



SuDS Drainage Design Report Barchester – Challoner House Care Home, 175 Winchester Road, Chandlers Ford, Eastleigh, SO53 2DU

Prepared on behalf of Barchester Healthcare Ltd

08/03/23

Charlie Neville – Technician
Charlie.neville@clancy.co.uk
enquiries@clancy.co.uk
www.clancy.co.uk

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Clancy Consulting Limited
19 Upper King Street
Norwich
Norfolk
NR3 1RB

FLOOD RISK ASSESSMENT & SUDS STRATEGY

Revision List

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01	Issue For Comment	14th September 2022
02	Updated to new architectural info and updated CCL drawings.	17 th January 2023
03	Updated to new architectural info.	8 th March 2023

Prepared by:


Civil Technician
for and on behalf of Clancy Consulting Ltd.

Reviewed by:

 **B.Eng.(Hons) GMICE**
Civil Engineer of Clancy Consulting Ltd.

Approved by:


Director of Clancy Consulting Ltd

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Appendix B – Drainage Strategy (including Statement)

Appendix C – Topographical survey

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1.0 Introduction

1.1 General

- 1.1.1 This report relates to proposals being submitted for & with a planning application for a new extension to the care facility of Challoner House Care Home, Eastleigh, SO53 2DU.
- 1.1.2 This report sets out the how the proposed drainage strategy which is included with in drawing number: CCL-8.2762-C-00-GA-DRN-4400_Drainage strategy (refer to Appendix B), meets the SuDS hierarchy as set out in CIRIA – SuDS Manual (C753) & that of Hampshire County Council, as Lead Local Flood Authority (LLFA). This report is intended to supplement but not replicate existing information already produced within other documentation, as submitted with this report, but to aid the Planning Authority to review and approve planning consent in an informed process.
- 1.1.3 This report is prepared solely for the benefit of Barchester Healthcare Ltd. This report may not be assigned without prior written permission from Clancy Consulting Ltd.

1.2 Background Information

- 1.2.1 In 2001 the Department for Transport, Local Government, and the Regions (DTLR) published Planning Policy Guidance Note 25 (PPG25), which explains how flood risk should be taken into consideration during the planning and development process.
- 1.2.2 PPG25 was replaced by Planning Policy Statement 25: Development and Flood Risk published in March 2010. This policy statement was introduced to place more emphasis on the increased flood risk from climate change.
- 1.2.3 In March 2012, the Government released the National Planning Policy Framework (NPPF) aiming to make the planning system less complex and more accessible, to protect the environment and promote sustainable growth.
- 1.2.4 NPPF accompanied with the Technical Guidance superseded PPS25 although the principles set out in the new publication remain similar in terms of the flood risk aspect.
- 1.2.5 The flood risk Practise Guide was published online in March 2014 with the latest update in August 2021.
- 1.2.6 In July 2018 the NPPF was updated. This update has highlighted the need for further awareness of flood risk issues for new developments. This has since been revised in February 2021 to include minor clarifications.
- 1.2.7 Construction standards for drainage are set out under the Approved Document H: for drainage & waste disposal, Building Regulations 2010 and Water UK Design Construction Guidance (v2.1 May 2021).

2.0 Structure of the Report

- 2.1** This report sets out in detail the existing site characteristics, flood risks and preliminary calculations to demonstrate suitability of the proposed drainage strategy, as required. This SuDS report expects the reader to refer to all other related information submitted along with the planning application.
- 2.2** The methodology for this SuDS Drainage Design Report (DDR) is to refer to the LLFA guidance relating to SuDS Hierarchy and The SuDS Manual (C753) by CIRIA.

3.0 Site Description

3.1 Location

3.1.1 The site is located as detailed below (Appendix A contains a location plan).

Table 3.1-1 – Site Details

OS X (Eastings)	444243
OS Y (Northings)	121399
Nearest Post Code	SO53 2DU

Figure 3.1 – existing site location – Challoner House Care Home, Eastleigh



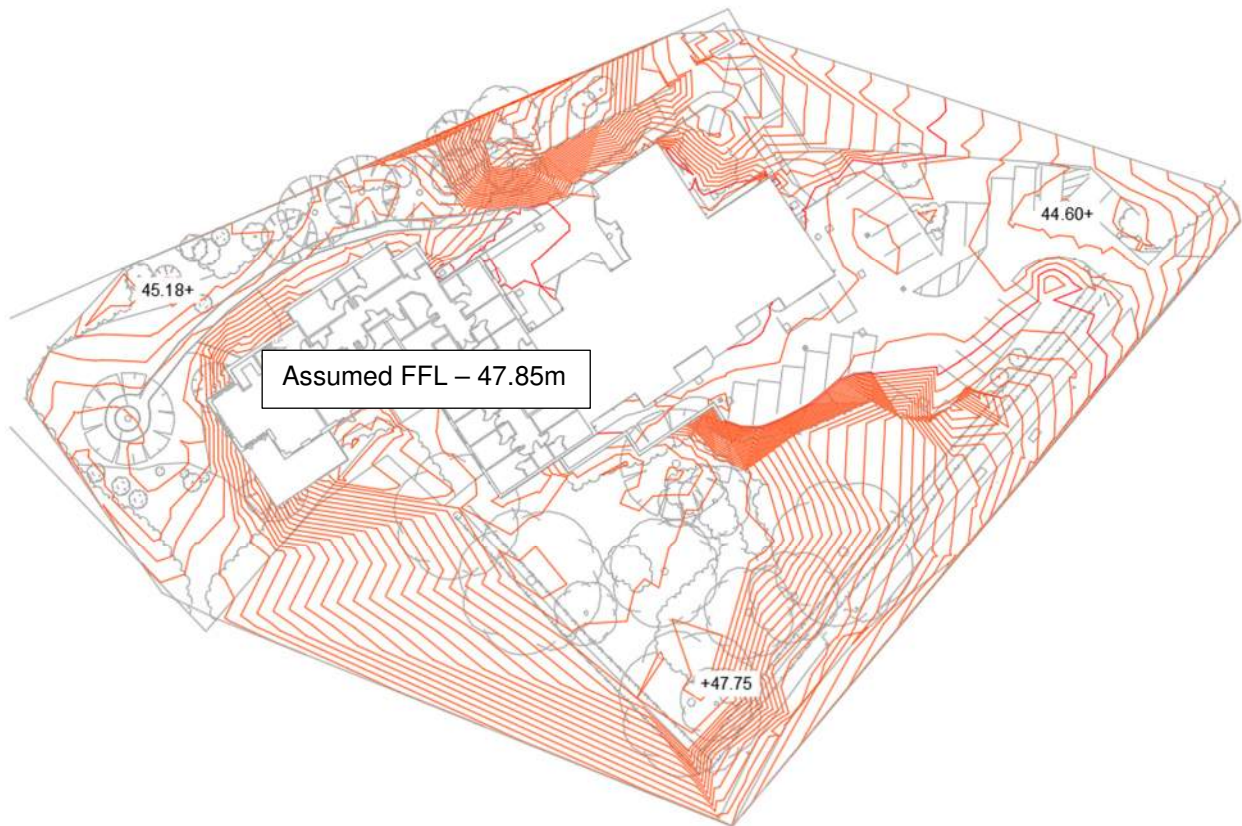
(<https://www.google.co.uk/maps/@52.6006574,1.2810651,343m/data=!3m1!1e3?hl=en>)

3.2 Site Boundaries

3.2.1 Currently the existing site is an active care home, the area that the extension is proposed over currently consists of soft landscaping.

3.3 Existing Site Usage

- 3.3.1 The existing site is currently used as a care facility, known as 'Challoner care home'. The site has direct highway access off Winchester Road.
- 3.3.2 A topographical survey of the site was completed and a copy of which is provided in Appendix C. The ground levels vary across the site, ranging from around 47.75mAOD in the Southern corner, to around 44.60mAOD in the Eastern corner.



3.4 Key Information Summarisation

3.4.1 The information in the table below has been assessed from a desktop study & provides a summary of key information.

Table 3.4-1 Key Information Summarization

Total Site Area	Area: 0.563ha
Flood Zone 1 <i>Land having a less than 1 in 1,000 annual probabilities of river or sea flooding. (Shown as 'clear' on the Flood Map all land outside Zones 2 & 3).</i>	NPPF Table 2 indicates residential care home use to be "More vulnerable". In flood zone 1 areas, this is considered acceptable for development. Environment Agency flood maps for planning (presented in figures 3.3-3.5 below) indicate the proposed development is in flood zone 1.
Topography	The site is brownfield and partly laid to concrete, excluding building footprints and soft landscaped areas. The site has a topographic low point of ~44.60mAOD at the East end, and high point of ~47.70mAOD at the South-West edge of the site. The site slopes away from the existing structure to the North at the rear elevation of the existing property falling from ~45.60mAOD to 45.20mAOD.
Geology	Superficial deposits: No superficial deposits recorded. Bedrock geology: London Clay Formation – Chalk, Silt and Sand. The London Clay mainly comprises bioturbated or poorly laminated, blue-grey or grey, brown, slightly calcareous, silty to very silty clay, clayey silt and sometimes silt, with some layers of sandy clay. Obtained via British Geological Survey mapping.
Hydrology	There are no watercourse or bodies of water within the site.

Hydrogeology	The underlying bedrock geology is recorded by the British Geological Survey mapping as being an “Unproductive” aquifer.
Infiltration Testing	A falling head infiltration test was undertaken in the Western area of the site within borehole WS04 in accordance with BS 5930:2015:A1:2020. The indicative draft permeability rate obtained from the test was 2.83×10^{-5} m/s. The full results can be seen in Appendix C.
Source Protection Zone (SPZ)	The site lies within an area which isn't source protected or Drinking water safeguarded (Ground water) (England) as per Environment Agency mapping.
Flood Zone	The site is within Zone 1.
Other flooding incurring at the site	None. While there is Very Low probability of surface water flooding within Winchester Road, there is also no surface water flooding within the proposed site.

