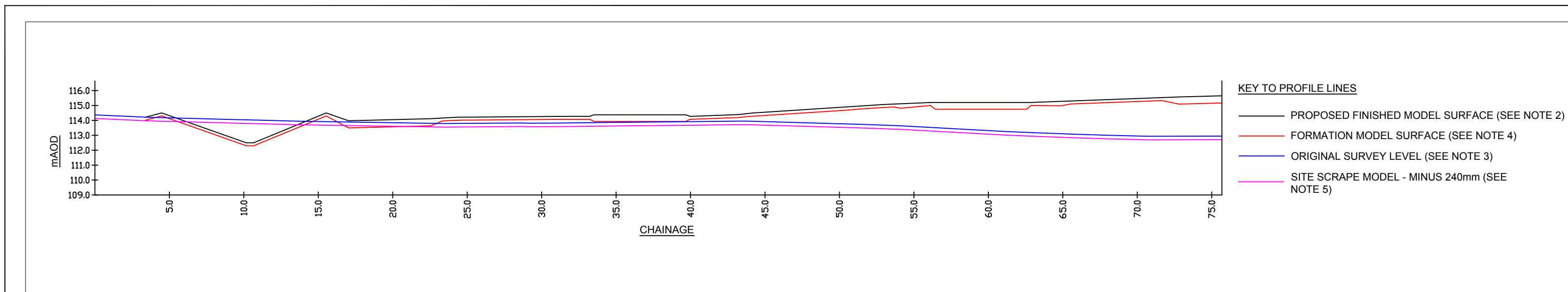
SCALE BAR (m)

THIS DRAWING SHOULD ONLY BE PRINTED IN COLOUR

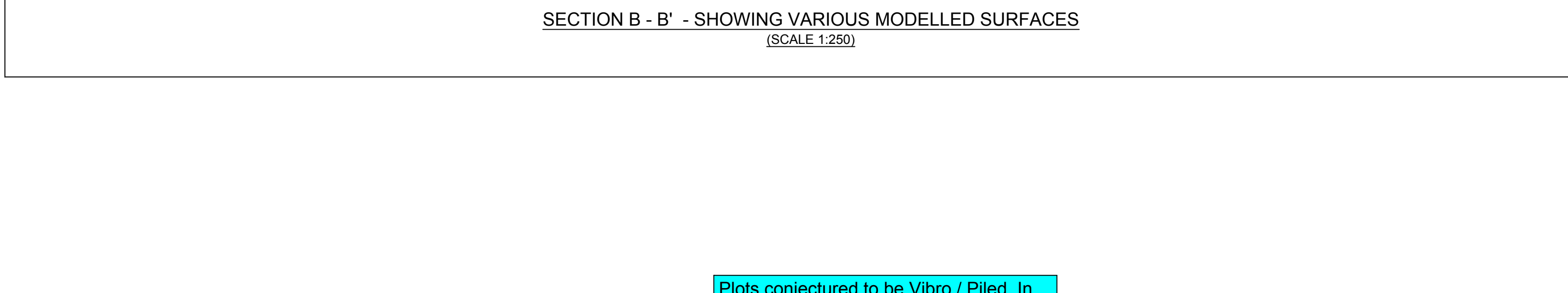
FOR GUIDANCE
PURPOSES ONLY



INFILTRATION BASIN
BASE LEVEL: 112.30m



A'



6,275cu.m. topsoil surplus to be exported off-site.