Fig. 3.3 – Surface water flood map

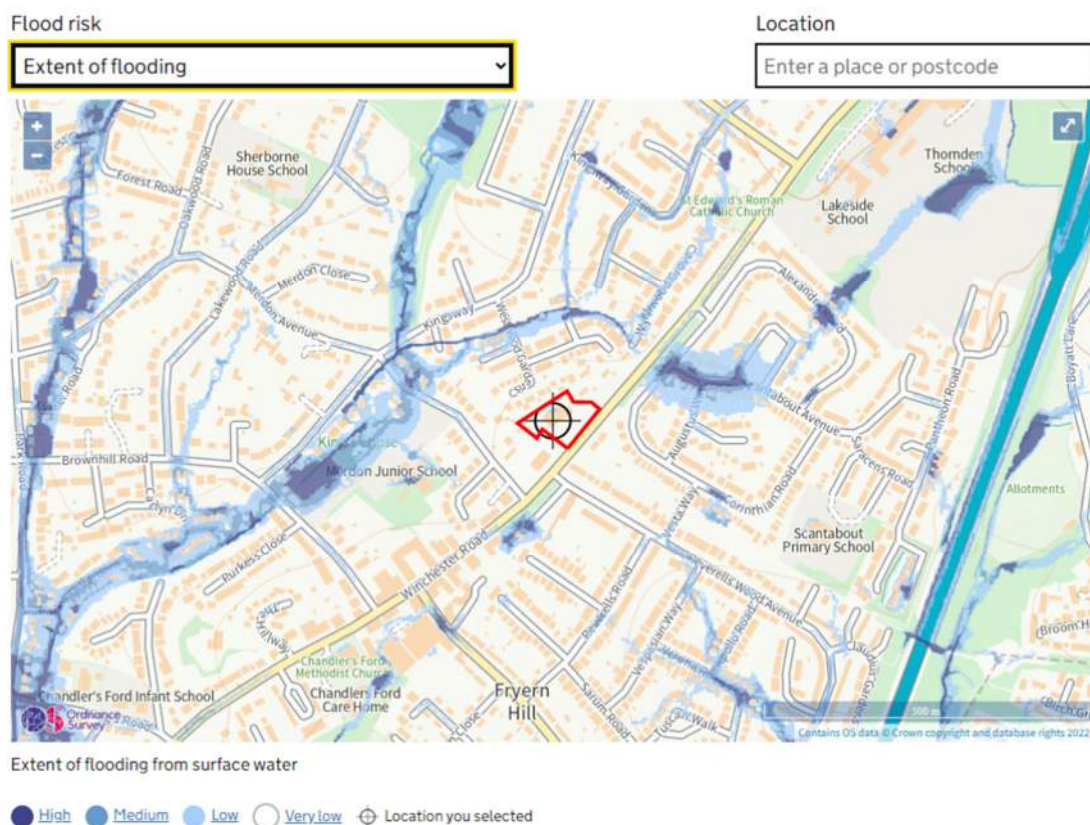
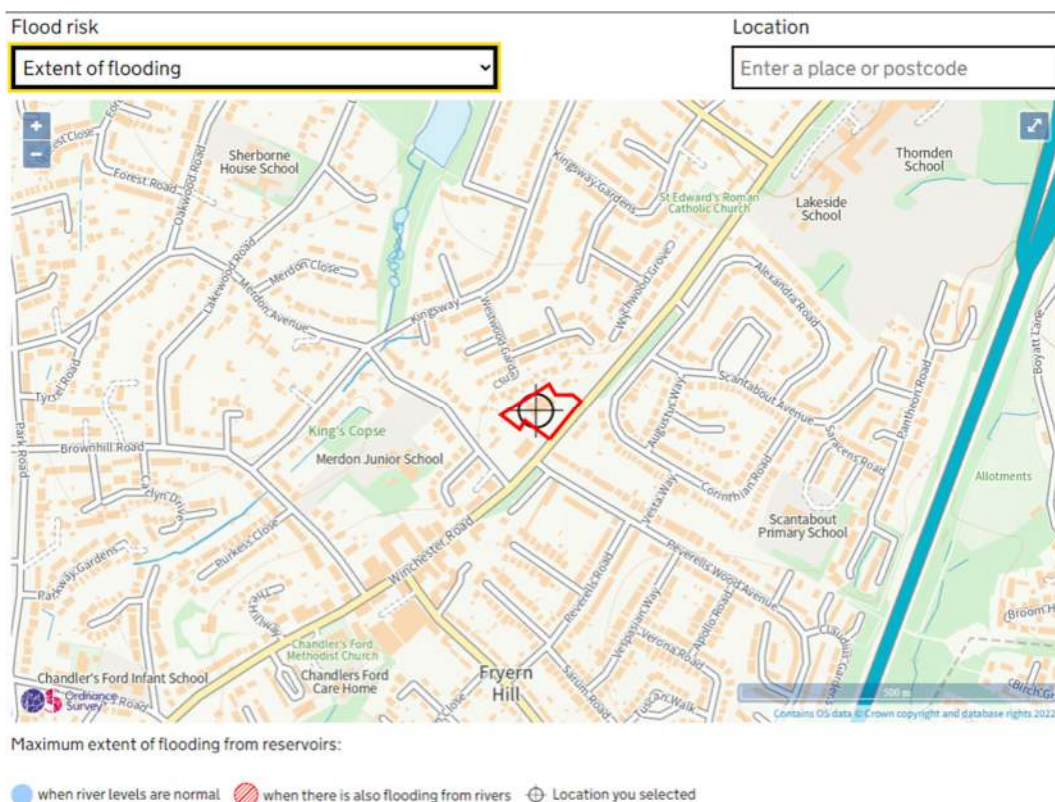


Fig. 3.4 – Extent of flooding from rivers or sea



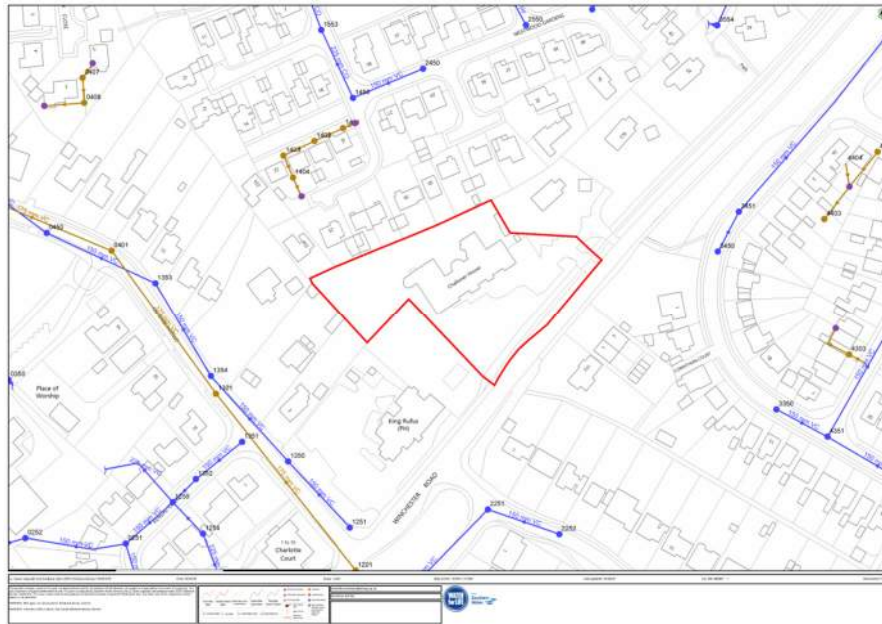
Fig. 3.5 – Extent of flooding from reservoirs



3.5 Existing Public Drainage

- 3.5.1** The local sewer authority is Southern Water (SW). As per the public sewer mapping provided by Southern Water, there is currently shown to be no known public sewers within the site or the section of Winchester Road adjacent to the site, with the closest foul sewer being approximately 36m Northwest. A copy of the provided asset plans can be found in Appendix B.
- 3.5.2** There are no publicly maintained surface water sewers serving the existing site.

Fig. 3.6 – Extract from Southern Water Asset Plans



3.6 Existing Private Drainage

- 3.6.1** Surface water runoff for the current site is collected in carrier pipes and transferred via gravity to existing onsite soakaways. The condition and positioning of the current network is as shown in the CCTV survey provided by Survey Solutions (copy found in Appendix B).
- 3.6.2** The existing foul drainage for the site appears to discharge via carrier pipe to the North-East of the site.

3.7 Existing Ground Conditions

- 3.7.1** A number of samples were collected to ascertain the type of strata and level of groundwater present on the site, with 4 of the 5 tests being window samples (WS) and the last being a hand pit (HP). All 5 tests were taken from the soft landscaping area in the West of the site, the area closest to the new extension footprint.
- 3.7.2** The different types of strata encountered throughout all of the samples were either topsoil, made ground, Wittering Formation and London Clay Formation.
- 3.7.3** Groundwater was not encountered in any of the sample locations during the intrusive works, however through subsequent groundwater monitoring, groundwater was discovered to be present at WS01 and WS02 on 02/08/2022 at depths of 4.59m and 4.34m respectively. However, on 30/08/2022 WS01 is recorded as being dry while WS02 had groundwater at 4.30m.

4.0 Proposed Development

4.1 Development

- 4.1.1 The proposal under this redevelopment is to demolish the western wing of the existing care home and construct 1No. new 10 bed care home extension.
- 4.1.2 A copy of the proposed architectural plans, can be found in Appendix A.

5.0 SuDS Hierarchy

5.1 LLFA SuDS Hierarchy

- 5.1.1** The Hampshire County Council – LLFA, follows the SuDS hierarchy outlined by The SuDS Manual (C753) by CIRIA.

The disposal of surface water should be considered in the following order of priority:

1. Infiltration into the subsoil.
2. Discharge to a water course or the sea.
3. Discharge to a surface water sewer.
4. Discharge to a combined sewer.

5.2 Source control - Infiltration

- 5.2.1** Given the site is brownfield and the is already paved with impermeable concrete, surface water runoff is currently captured by a series of positive features, such as, gutters for the buildings, drainage channels, downpipes & gullies. These transfer runoff to on-site soakaways via a gravity piped network.

- 5.2.2** On-site infiltration testing has been undertaken. Results indicate that the subsoil strata are suitable for infiltration. Therefore, as per the drainage hierarchy, surface water will be captured at source and discharged via infiltration. The worst-case infiltration rate of 2.83×10^{-5} m/s will be used for design purposes. On-site infiltration rates should be confirmed at the proposed soakaway location prior to construction works, with testing in accordance with BRE 365, and the result reported to the civil engineer for review prior to drainage works being undertaken.

Trial Pit	Infiltration rate (m/s)
WS04	2.83×10^{-5}

Infiltration rates taken from Appendix C email summary of ground investigation

- 5.2.3** As per the Hampshire Local Flood and Water Management Strategy SuDS Policy 1, the design must ensure that, post development, the volume and discharge rate of surface water discharge should not increase. The report also states that Hampshire County Council will follow best practise requirements when dealing with surface water consultations, such as ensuring all surface water attenuation is designed for up to a 1 in 100 year plus climate change event, ensuring drainage systems consider the required water quality and making sure that processes for ongoing maintenance of SuDS are considered.

6.0 Drainage

6.1 Overall Strategy

- 6.1.1** The general drainage strategy statement can be found on drawing number: CCL-8-2760-C-CHA-GA-DRN-4400_Drainage strategy enclosed in Appendix B.
- 6.1.2** Site has an approximate area of 0.563ha. 0.238ha of that will form the proposed developments impermeable area, which includes existing impermeable area from the care home footprint and a mixture of additional roof area and impermeable pavements. The remaining areas are to remain landscaped. Landscaped pavements are assumed to drain to soft landscaping directly adjacent as laid out below.

Area Reference	Existing areas (ha)	Proposed areas (ha)
Impermeable area	0.211	0.238
Permeable area	0.352	0.326
	0.563	0.563

Proposed Drainage reference	Proposed Impermeable area (ha)
Roof + Car park	0.184
Landscaping paths	0.054
	0.238

- 6.1.3** The proposals for this development include 1No. extension to the existing building with a footprint of around 578m². This is the impermeable area the proposed drainage will capture; however, the development does not increase the overall impermeable area by this amount as 321m² of the original demolished footprint will be covered by the new extension, with only 257m² being additional in total.
- 6.1.4** The parts of the existing building that are to remain will continue to be drained to the existing soakaways on site. Any additional impermeable areas will be required to drain to new infiltration features, as the capacity and effectiveness of the existing soakaways cannot be verified.
- 6.1.5** Surface water discharge from the roof of the extension will be piped, via gravity to a soakaway located at the rear of the development. The foul waste will be transferred to the existing system in place on site. It has been assumed that the downstream network has sufficient capacity.
- 6.1.6** The soakaway has been sized to accept all storm events up to and including, 1:100-year critical event + 45% climate change, as per the upper band for 2070s epoch in the 'Test and Itchen Management Catchment Peak rainfall allowances mapping produced by the Environment Agency.
- 6.1.7** As stated in section 3.4.1 - The site is wholly within Flood Zone 1 category.
- 6.1.8** The NPPF (Technical Guidance) Table 3, Flood Risk Vulnerability and Flood Zone Compatibility matrix, indicates that "More Vulnerable" development proposals in Flood Zone 1 are acceptable.

6.2 Half Drain Down Time

- 6.2.1** Hampshire LLFA guidance requires infiltration features to half drain within 24 hours. This is to ensure that adequate space is available in the drainage system for later storm events. Due to the high infiltration rate achieved on site during testing and the small size of soakaway, the proposed half drain down time was only 256 minutes (see Appendix D for calculations) which easily falls within the 24-hour guidelines, therefore making this feature acceptable.

6.3 Water Quality

6.3.1 A well-designed SuDS scheme should manage the quality of runoff so that receiving waters and / or groundwater are protected from pollution hazards. The methods for achieving the required water quality requirements specific to this site have been designed in accordance with The SuDS Manual (CIRIA 2015) using the simple Indices method.

6.3.2 The below table defines the pollution hazard indices for varying use classifications.

Table 6.3-1 - Pollution hazard indices for different land use classifications (source: The SuDS Manual 2015)

Land use	Pollution hazard indices for different land use classification			
	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydro-carbons
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial / industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof).	0.05
Individual property driveways, residential car parks, low traffic roads (e.g., cul-de-sacs, home zones & general access roads) & non-residential car parking with infrequent change (e.g., schools, offices) i.e., < 300 traffic movements / day.	Low	0.5	0.4	0.4
Commercial yard & delivery areas, non-residential car parking with frequent change (e.g., hospitals, retail), all roads except low traffic roads & trunk roads / motorways ¹ .	Medium	0.7	0.6	0.7
Sites with heavy pollution (e.g., haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals & fuels (other than domestic fuel oil) are to be delivered, handled, stored, used, or manufactured; industrial sites; trunk roads & motorways.	High	0.8 ²	0.8 ²	0.9 ²

6.3.3 The use classifications for this site have been highlighted green in table above.

Table 6.3-2 - Proposed pollution mitigation

<i>Characteristics of the material overlying the proposed infiltration surface, through which the runoff percolates</i>	TSS	Metals	Hydrocarbons
<i>A soil with good contaminant attenuation potential of at least 300mm in depth</i>	0.4	0.3	0.3

Roof drainage is considered suitable for discharge to the soakaway without further cleaning.

6.4 Proposed Design Infiltration Rates

6.4.1 Infiltration test results have been established via on-site infiltration testing. Infiltration was found to be a viable method of surface water discharge and the ground investigation results are found in section 5.2.2 of this report. For the purposes of design, the worst infiltration rate of 2.83×10^{-5} has been assumed representative as a conservative assumption. Location specific infiltration rates should be undertaken in accordance with BRE Digest 365 – Soakaway Design (2016) prior to construction to validate the design. The window sample closest to the proposed location of the soakaway showed groundwater at depths of around 4.30m BGL in the most recent reading from 30th October 2022, which is more than 1m below the proposed base of the soakaway feature.

6.5 Foul Drainage

- 6.5.1** A CCTV drainage survey carried out by Survey Solutions on 12th August 2022 shows that the existing foul drainage is piped off site to the North-East edge of the site into third party land.
- 6.5.2** It is proposed to maintain the existing foul water drainage connection. New foul drainage will connect to the existing private system.

7.0 Operation & Maintenance

- 7.1** A well-maintained drainage system will ensure that flood risk on-site and downstream of the proposed development site remain low by reducing the risk of blockages in the drainage system. General and specific item maintenance information has been included below. This information should form part of the building O&M manual and have been extracted from the CIRIA SUDS manual (C753) as best practise.

Geocellular Infiltration Tank

Description

Infiltration tanks are used to facilitate the transference of surface water run-off collected from hardstanding/roof areas into the ground below the site for discharge. Geocellular infiltration crates are advantageous as they allow for spatial versatility as opposed to above ground water features such as retention basins and swales.

Maintenance Issues

For Geocellular infiltration tanks typical issues relate to the build-up of silt within the tank, causing a decrease in capacity and porosity over time.

Maintenance Regime

Schedule	Action Required	Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly. Take remedial action as appropriate	For 3 months after installation, then annually.
	Remove debris from the catchment surface (where it may cause a risk to performance)	Monthly
	For systems where rainfall infiltrate into the tank from above, check surface of filter for blockage by sediment, algae or other matter. Remove blockage and replace surface infiltration medium as appropriate.	Annually
	Remove Sediment from pre-treatment structures and/or internal forebays.	Annual, or as needed
Remedial Actions	Repair/rehabilitate inlets, outlets, overflows and vents.	As needed

Monitoring	Check all inlets, outlets, vents and overflows to ensure that they are working as designed.	Annually
	Survey inside of tank for sediment build-up and remove as appropriate.	Every 5 years or as needed.

Catchpits

Description

Catchpits are similar to manholes; however, they include a sump to the base which is designed to capture silt and prevent it reaching other parts of the drainage network. Catchpits provide a useful location to remove silt for drainage networks. Catchpits must only be accessed after a risk assessment, and the implementation of a safe system of work, which identifies the specific risk to confined space.

Maintenance Issues

If the silt captured in catchpits does not get removed regularly it will cause silt to move downstream to other part of the drainage network, some of which may be difficult to access, or totally inaccessible.

Maintenance Regime

Schedule	Action Required	Frequency
Routine/regular maintenance (inc. inspections and monitoring)	Remove manhole covers and ensure that there are no blockages. Inspect and identify any parts that are not operating correctly and resolve. Inspect silt storage in sump. Remove silt as appropriate using subcontractor with vacuum extraction plant.	For 3 months after installation
	Check covers do not need repairing. Repair/replace as required.	Monthly
	Inspect catchpits to ensure that the drainage is running freely, and free of debris. Inspect silt storage in sump. Remove silt as appropriate using subcontractor with vacuum extraction plant.	Every 6 months and following the leaf fall in autumn.
Occasional maintenance	Suction sweeping and cleansing (to Water Jetting Association standards) and CCTV where appropriate. Resolve any chamber structural defects, or any defects that could reduce the free flow of water.	2 – 4 Years

Remedial maintenance	• Silt removal • Inlet/outlet repair • Erosion repairs • System recovery following a pollution event • Manhole Cover Replacement • Repairs to brickwork or concrete	When required (tasks to repair problems due to wear, damage or vandalism)
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Gullies

Description

Surface Water is drained over impermeable areas towards grated gullies at low points and water is carried to below ground pipework.

Maintenance Issues

Gullies can become blocked by silt or debris, causing flooding.

Gullies include integral silt traps which can cause siltation of downstream drainage infrastructure if the appropriate maintenance is not undertaken.

Gullies frequently include a trapped outlet which prevents liquids lighter than water (ie oil and fuel) departing the gully. If silt and light liquids do not get removed regularly silt and oil will move downstream to other areas of the drainage network, some of which may be difficult to access, or totally inaccessible.

Maintenance Regime

Schedule	Action Required	Frequency
Routine/regular maintenance (inc. inspections and monitoring)	Inspect to ensure that there are no blockages at surface level, and that the outfall is operating efficiently.	For 3 months after installation
	Inspect and identify any parts that are not operating correctly and resolve.	
	Check that there are no blockages at surface level.	Monthly
	Remove covers to check for blockages or siltation.	Every 6 months and following the leaf fall in autumn.
Occasional maintenance	Remove oil and silt using specialist vacuum extraction plant.	1 – 2 Years
Remedial maintenance	- Silt removal - Inlet/outlet repair - Erosion repairs - System rehabilitation following a pollution event - Cover replacement - Structural failure of gully pot - Ensure that impermeable surfaces surrounding linear drains	When required (tasks to repair problems due to wear, damage or vandalism)

	have not settled below top of gully cover level, causing ponding	
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Pipework

Description

Below ground drainage pipework connects drainage inlets (gullies, linear drains etc) to manholes as well as providing connections between manholes.

Maintenance Issues

Pipes could become blocked by silt, debris fat, grease, or collapse. In addition, it's possible for pipe joints to become displaced or for roots to grow from the surrounding ground into the pipes.

These factors can cause a reduction in, or loss of, the hydraulic capability of the pipes which could cause flooding to land and buildings.

Defects in pipes could cause a reduction in stability to ground underlying foundations, thus, causing settlement and damage to buildings and external surfaces.

The material of pipes and associated couplings can be damaged if aggressive liquids are passed through the pipes.

It is recommended that trees are not planted within 3m of pipes to reduce the risk of root ingress.

Maintenance Regime

Schedule	Action Required	Frequency
Routine/regular maintenance (inc. inspections and monitoring)	Inspect and identify any parts that are not operating correctly and resolve.	For 3 months after installation.
	Monitor working of drainage at ground level. The indications damaged pipework's may include localised flooding or emission of smells.	Monthly
	Remove manholes covers to check for blockages.	Every 6 months
Occasional maintenance	CCTV pipework, clean to WRC Sewer Jetting Code of Practice. Resolve issues as appropriate.	1 – 2 Years

Remedial maintenance	• Silt removal. • Fat and Grease removal. • Erosion repairs. • Joint displacement. • Structural failure, cracking or collapse. • System rehabilitation following a pollution event.	When required (tasks to repair problems due to wear, damage or vandalism)
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8.0 Conclusions and Recommendations

- 8.1** This report provides the information required by the planning authority to make an informed & appropriate decision related to the drainage proposals for this development.
- 8.2** The site drainage has been designed in accordance with LLFA guidance and recommendations. SUDS features have been introduced to reduce velocity & quantity of run-off. It has also demonstrated, water quality has been considered to protect ground water sources, through several treatment processes. It has also demonstrated, the proposals are likely to be of a “Low” risk of potential contamination, likely to affect any ground water sources that may be present.
- 8.3** Allowances have been made for 45% climate change increases in rainfall events and systems have been designed for critical rainfall events.