DRAWING NUMBER

7791 / 500 / 01

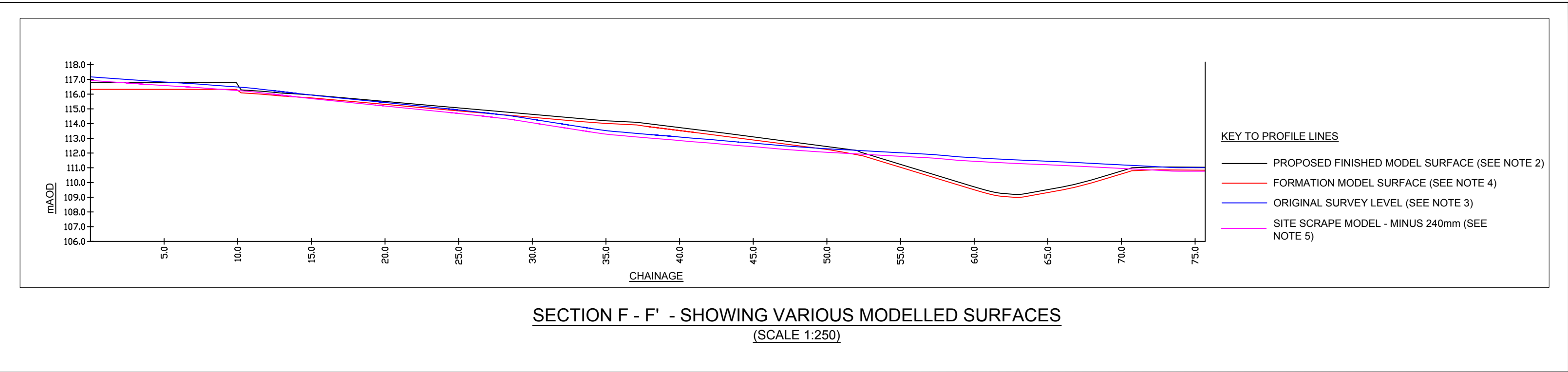
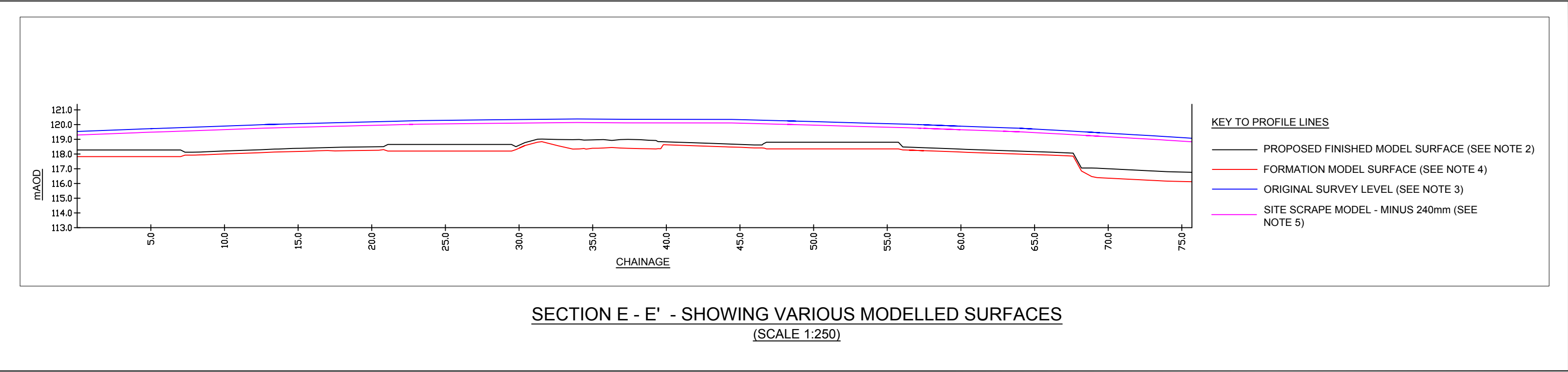
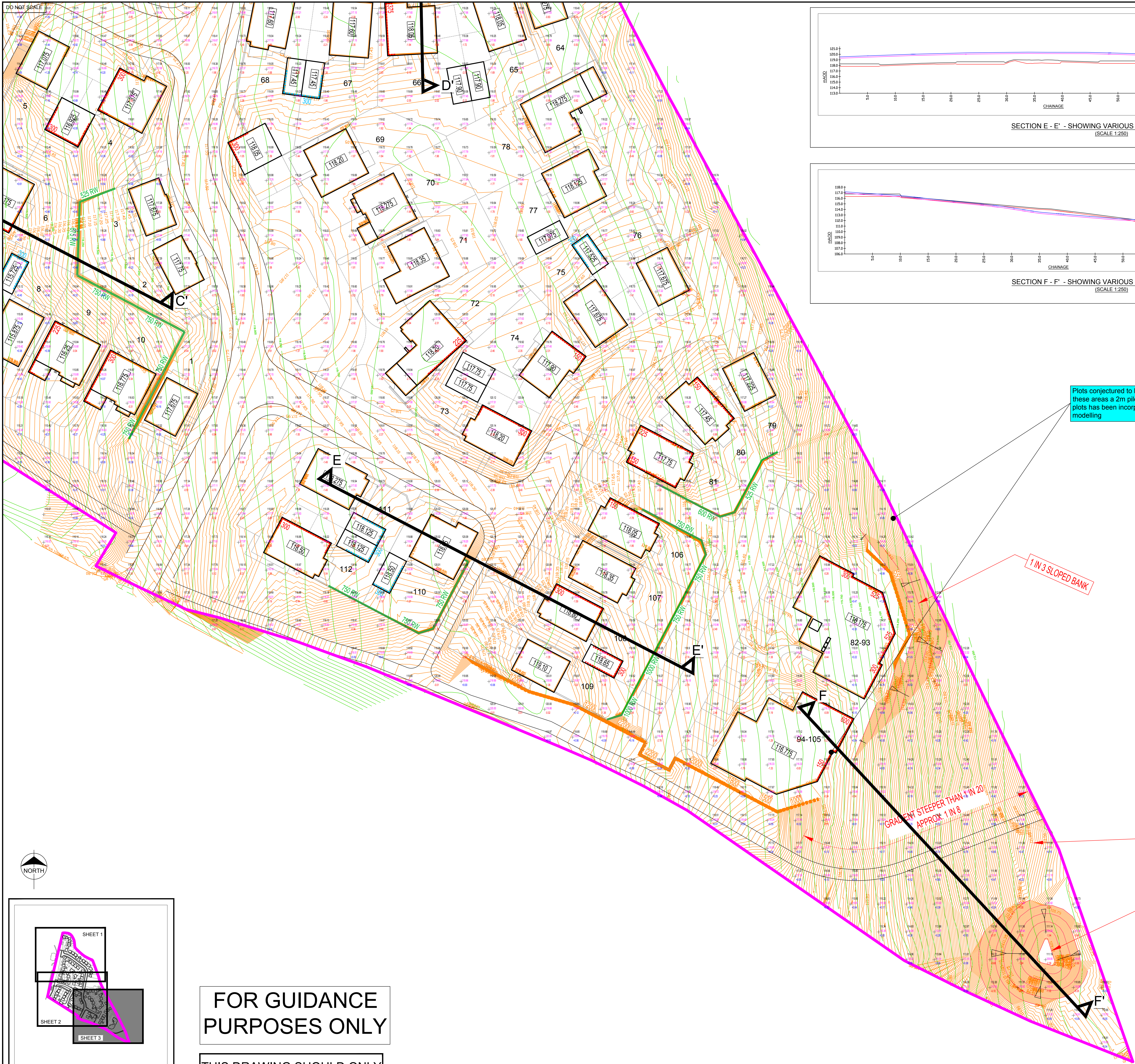
SCALE of 10 1:250

DATE	16.07.2016
DRAWN BY	ALL

CHECKED	BH / A.
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REVISION

A



THIS EARTHWORKS ASSESSMENT IS BASED ON A PREVIOUS PLANNING LAYOUT PENDING UPDATED EXTERNAL WORKS DRAWING

LEGEND

KEY TO CONTOURS

- Topographical contours at 50mm intervals (Note 3)
- Proposed finished contours at 50mm intervals (Note 2)

KEY TO LEVELS

- Spot height of survey minus 240mm model (Note 5)
- Spot height of formation model (Note 4)
- Cut Depth
- Fill Depth

Between survey minus 240mm model (Note 5) & formation model (Note 4) profiles

Proposed finished floor level (taken from ref. 1.b)

Site boundary (taken from ref. 1.c)

CONSTRUCTION THICKNESSES:

Carriageway	= 640mm (CBR 3%)
Shared Drive	= 480mm
Private Drive	= 240mm
Building	= 450mm
Garage	= 450mm
Garden / POS	= 200mm
Paths	= 180mm
2m offset around plots (pile mat)	= 300mm
(Applicable only to areas shown on plan)	

PROPOSED VOLUMES TO FORMATION (ESTIMATE)

Taken between post site scrape surface (extg -240mm) and proposed site formation levels

Cut	25,640 cu.m
Fill	20,030 cu.m
Net	+5,610 cu.m

This surplus does not take into account arisings (see below)

ARISING CALCULATIONS: (ESTIMATE)

Private drainage & services	= 1,120cu.m
(Assumed 10cu.m per plot)	
Foul sewers / manholes	= 1,490cu.m
SW sewers / manholes	= 1,480cu.m
Foundations	= 3,155cu.m
(2 x apartment blocks (24 plots) x 150cu.m / plot	
88 plots x 30cu.m / plot	
27 garages x 8cu.m / garage)	
Total	= 7,245cu.m (estimate)

Overall Cut/Fill Net Value	
Net	+12,855m³

TOPSOIL CALCULATIONS: (ESTIMATE)

Approx 11,210cu.m. of topsoil will be generated by an average 240mm site scrape based on a 46,720m² (4.672ha) area (excluding reservoir area which is to remain as existing).

Approx 4,935cu.m. of topsoil will be required in proposed garden and POS areas (garden / POS areas = 24,680m² x 0.2m thick topsoil).

6,275cu.m. topsoil surplus to be exported off-site.