APPENDIX A – ARCHITECTURAL PROPOSALS

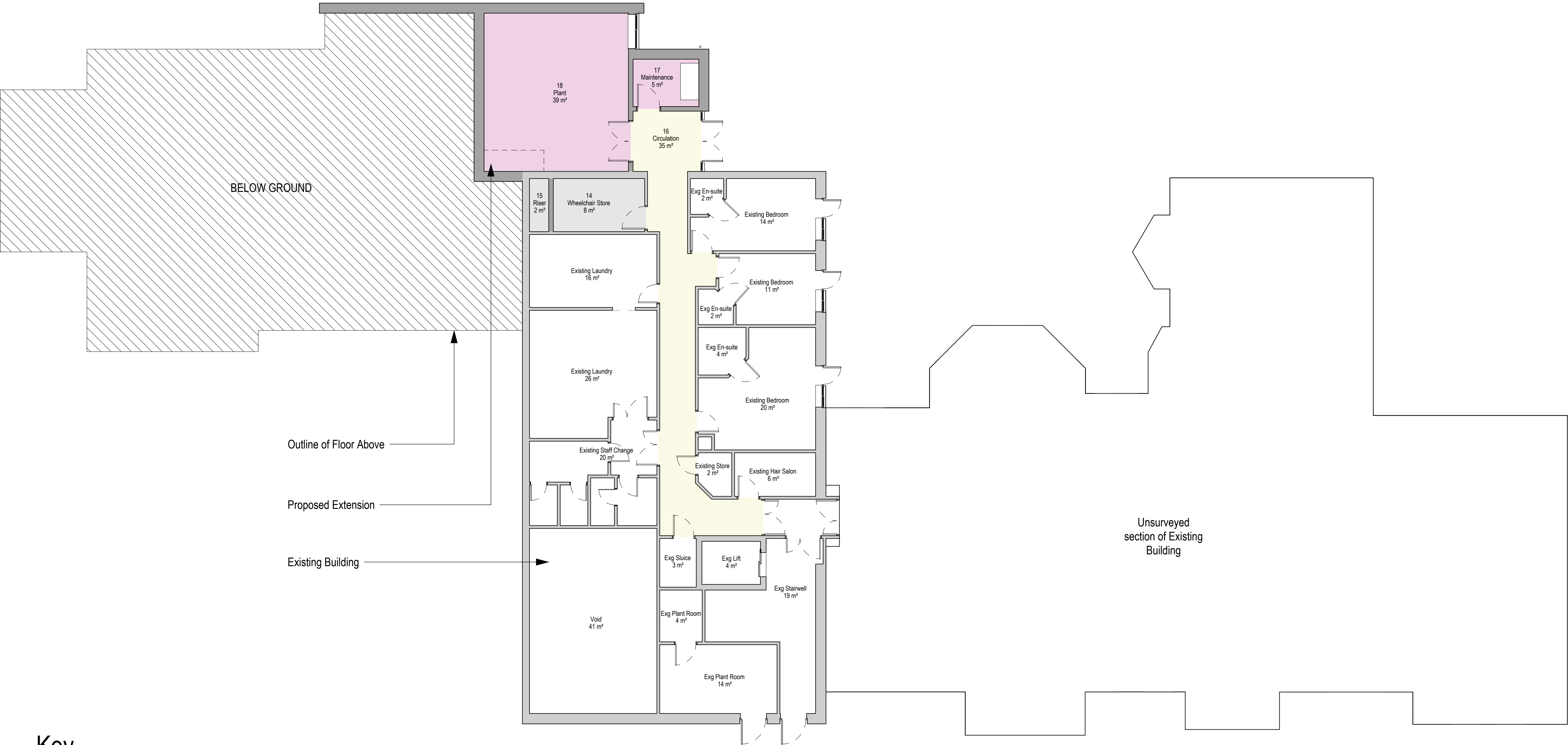
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Key

- Existing Walls
- Proposed Walls

Room Type Key

- Circulation
- Existing Rooms
- Staff
- Storage
- Unused Space

P8	08/02/23	Adjustments to Layout and Annotations	AB	ID
P7	02/02/23	Revised Ground Floor	AB	ID
P6	20/12/22	Adjustment to Design	AB	ID
P5	29/11/22	Addition of Plant and Risers	AB	ID
Rev	Date	Description	Drawn By	Checked By

HARRIS IRWIN
architects

Aske Stables, Aske, Richmond,
North Yorkshire. DL10 5HG
t: 01748 826675
e: enquiries@harrisirwin.com
w: www.harrisirwin.com

Project:
Challoner House
Challoner House Care Home,
Eastleigh,
SO53 2DU

Client: Barchester

Drawing Title:
Proposed Ground Floor

For Planning Submission

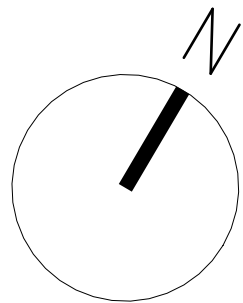
HIA Project Number 3307	Scale @ A1 1: 100	Suitability DO
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Project 3307 - HIA - 01 - B0 - DR - A - 0201	Originator HIA	Volume 01	Level B0	Type DR	Role A	Number 0201
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0201 Ground Floor



SCALE 1:100 @ A1



NOTES

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Care Group Day
Space Comparison

First Floor

Existing: 67m²
Proposed: 90m²

Room Type Key

- Bedrooms
- Circulation
- Day Rooms
- En-Suites
- Existing Rooms
- Sanitary
- Staff
- Storage

P8	08/02/23	Adjustments to Layout and Annotations	AB	ID
P7	02/02/23	Revised Ground Floor	AB	ID
P6	20/12/22	Adjustment to Design	AB	ID
P5	29/11/22	Addition of Plant and Risers	AB	ID
Rev	Date	Description	Drawn By	Checked By

HARRIS IRWIN
architects

Aske Stables, Aske, Richmond,
North Yorkshire. DL10 5HG
t: 01748 826675
e: enquiries@harrisirwin.com
w: www.harrisirwin.com

Project:
Challoner House
Challoner House Care Home,
Eastleigh,
SO53 2DU

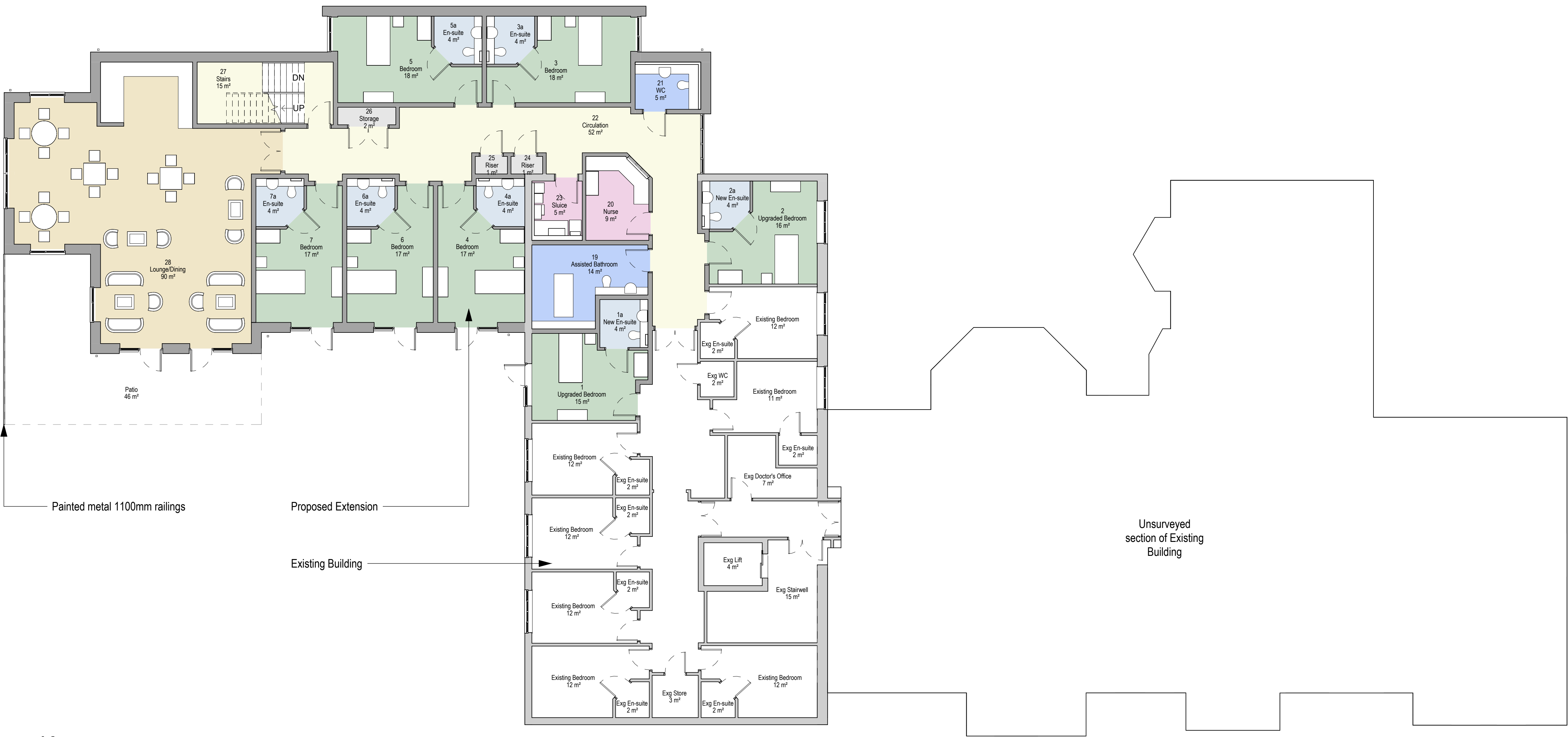
Client: Barchester

Drawing Title:
Proposed First Floor Plan

For Planning Submission

HIA Project Number	Scale @ A1	Suitability
3307	1: 100	DO

Project	Originator	Volume	Level	Type	Role	Number
3307 - HIA	-	01	-	00 - DR	-	A - 0211



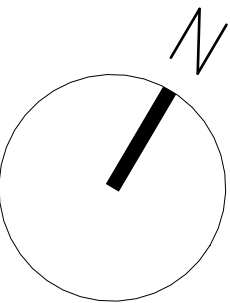
Key

- Existing Walls
- Proposed Walls

0211 First Floor



SCALE 1:100 @ A1



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Director.

Existing: 0m²
Proposed: 69m²

- Bedrooms
- Circulation
- Day Rooms
- En-Suites
- Existing Rooms
- Sanitary
- Staff
- Storage

P8	08/02/23	Adjustments to Layout and Annotations	AB	ID
P7	02/02/23	Revised Ground Floor	AB	ID
P6	20/12/22	Adjustment to Design	AB	ID
P5	29/11/22	Addition of Plant and Risers	AB	ID
Rev	Date	Description	Drawn By	Checked By

Aske Stables, Aske, Richmond,
North Yorkshire. DL10 5HG
t: 01748 825675
e: enquiries@harrisirwin.com
w: www.harrisirwin.com

Client: Barchester

Drawing Title:
Proposed Second Floor Plan

For Planning Submission

HIA Project Number	Scale @ A1	Suitability
3307	1 : 100	D0

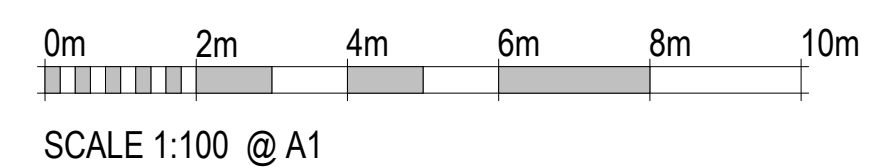
Project	Originator	Volume	Level	Type	Role	Number
3307	HIA	01	01	DR	A	0221



Existing Walls

Proposed Wall

0221 Second Floor



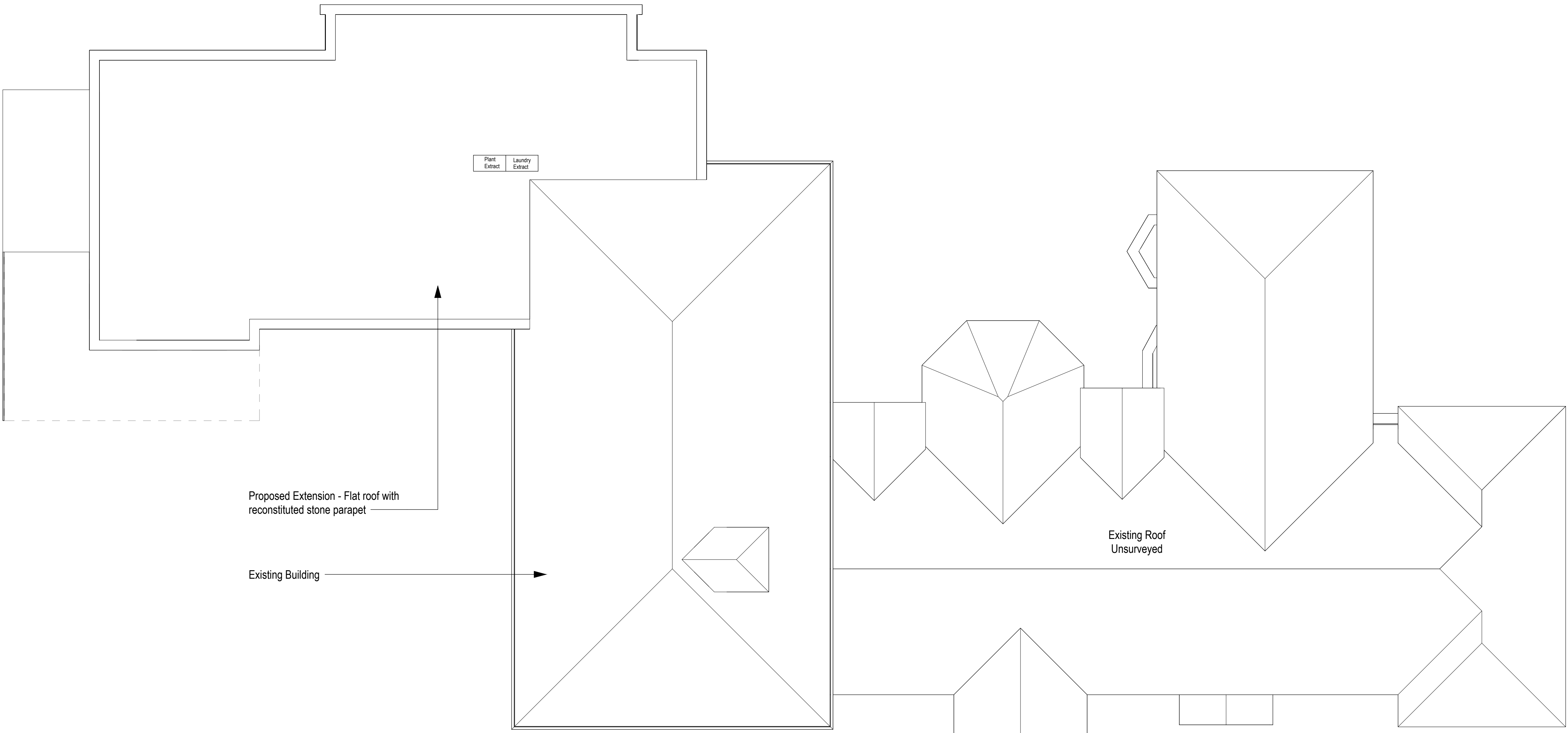
NOTES

All dimensions are in millimetres unless stated otherwise.

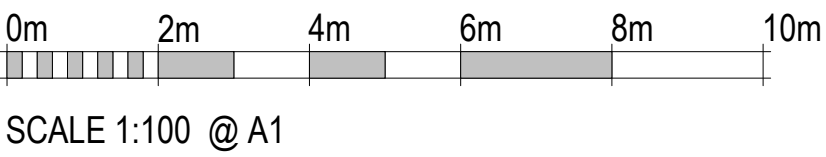
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2701 Roof Plan



P5	08/02/23	Adjustments to Layout and Annotations	AB	ID
P4	22/12/22	Adjusted Annotations	AB	ID
P3	20/12/22	Adjustment to Design	AB	ID
P2	29/11/22	Addition of Plant and Risers	AB	ID
Rev	Date	Description	Drawn By	Checked By

HARRIS IRWIN
architects

Aske Stables, Aske, Richmond,
North Yorkshire. DL10 5HG

t: 01748 825675
e: enquiries@harrisirwin.com
w: www.harrisirwin.com

Project:
Challoner House
Challoner House Care Home,
Eastleigh,
SO53 2DU

Client: Barchester

Drawing Title:
Proposed Roof Plan

For Planning Submission

HIA Project Number 3307	Scale @ A1 1 : 100	Suitability DO
Project 3307 - HIA - 01 - RF - DR - A - 2701	Originator Volume Level Type Role Number	



NOTES

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- New retaining wall
- New refuse and recycling store
- New parking arrangement (Spaces 5m x 2.5m)
- New retaining wall
- Cycle parking

Proposed patio extension with safety balustrade

New Retaining Wall

Thick red line denotes site boundary

- Existing Tree RPA's
- - - Removed Trees

P4	20/11/22	Parking Adjustments	AB	ID
P3	19/08/22	Minor Adjustments	AB	ID
P2	16/08/22	First Draft	AB	ID
P1	08/07/22	Drawing in Progress	SL	ID
Rev	Date	Description	Drawn By	Checked By

HARRIS IRWIN
architects

Aske Stables, Aske, Richmond,
North Yorkshire, DL10 5HG
t: 01748 825675
e: enquiries@harrisirwin.com
w: www.harrisirwin.com

Project:
Challoner House
Challoner House Care Home,
Eastleigh,
SO53 2DU
Client: Barchester

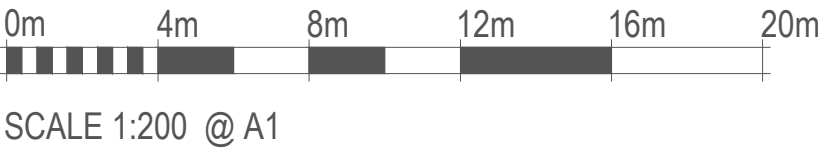
Drawing Title:
Proposed Site Plan

For Planning

100 Project Number	Scale 1:1	Assembly
3307	1:200	D0

Project	Originator	Volume	Level	Type	Rev	Number
3307	HIA	ZZ	XX	DR	A	0102

0102 Proposed Site Plan



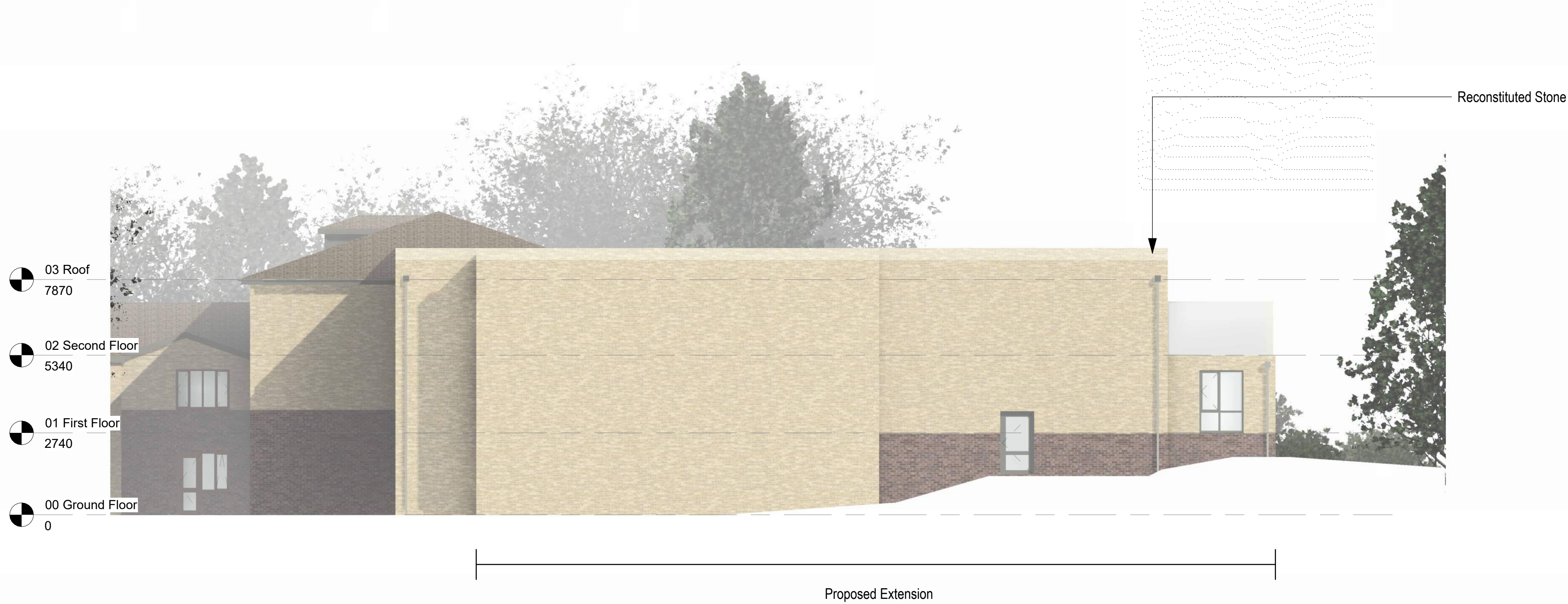
NOTES

All dimensions are in millimetres unless stated otherwise.