- Notes**
- This assessment has been based on the following documents:
 - Survey - DWG ref. '2039_3D', received by Coopers on 08 June 2021.
 - External Works - DWG ref. '13998-2011-P00-CLIENT ISSUE', received by Coopers on 09 July 2021.
 - Planning layout - extracted from DWG ref. '13998-2011-P00-CLIENT ISSUE', received by Coopers on 09 July 2021.
 - A detailed 3D model of the proposed finished development surface has been created using external works level information (ref. b), 3D highway and footpath PDS strings and existing boundary data from the topographical survey (ref. a). This model incorporates all retaining features, underbuild, tanking, drive and gardens levels. The contours of this model are shown on this plan.
 - A 3D surface model of the current levels has been created using the topographical survey referenced above (ref. a). The contours of this model are shown on this plan.
 - A formation model has been built from the proposed model referenced in Note 2 above using the construction thicknesses stated above.
 - Using trial pit logged data, an average topsoil depth across this site has been deduced as 240mm. A new model was produced by lowering the 3D surface model stated in Note 3 by 240mm to account for the topsoil strip of the site excluding the reservoir area which is staying as existing level.
 - A prismatic volumetric computation has been undertaken via PDS between the formation model in stated in Note 4 and the reduced survey model stated in Note 5. The results of this computation is presented on this drawing.
 - The determination of cut and fill volumes are based upon modeled data, and the relevant construction thicknesses. It should be recognised that variations in the construction may occur and the actual volumes generated may therefore be in variance to those calculated.
 - These figures take no account of bulking or compaction.
 - Other excavations not stated on this drawing, such as for proposed services, may generate further surplus arisings. Volumes of arisings from pumping station not included.
 - These quantities assume all site material is suitable for re-use.
 - Volumes stated on this drawing are for within the site boundary only and do not include any earthworks outside of the site boundary shown.
 - All POS areas assumed to be capped in topsoil.
 - Quantities do not include material displaced upon retaining wall placement.
 - Tendering contractors to make own assessment of quantities.

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Park House
Sandpiper Court
Chesler Business Park
Chesler
CH4 9QU

Client
Bellway

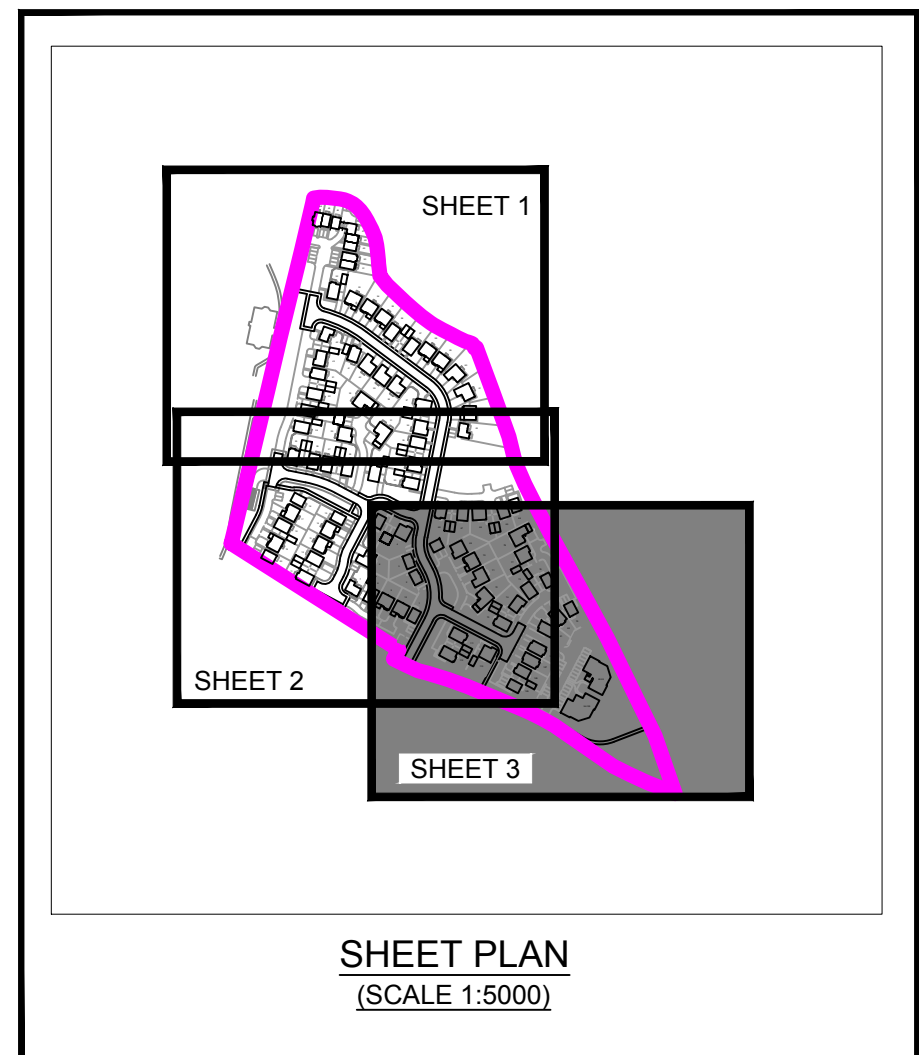
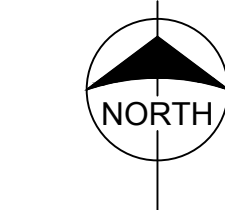
Project
Gatewen Road,
Wrexham.

Title
**CUT AND FILL ASSESSMENT
SHEET 3 OF 3**

DRAWING NUMBER	7791 / 500 / 03	SCALE at A0	1:250	DATE	16.07.21	REVISION	A
Rev.	Date	Revision	By	BH	Appd.		

FOR GUIDANCE PURPOSES ONLY

THIS DRAWING SHOULD ONLY BE PRINTED IN COLOUR



1. This drawing is to be read in conjunction with Coopers Site Investigation Report Ref: 7791si.
2. Reinforcement

Bottom - BS Mesh A393
Laps - 350mm minimum
Cover - Bottom - 75mm Sides - 75mm
3. All backfill material to the foundation excavations and floor voids to be inert, non-biodegradable and free of all harmful contaminants in accordance with Approved Document C/1/2/3 of the building Regulations (1992).
4. All wall cavities below ground to be filled with GEN 1 concrete to BS 5328 (max. agg. size 10mm). Wall cavities to be filled prior to the commencement of backfill to the foundation excavations and/or the floor voids. All backfilling to be complete in a uniform manner to prevent horizontal forces being applied to the foundation walls.
5. For concrete, Blockwork/Brickwork and Mortar below DPC refer to Coopers Specification appended to the Site Investigation Report in Note 1 above.
6. The minimum clear void below the suspended precast concrete ground floor is to be 150mm and should be adequately ventilated in accordance with the Building Regulations (1992) and NHBC Standards Chapter 4.2 S4(d) table 10. The level of backfill to the floor voids is to be within 225mm of the adjoining outer ground level, with the backfill material being effectively drained.

CDM HIGH RISK ASSESSMENT
FOR ALL RISKS REFER TO DESIGN RISK ASSESSMENT

* Actual width of foundation dependent on wall loading and safe bearing pressure.

REVISIONS



~~Chartered Consulting Engineers~~ Park House
Sandpiper Court
Chester Business Park
Chester
CH4 9QU

CLIENT

Bellway

PROJECT

Gatewen Road,
Wrexham.

TITL E

Typical Details for Nominally Reinforced Footing with Precast Slab

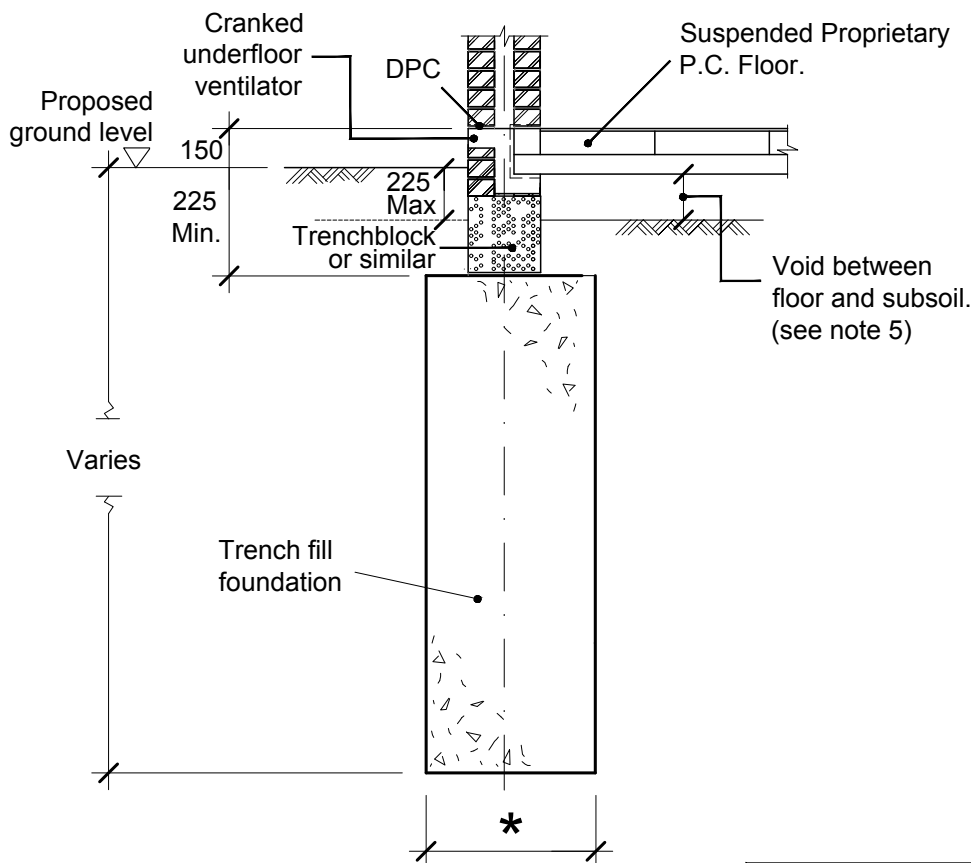
DRAWN BY	AH
DATE	29.07.21
SCALE(S)	NTS
DRAWING NUMBER	REVISION

7791/Rn/01

REVISION

-

THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE RELEVANT HOUSE TYPE DRAWINGS, FOUNDATION PLAN & SCHEDULE AND THE SITE SPECIFIC SITE INVESTIGATION REPORTS



TRENCH FILL FOUNDATION

* Actual width of foundation dependent on wall loading and safe bearing pressure.

NOTES

1. This drawing is to be read in conjunction with Coopers Site Investigation Report ref. 7791si.
2. The safe bearing pressure on strata limited to that indicated in the Site Investigation Report referred to in Note 1 above.
3. For Concrete, Blockwork/Brickwork and Mortar below DPC refer to the information contained in the Foundation Plan referred to in Note 1 above.
4. All backfill material to the foundation excavations and floor voids to be inert, non-biodegradable and free of all harmful contaminants in accordance with Approved Document C/1/2/3 of the Building Regulations (1992).
5. The minimum clear void below the suspended precast concrete ground floor is to be 150mm and should be adequately ventilated in accordance with the Building Regulations (1992) and NHBC Standards Chapter 4.2 S4(d) table 10. The level of backfill to the floor voids is to be within 225mm of the adjoining outer ground level, with the backfill material being effectively drained.
6. All wall cavities below ground to be filled with GEN 1 concrete to BS 5328 (max. agg. size 10mm). Wall cavities to be filled prior to the commencement of backfill to the foundation excavations and/or the floor voids. All backfilling to be completed in a uniform manner to prevent horizontal forces being applied to the foundation walls.
7. Refer to proprietary precast concrete floor manufacturers specialist drawing for all P.C. floor details.



CDM HIGH RISK ASSESSMENT

FOR ALL RISKS REFER TO DESIGN RISK ASSESSMENT



coopers

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Park House
Sandpiper Court
Chester Business Park
Chester
CH4 9QU

CLIENT

Bellway

PROJECT

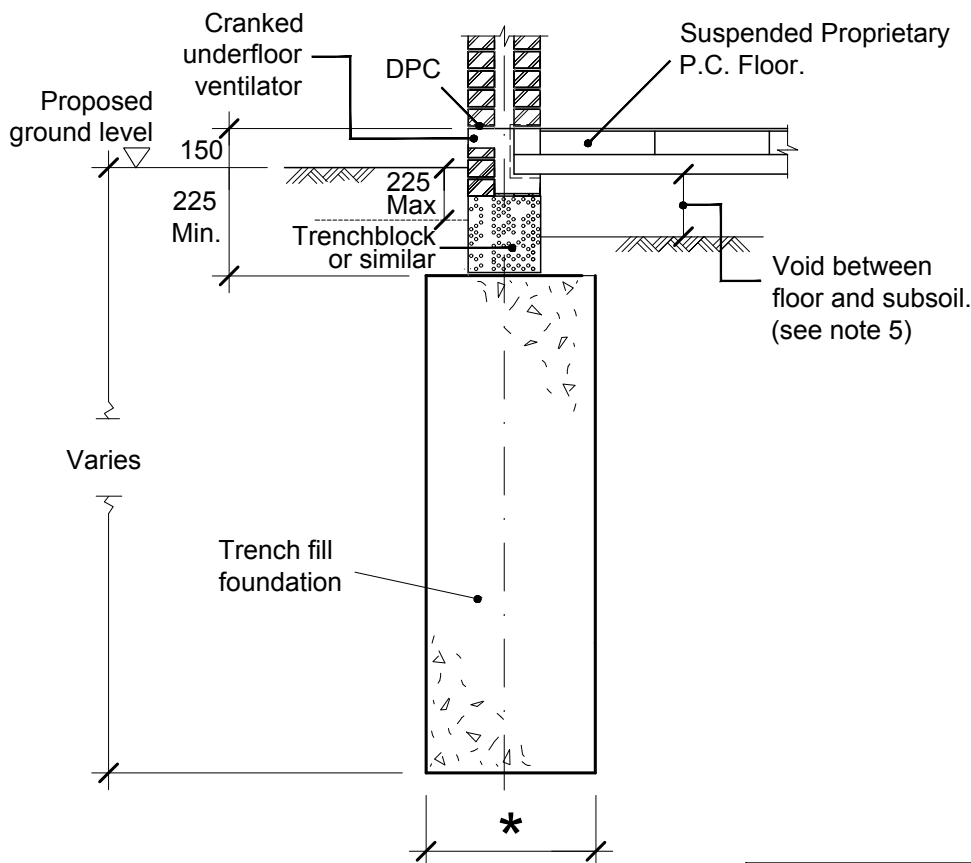
Gatewen Road,
Wrexham.

TITLE

Typical Details for
Trenchfill Foundation

DRAWN BY	AH
DATE	29.07.21
SCALE(S)	NTS
DRAWING NUMBER	7791/Tf/01
REVISION	-

THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE RELEVANT HOUSE TYPE DRAWINGS, FOUNDATION PLAN & SCHEDULE AND THE SITE SPECIFIC SITE INVESTIGATION REPORTS



**TRENCH FILL FOUNDATION
WITH HEAVE PRECAUTIONS**

* Actual width of foundation dependent on wall loading and safe bearing pressure.