Drawings are not to be scaled for Construction purposes.

This drawing is to be read in conjunction with all other relevant drawings and specifications.

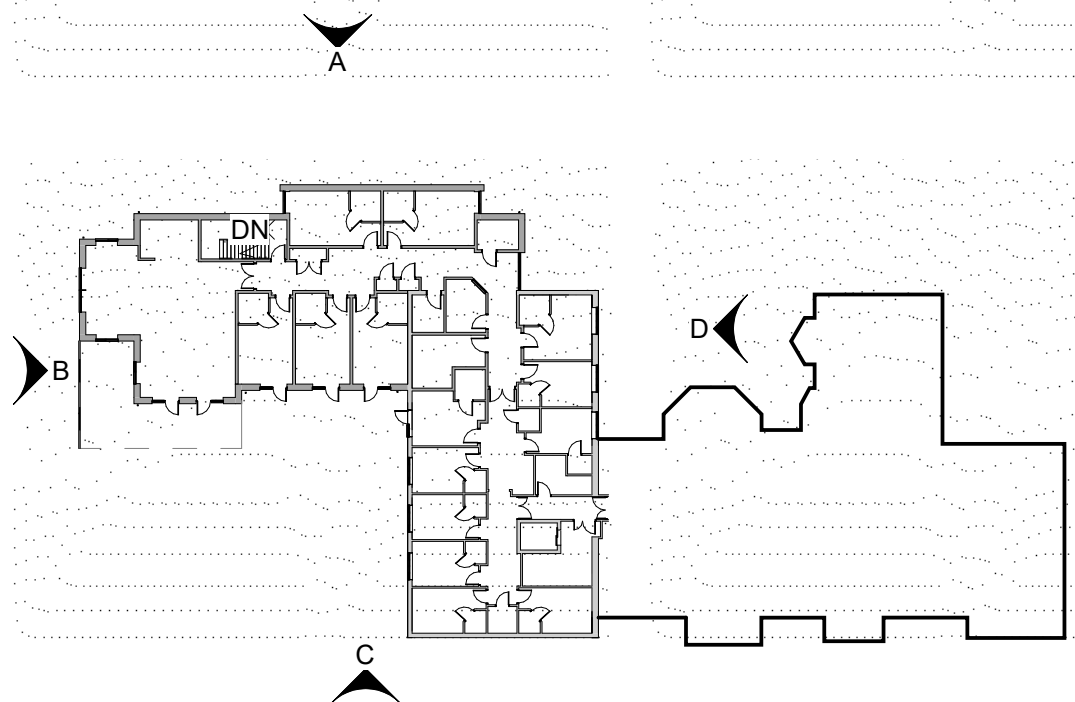
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A - North Elevation



B - West Elevation



P5	02/02/23	Revised Ground Floor	AB	ID
P4	20/01/23	Added Levels	AB	ID
P3	20/12/22	Adjustment to Design	AB	ID
P2	19/08/22	Minor Adjustments	AB	ID
Rev	Date	Description	Drawn By	Checked By

HARRIS IRWIN
architects

Aske Stables, Aske, Richmond,
North Yorkshire. DL10 5HG
t: 01748 826675
e: enquiries@harrisirwin.com
w: www.harrisirwin.com

Project:
Challoner House
Challoner House Care Home,
Eastleigh,
SO53 2DU

Client: Barchester

Drawing Title:
Proposed N&W Elevations

For Planning Submission



SCALE 1:100 @ A1

HIA Project Number 3307	Scale @ A1 As indicated	Suitability D0
Project 3307 - HIA - 01 - ZZ - DR - A - 0301	Originator HIA	Volume 01
Level ZZ	Type DR	Role A
Number 0301		

NOTES

All dimensions are in millimetres unless stated otherwise.

Drawings are not to be scaled for Construction purposes.

This drawing is to be read in conjunction with all other relevant drawings and specifications.

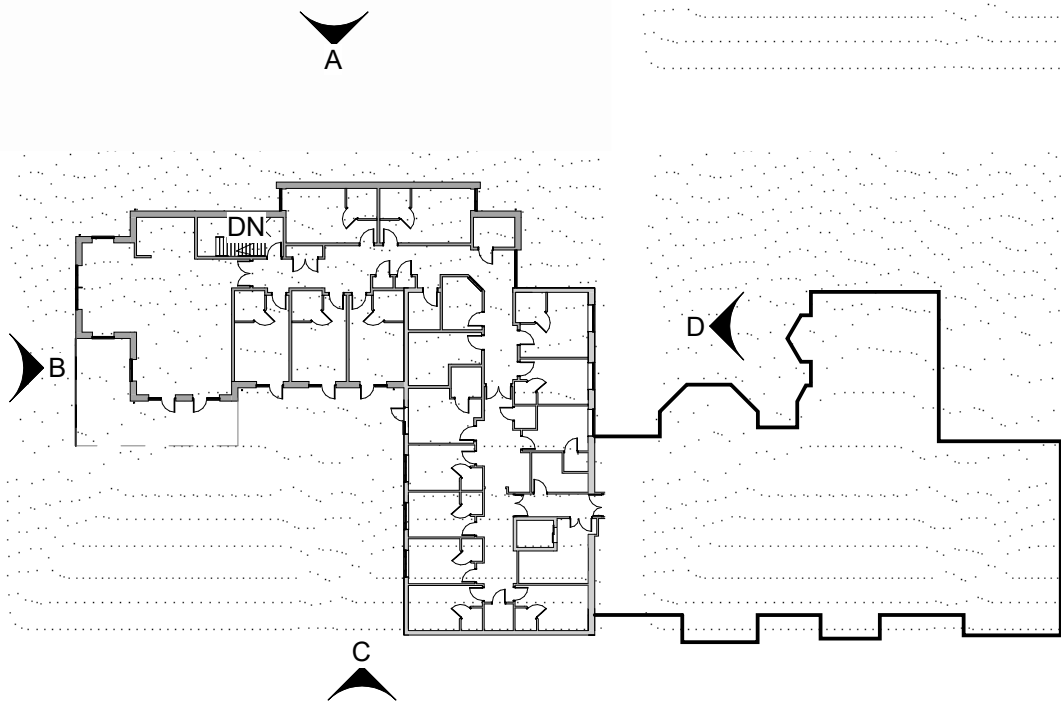
The copyright of this drawing is vested in Harris Irwin Associates Ltd. and must not be copied or reproduced without the written consent of a Director.



C - South Elevation



D - East Elevation



P5	02/02/23	Revised Ground Floor	AB	ID
P4	20/01/23	Added Levels	AB	ID
P3	20/12/22	Adjustment to Design	AB	ID
P2	19/08/22	Minor Adjustments	AB	ID
Rev	Date	Description	Drawn By	Checked By

HARRIS IRWIN
architects

Aske Stables, Aske, Richmond,
North Yorkshire. DL10 5HG
t: 01748 826675
e: enquiries@harrisirwin.com
w: www.harrisirwin.com

Project:
Challoner House
Challoner House Care Home,
Eastleigh,
SO53 2DU

Client: Barchester

Drawing Title:
Proposed S&E Elevations

For Planning Submission

HIA Project Number 3307	Scale @ A1 As indicated	Suitability D0
----------------------------	----------------------------	-------------------

Project	Originator	Volume	Level	Type	Role	Number
3307	HIA	01	ZZ	DR	A	0302



SCALE 1:100 @ A1



Proposed 10 Bed Extension to Existing Care Home

Challoner House

Design and Access Statement

Prepared by Harris Irwin Architects

February 2023

Job No. 3307



HARRIS IRWIN ARCHITECTS

Harris Irwin Architects is one of the UK’s leading, and award-winning, specialist care, extra care and dementia housing architectural practices.

Our clients rely upon our expertise and depth of knowledge to regularly assess the potential of new sites and provide design solutions which are deliverable, operable, profitable and beautiful; buildings and communities which we take pride in helping to form.

We are focused on constructing later-living buildings and communities which are completed to the highest standards. Our expertise within the sector allows us to continually improve and innovate the care environment, enhancing the experience of the residents, their guests and staff whilst being practical to build and efficient to operate.

01748 825675

enquiries@harrisirwin.com

www.harrisirwin.com

PROJECT PARTICULARS

PROJECT NAME

Challoner House

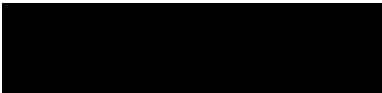
PROJECT REFERENCE NO.

3307

CLIENT

Barchester

DOCUMENT AUTHOR / CHECKING



ISSUE DATE AND REVISION

16.08.2022	First Draft Issue
19.08.2022	Amendments
31.08.2022	Minor Amendments
01.09.2022	Minor Amendments
20.12.2022	Adjustments to Design
09.02.2023	Adjustments to Design

CONTENTS

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- 4.5 South and East Elevations
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- 4.7 Ground Floor Layout
- 4.8 First Floor Layout
- 4.9 Second Floor Layout

5 OTHER

- 5.1 Access and Transport
- 5.2 Daylight and Sunlight Report

1 LOCATION

1.1 LOCATION PLAN

Our client seeks to gain Planning Permission for an extension to Challoner House, an existing Care home on Winchester Road.

Challoner House Care Home is located within the residential area of Chandler's Ford, with neighbouring residential properties including the King Rufus Pub and Grill. The site boundary is lined with trees, obscuring the care home from view of surrounding neighbours.

Barchester Care seeks to improve and upgrade the existing care home by adding extra facilities and beds, in order to run the care home efficiently and provide a high-quality of care and wellness for its residents and staff.

The proposed design is carefully considered to ensure minimal impact on surrounding properties and amenities, whilst also creating an inviting, bright and modern home which its residents will enjoy.