NOTES

1. This drawing is to be read in conjunction with Coopers Site Investigation Report ref. 7791si.
2. The safe bearing pressure on strata limited to that indicated in the Site Investigation Report referred to in Note 1 above.
3. For Concrete, Blockwork/Brickwork and Mortar below DPC refer to the information contained in the Foundation Plan referred to in Note 1 above.
4. All backfill material to the foundation excavations and floor voids to be inert, non-biodegradable and free of all harmful contaminants in accordance with Approved Document C/1/2/3 of the Building Regulations (1992).
5. The minimum clear void below the suspended precast concrete ground floor is to be 200mm and should be adequately ventilated in accordance with the Building Regulations (1992) and NHBC Standards Chapter 4.2 S4(d) table 10. The level of backfill to the floor voids is to be within 225mm of the adjoining outer ground level, with the backfill material being effectively drained.
6. All wall cavities below ground to be filled with GEN 1 concrete to BS 5328 (max. agg. size 10mm). Wall cavities to be filled prior to the commencement of backfill to the foundation excavations and/or the floor voids. All backfilling to be completed in a uniform manner to prevent horizontal forces being applied to the foundation walls.
7. Refer to proprietary precast concrete floor manufacturers specialist drawing for all P.C. floor details.



CDM HIGH RISK ASSESSMENT

FOR ALL RISKS REFER TO DESIGN RISK ASSESSMENT



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CLIENT

Bellway

PROJECT

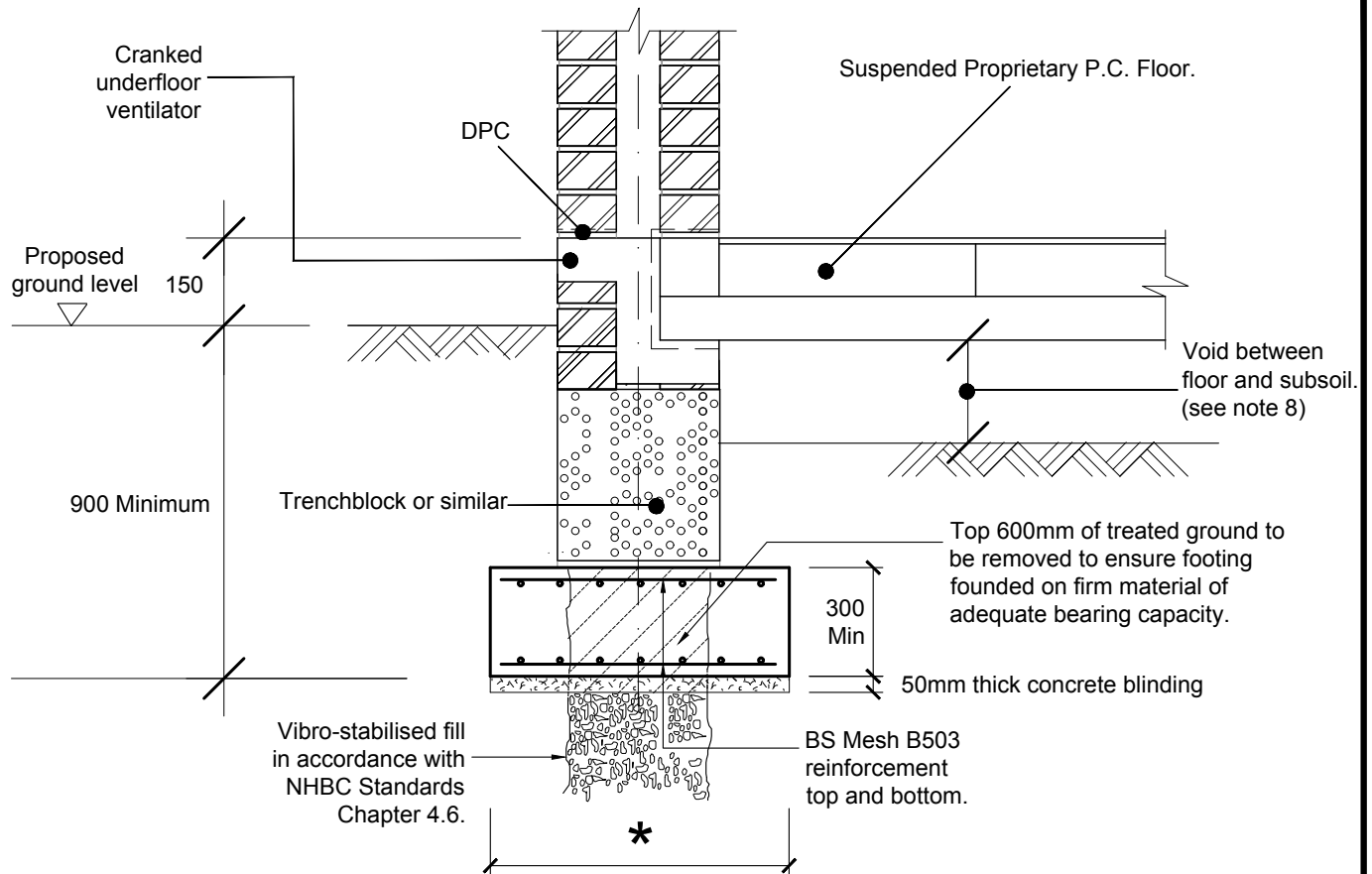
Gatewen Road,
Wrexham.

TITLE

Typical Details for
Trenchfill Foundation
With Heave Precautions

DRAWN BY	AH
DATE	29.07.21
SCALE(S)	NTS
DRAWING NUMBER	7791/TfH/01
REVISION	-

THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE RELEVANT HOUSE TYPE DRAWINGS, FOUNDATION PLAN & SCHEDULE AND THE SITE SPECIFIC SITE INVESTIGATION REPORTS



DOUBLY REINFORCED FOOTING ON VIBRO-STABILISED FILL

NOTES

1. This drawing is to be read in conjunction with Coopers Site Investigation Report Ref: 7791si.
2. Maximum safe bearing pressure on stabilised fill limited to that indicated in the report referred to in Note 1 above.
3. Unless noted otherwise all steel reinforcement to be BS mesh in accordance with BS 4483.
4. Reinforcement - BS Mesh B503 - Top and bottom Laps - 450mm minimum.
5. Minimum cover to be as follows:
Bottom - 50mm
Top - 50mm
Sides - 75mm
6. All wall cavities below ground to be filled with GEN 1 concrete to BS 5328 (max. agg. size 10mm). Wall cavities to be filled prior to the commencement of backfill to the foundation excavations and/or the floor voids. All backfilling to be completed in a uniform manner to prevent horizontal forces being applied to the foundation walls.
7. For Concrete, Blockwork/Brickwork and Mortar below DPC refer to Coopers Specification appended to the Report referred to in Note 1 above.
8. The minimum clear void below the suspended precast concrete ground floor is to be 150mm and should be adequately ventilated in accordance with the Building Regulations (1992) and NHBC Standards Chapter 4.2 S4(d) table 10. The level of backfill to the floor voids is to be within 225mm of the adjoining outer ground level, with the backfill material being effectively drained.

CDM HIGH RISK ASSESSMENT
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PROJECT

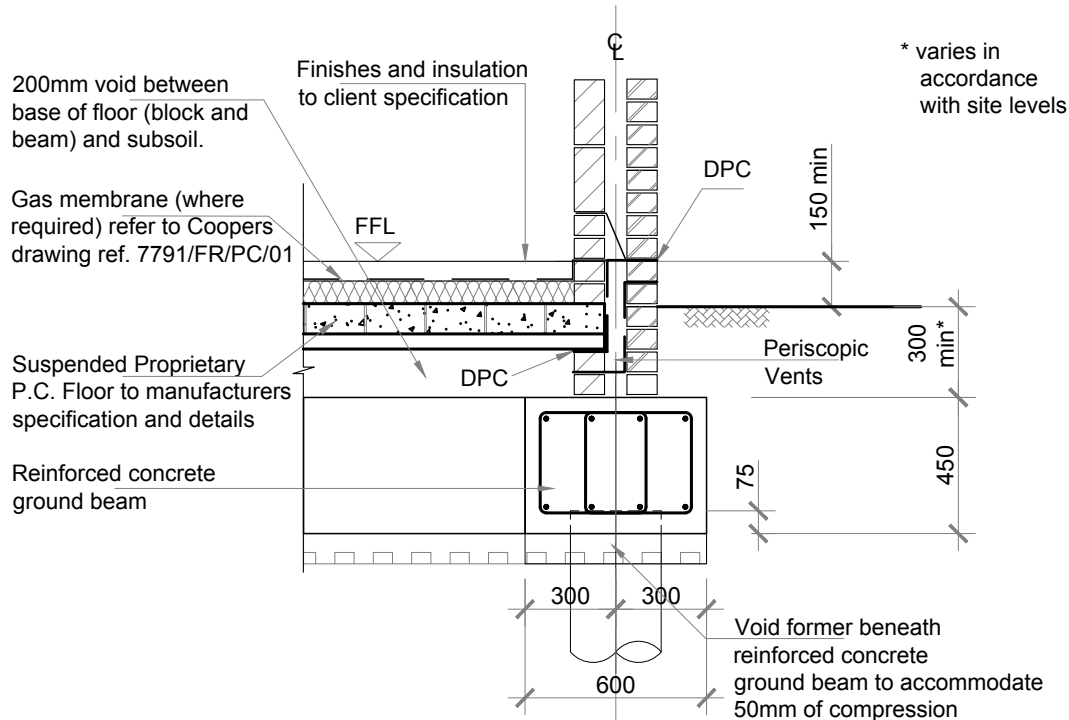
Gatewen Road, Wrexham.

TITLE

Typical Foundation Details
for Doubly Reinforced Footing
on Vibro-Stabilised Fill

DRAWN BY	AH
DATE	29.07.21
SCALE(S)	NTS
DRAWING NUMBER	7791/VD/01
REVISION	-

This drawing must be read in conjunction with the relevant house type drawings, foundation plan, gas mitigation details & schedule and the site specific site investigation reports



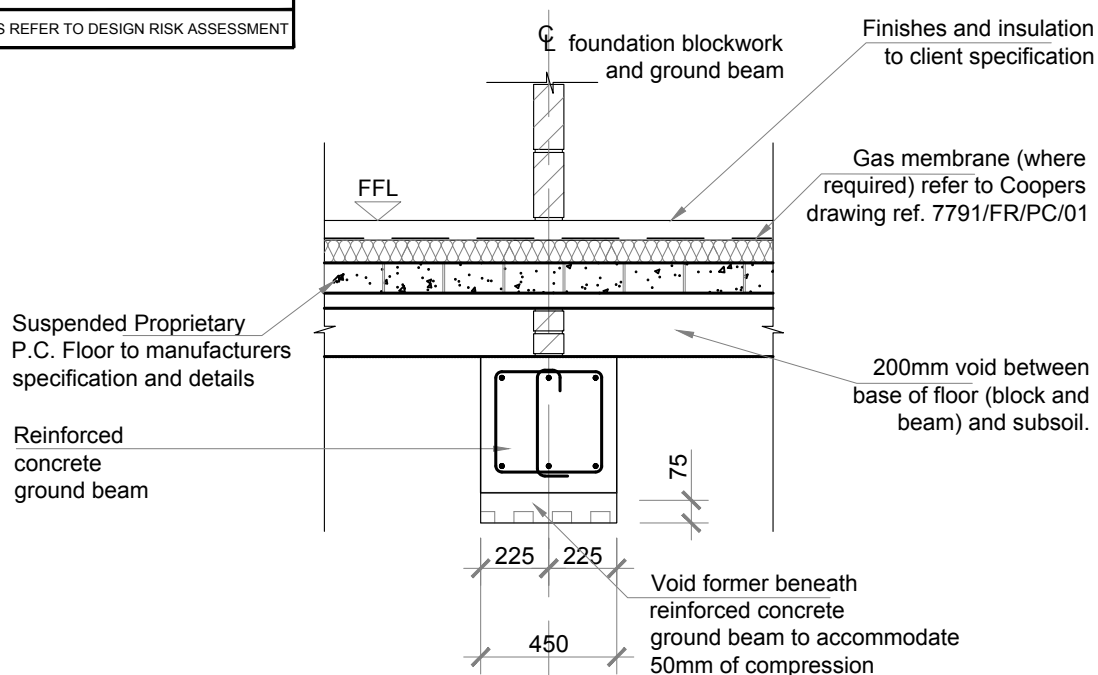
TYPICAL EXTERNAL SECTION WITH HEAVE

(SCALE 1:25)



CDM HIGH RISK ASSESSMENT

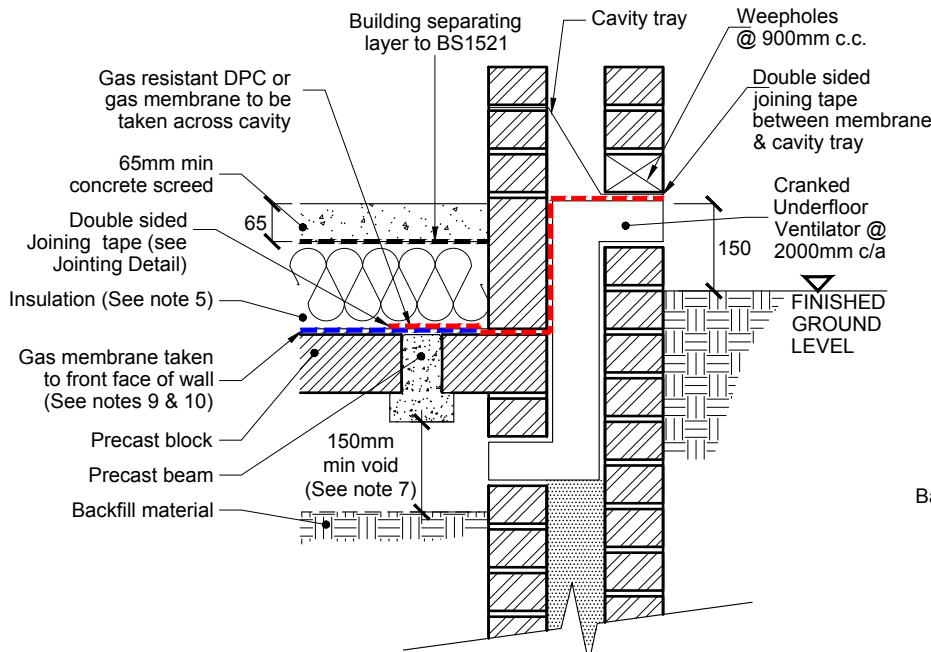
FOR ALL RISKS REFER TO DESIGN RISK ASSESSMENT