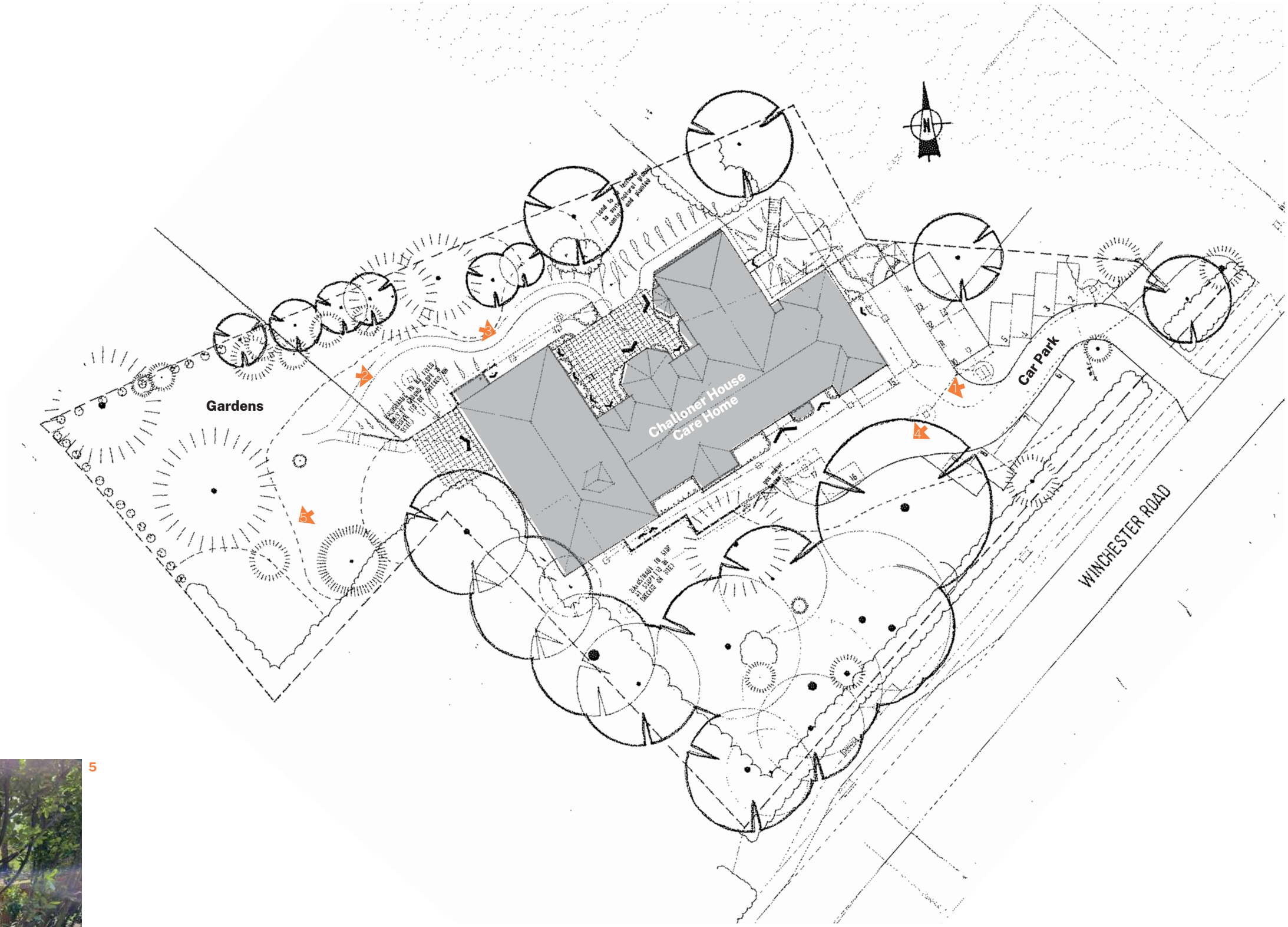
Google Maps View

Not to scale



2 EXISTING BUILDING

2.1 SITE PLAN AND SITE PHOTOGRAPHS



Previous Site Plan from 1994 Not to scale



Site Photographs 2022

3 SITE CONSTRAINTS

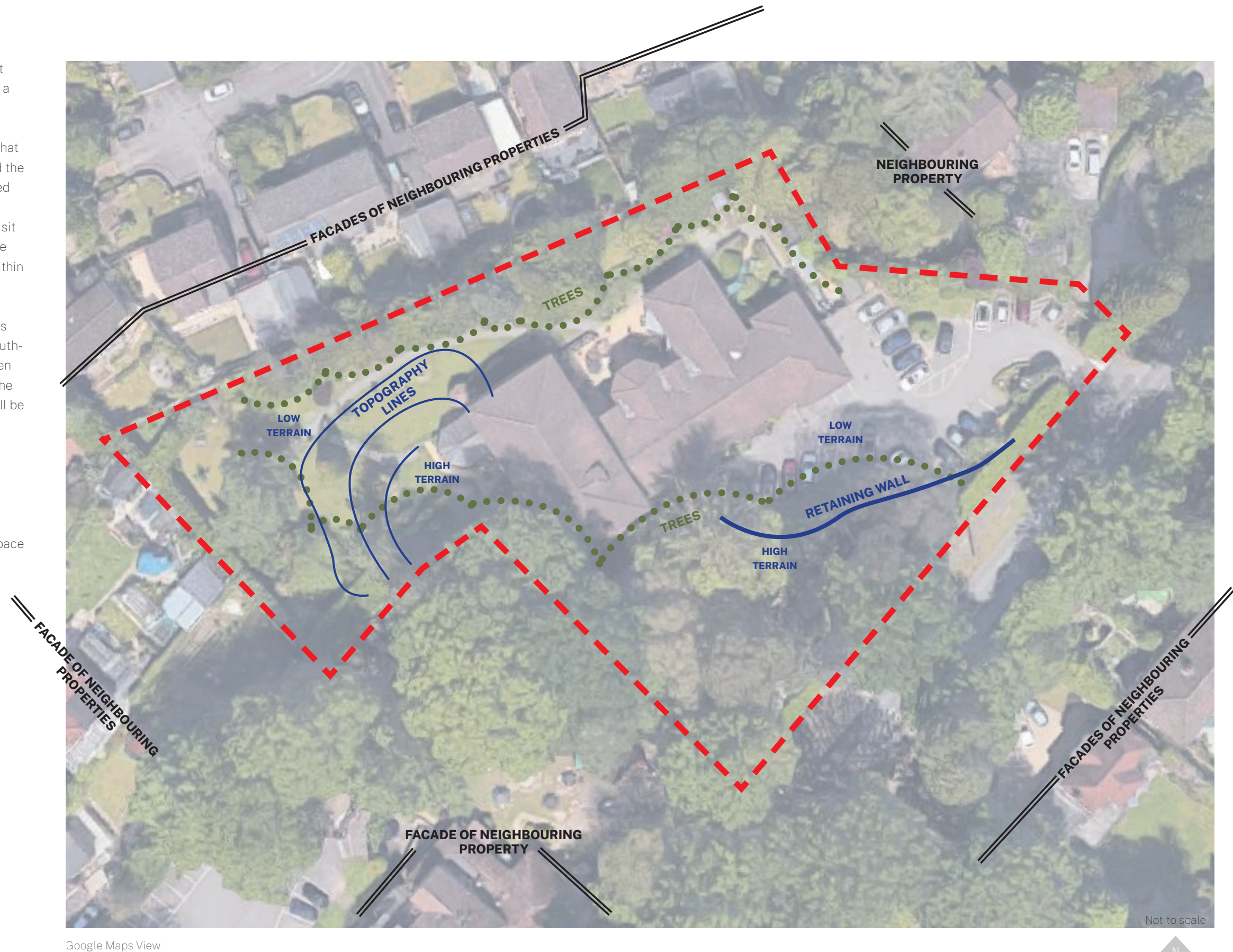
3.1 CONSTRAINTS AND OPPORTUNITIES

A series of constraints will impact any future development across the site. Through understanding these constraints, a successful development strategy can emerge.

The first constraint involves the neighbouring properties that surround the site including the residential neighbours and the pub. The neighbouring amenity spaces should be protected from damage to outlook, overlooking, sense of enclosure and loss of daylight / sunlight. Therefore the proposal will sit at an appropriate distance away from the boundary and be designed to have an appropriate scale and appearance within the setting.

Secondly, the green dotted line represents where the trees surround the building particularly on the Northern and South-Western boundaries. These create a natural buffer between the existing care home and the properties that surround the site. This will benefit the proposal where any extension will be less exposed.

Finally the proposal will need to consider the topography of the site. The topography lines and retaining wall are illustrated in dark blue, showing the parts of the site that sit on higher ground. The design of the extension will accommodate for this so that users can access outside space from all areas of the scheme.



4.1 SITE PLAN

The previously identified constraints provide a framework for identifying potential development across the site. These have been incorporated in the design of the extension. The proposed site plan illustrates the proposal. The grey area highlighted represents the existing care home footprint. The drawing illustrates how the extension sits within the site.

The extension sits away from the Northern and Western boundaries in respect of neighbouring properties. Healthy trees are retained around the boundaries to keep the natural buffer between the site and neighbours.

The extension accommodates for the change in levels. Illustrated on the site plan is the proposed patio with access for residents to and from the day room.

The parking has been rearranged to accommodate for more adequate parking spaces and a more efficient layout of the car park.



Proposed Site Plan

Not to scale



4 DESIGN

4.2 TREE REPORT

A tree report (BS 5837:2012) was undertaken by Rob Keyzor Tree Surgeons and Arboricultural Consultants Ltd to support the planning application.

Page 3 highlights the overall summary, some notes are as follows:

‘From an arboricultural perspective, the trees are not considered to be a significant constraint on the proposed development. This is due to the low quality of the trees to be removed and the protective measures proposed to mitigate the damage to retained trees.’

‘It will be necessary to remove five comparatively low value trees, this is due to three trees being in poor condition (T1910, T1914 & T1917) and two requiring removal to facilitate the development (T1906 & T1908).’

‘There is some space for new / compensatory planting and landscaping though caution is advised on selecting Species with large potential stature.’

The removed trees are highlighted in red and retained trees highlighted in yellow. The red line denotes the protection zone around protected trees inhibiting development beyond this line.