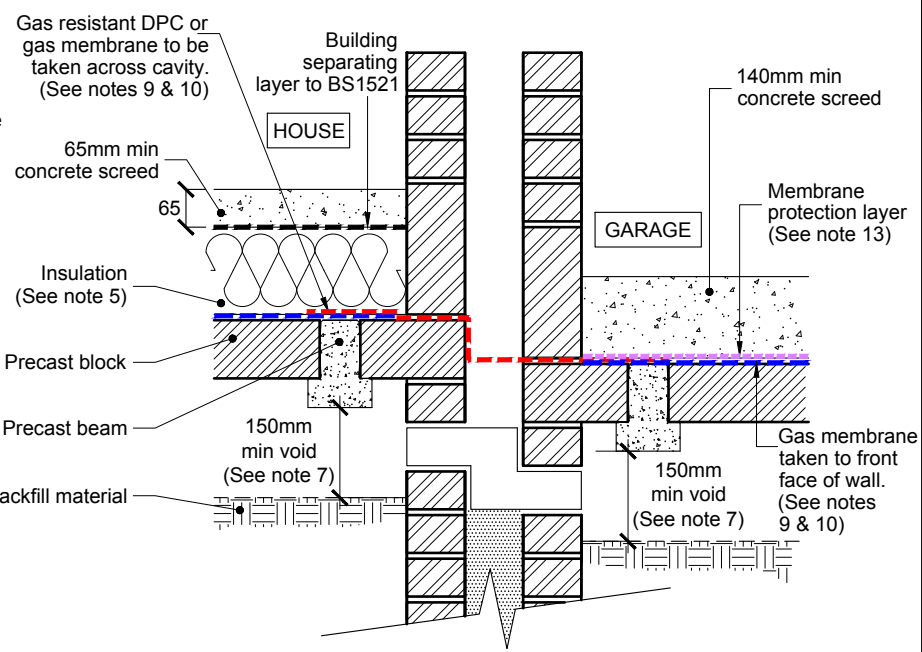
TYPICAL INTERNAL SECTION WITH HEAVE

(SCALE 1:25)

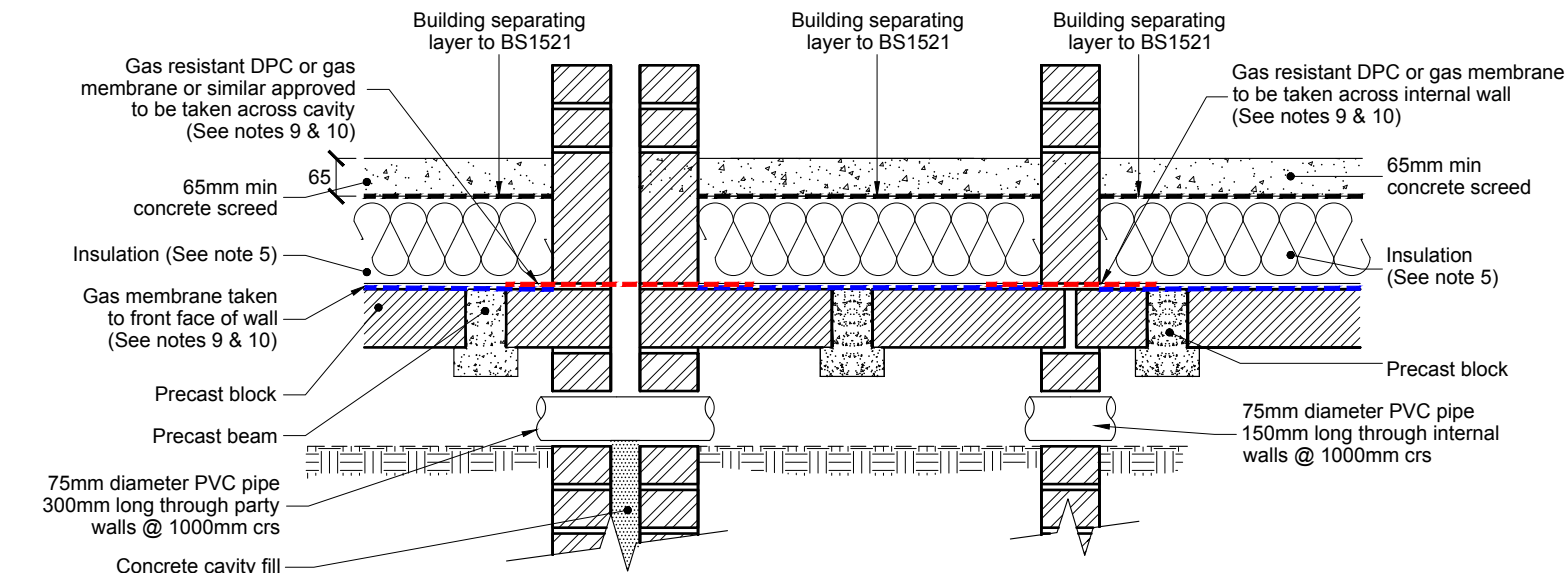
THIS DRAWING MUST BE READ IN CONJUNCTION WITH THE RELEVANT HOUSE TYPE DRAWINGS, FOUNDATION PLAN & SCHEDULE AND THE SITE SPECIFIC GROUND GAS & SITE INVESTIGATION REPORTS



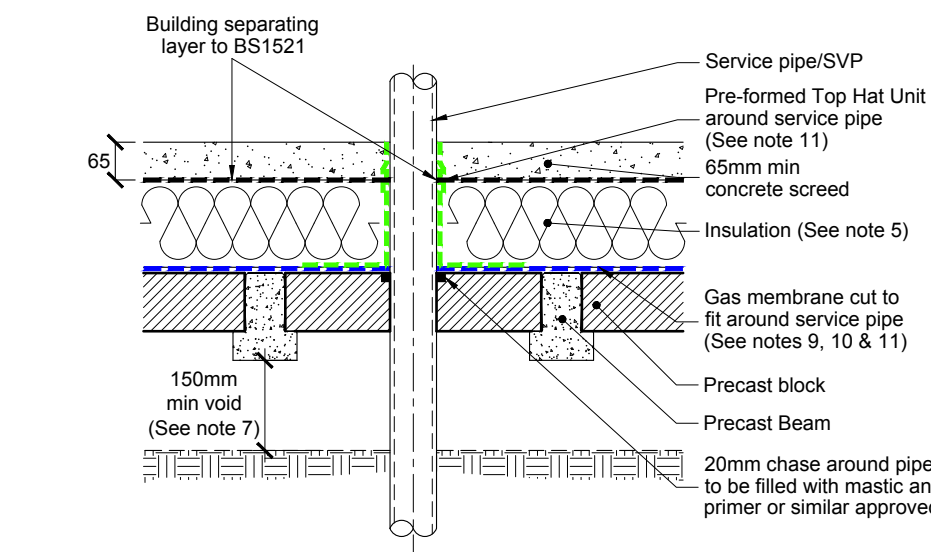
SLAB EDGE DETAIL AT EXTERNAL WALL



SLAB EDGE DETAIL WITH INTERNAL GARAGE

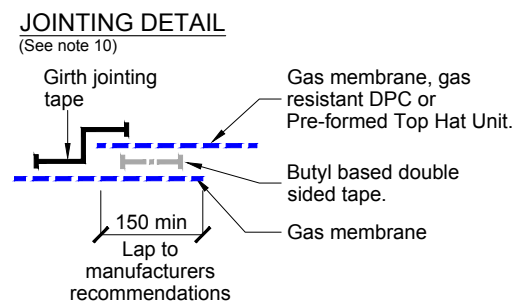


SLAB EDGE DETAIL AT PARTY WALL AND INTERNAL WALL DETAIL



SERVICE ENTRY

FOR GUIDANCE PURPOSES ONLY

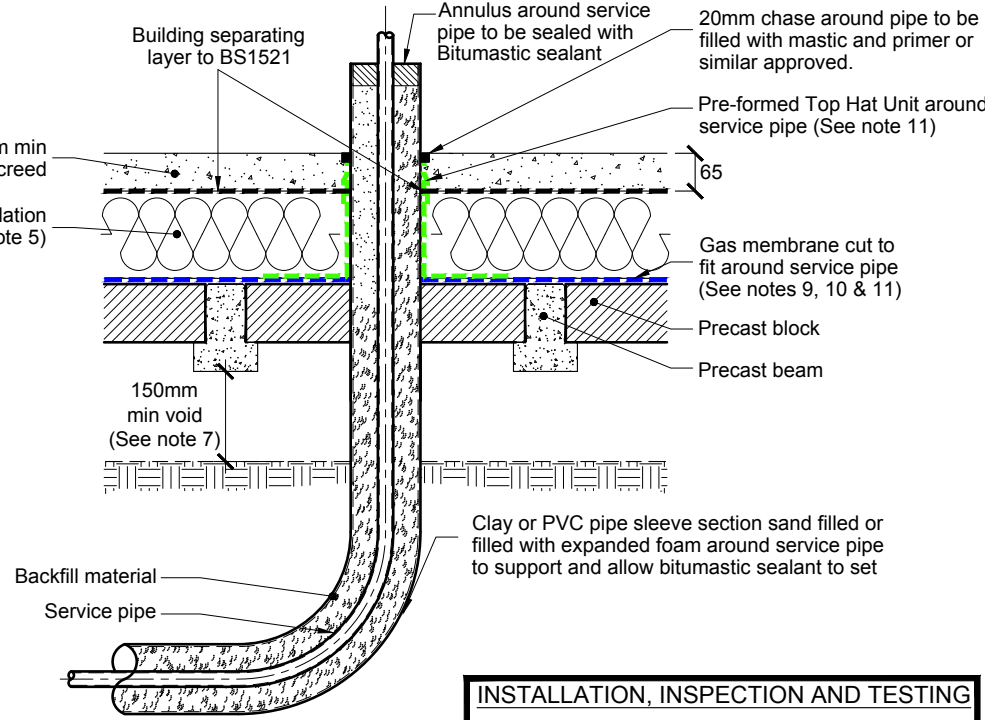


Note: If intended contracted installer is proposing heat welded joints these can have <150mm overlaps provided joint integrity not compromised.

NOTES

1. Coopers take no responsibility for the inappropriate use of this detail on a development. It is the responsibility of the Developer to commission a suitably qualified geo-environmental consultant to assess the relevant ground gas conditions at a development based upon the findings of in situ monitoring and/or qualitative risk assessment.
2. Coopers drawing is in accordance with current best practice with respect to design of measures and specification of membranes for the adequate protection of dwellings from the ingress of harmful ground gases. The details contained on this drawing are generic and for guidance purposes only. Any proposed amendments to the detail due to variations on specific house types should be referred back to Coopers for review and approval prior to implementation on site.
3. This drawing was prepared for the purpose stated. New products, improved practices and legislation may necessitate an alteration to this drawing in whole or in part after its submission. It is recommended that this drawing is referred to Coopers for reappraisal no later than one year from the date on this drawing. Continued use of this drawing beyond this date is at the Developers own risk.
4. Refer to precast slab drawing for relevant house types.
5. Refer to insulation details on specific house type slab drawings.
6. For details of proposed foundations refer to site specific foundation plan and site investigation report.
7. The minimum clear void below the suspended precast concrete ground floor is to be 150mm (plus heave thickness, where applicable) and should be adequately ventilated in accordance with the Building Regulations. The base of the void is to be within 450mm of the outer ground level unless masonry is designed by a structural engineer. The backfill material should be effectively drained. At the developers discretion the installation or an additional access plug to the subfloor can be installed to allow future connection of pumps for active extraction.
8. The gas membrane should be a proprietary radon membrane, consisting of a minimum 300µm (1200 gauge) Low Density Polyethylene (LDPE) membrane, made from virgin polymers. The membrane must have a low permeability to radon gas and also act as a damp proof membrane. The specification of the gas membrane should be submitted to Coopers for approval prior to use.
9. All gas membranes should be installed to the manufacturers guidelines and recommendations. Special care must be taken to ensure that the gas membrane is not snagged, torn, punctured, stretched or in any way damaged during construction. All damaged areas of the gas membrane must be replaced or repaired to manufacturers recommendations.
10. Taped joints between sheets of gas membrane should be well lapped (150mm min) and taped between sheets with a double sided butyl based tape in accordance with manufacturers recommendations.
11. All service entry points should be fitted with pre-formed gas resistant top hats. Tophats should be sealed to the pipe and gas membrane using butyl based double sided tape and fixed to the pipe with a jubilee clip.
12. Radon mitigation is defined within BR211 (2015) "Protecting New Buildings From Radon".
13. A protection layer is recommended where concrete is to be placed directly onto the gas membrane where minimum specification unreinforced LDPE products are to be used. The protection layer is recommended to consist of geotextile, non-woven needle-punched fleece with a mass per unit area of 300g/m². Alternatively consider use of a reinforced or thicker membrane.

This typical detail is provided as a guide for construction. House type specific variations are required to account for slopes on garage floor slabs, stepped slab levels, full building level access, party wall temporary shuttering, corner unit construction, cloaking units around doors, piers, and other similar specific considerations. We would advocate the contractors hold pre-construction discussions with Coopers (and the verification consultants if another consultant) on the approaches and considerations for specific house type construction prior to commencing installation. Should variations be constructed without prior consent these will be deemed by Coopers as a defect and not suitable for construction or approval by us or third parties.



SLEEVED SERVICE ENTRY

INSTALLATION, INSPECTION AND TESTING

1. A Ciria C735 compliant verification strategy is likely to be required, subject to approval by the Local Authority and NHBC.

CDM HIGH RISK ASSESSMENT

FOR ALL RISKS REFER TO DESIGN RISK ASSESSMENT

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CLIENT

Bellway

PROJECT

Gatewen Road, Wrexham.

TITLE

Typical Gas Precaution Detail to a Precast Concrete Slab and a Vented Sub-floor Void for Full Radon Mitigation.

DRAWN BY	AH
DATE	30.07.21
SCALE(S)	NTS
DRAWING NUMBER	7791/FR/PC/01
REVISION	-