Proposed Tree Report
Drawing no. J4421 TPP

Not to scale



4 DESIGN

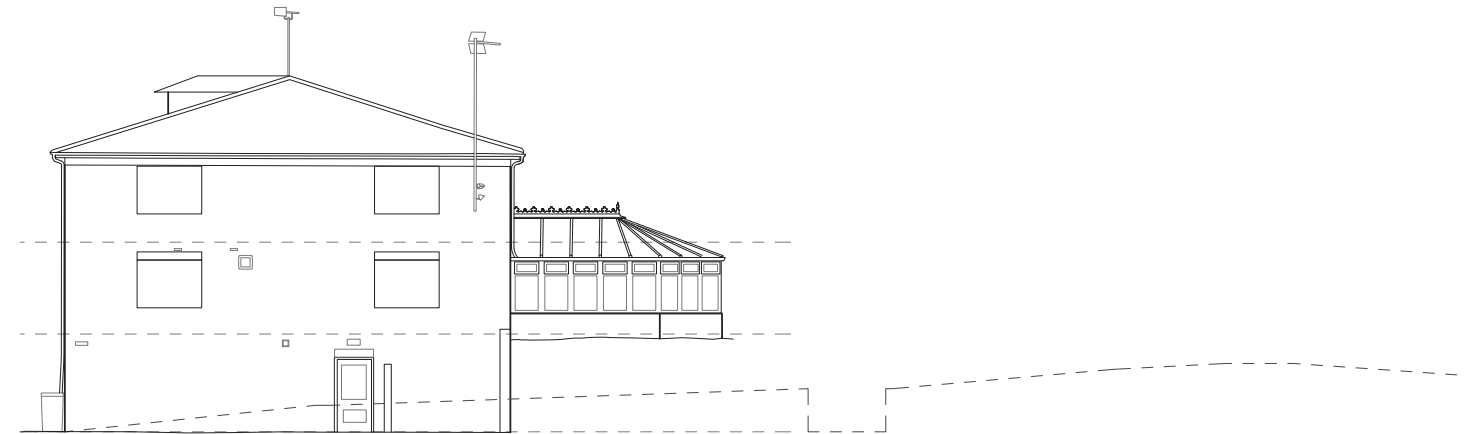
4.3 NORTH ELEVATION

This page compares the existing and proposed North Elevation.

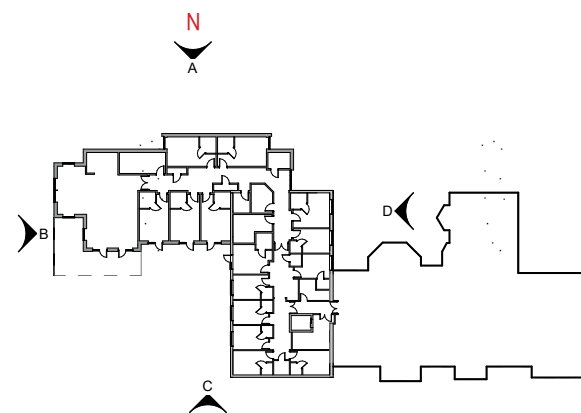
The proposed materials, scale and elevational design reflect that of the original building. The main facade does not have windows to prevent overlooking onto neighbours. This elevation in real life is obscured by a line of trees. Some of these have been removed in this illustration to show the appearance of the facade for the application.

An escape door opens from the staircase to the exterior level, approximately halfway between the ground and first floor level.

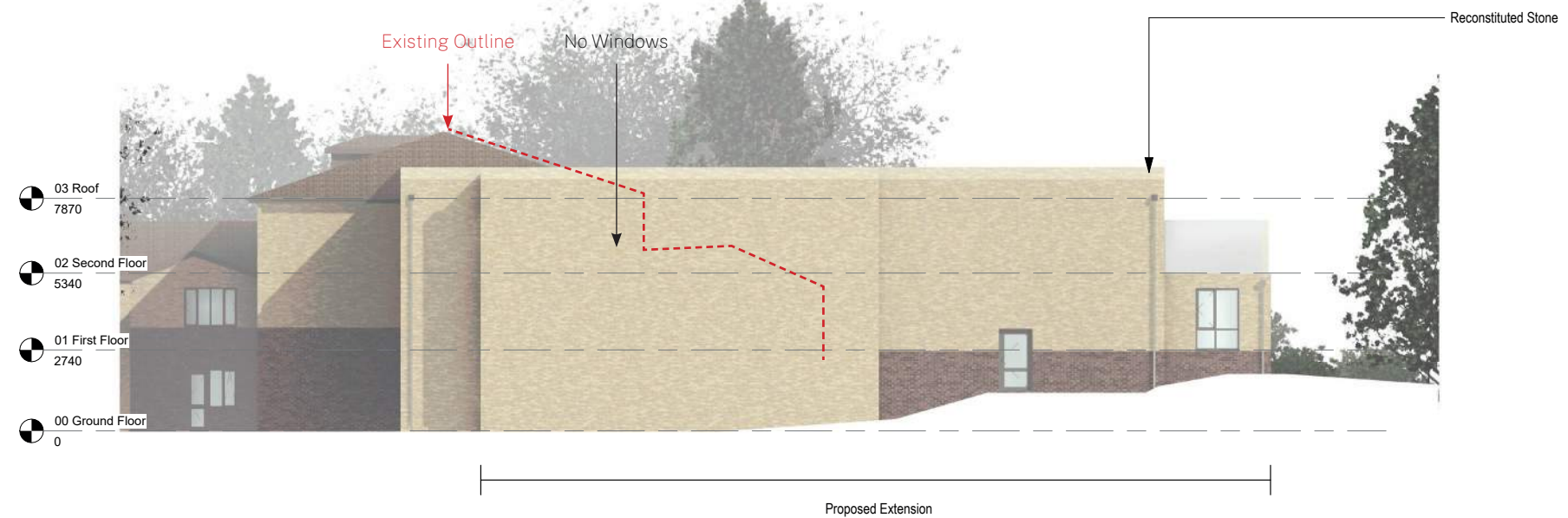
Note: Only some existing drawing information have been provided externally. Therefore on the following pages we only show this information where applicable.



Existing North Elevation
Not to scale



Reference Plan not to scale



Proposed North Elevation
Not to scale

4 DESIGN

4.4 EAST ELEVATION

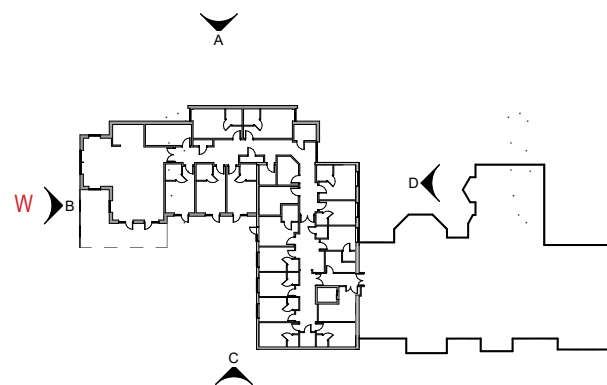
This page compares the existing and proposed West Elevation.

Again, the proposed materials, scale and elevational design reflect that of the original building. The facing facade houses day space and so incorporates windows out onto the gardens. This side also shows the terrace. Windows have been allocated to bedrooms (shown on the far left of the elevation on both first and second floor) to give outlook to the bedrooms without overlooking the neighbours to the North.

This elevation in real life is obscured by a line of trees. These have been removed in this illustration to show the appearance of the facade for the application.



Existing West Elevation
Not to scale



Reference Plan not to scale



Proposed West Elevation
Not to scale

4 DESIGN

4.5 SOUTH AND EAST ELEVATIONS

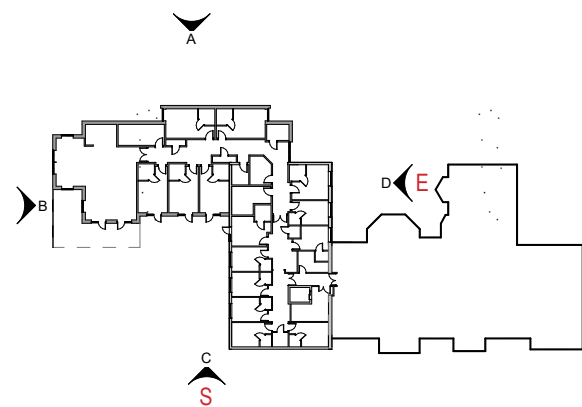
This page illustrates the proposed South and East elevations.

Again, the materials, scale and elevational design reflect that of the original building. The extension on the South Elevation in real life is hidden behind many trees and again some of these have been removed in this illustration to show the appearance of the facade for the application.

The East elevation again shows the windows that have been allocated to bedrooms (shown on the far right of the elevation on both first and second floor) to give outlook to the bedrooms without overlooking the neighbours to the North.



Proposed South Elevation
Not to scale



Reference Plan not to scale



Proposed East Elevation
Not to scale

4 DESIGN

4.6 MATERIALITY

The proposed materials will include the 2 brick styles, window frames and roof tiles to match that of the existing building. All materials have been chosen in order to keep the design simple, respectful of the neighbouring properties and surrounding area and in keeping of the local context.



Red Brick

Typical in the area and seen on the existing building.



Yellow Brick

Typical in the area and seen on the existing building.



Reconstituted Stone

Used at the top of the parapet to break up the mass and complement the yellow brick.

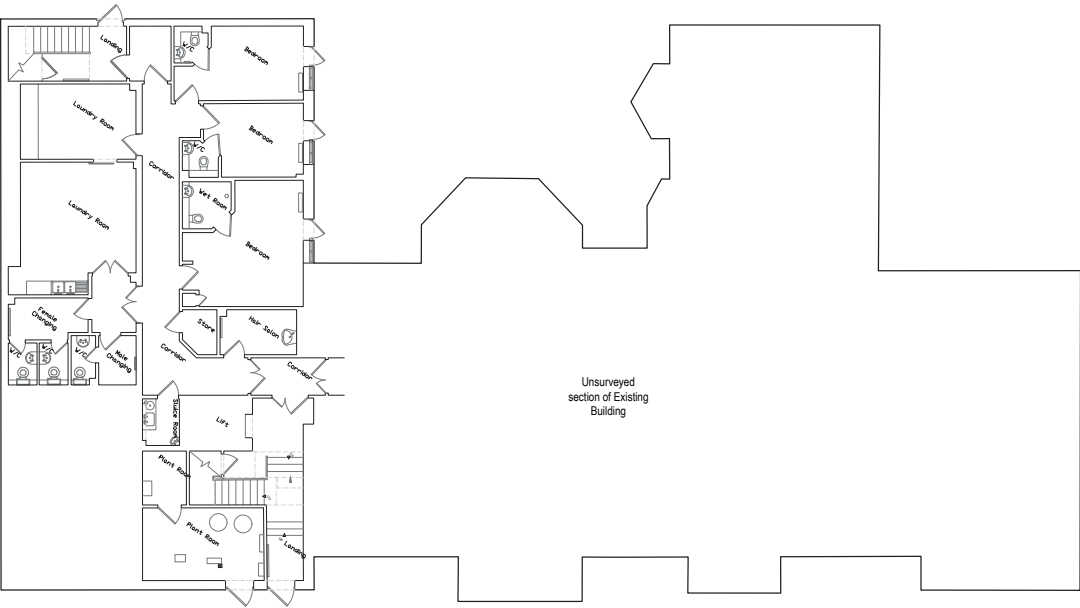


Photo of existing entrance

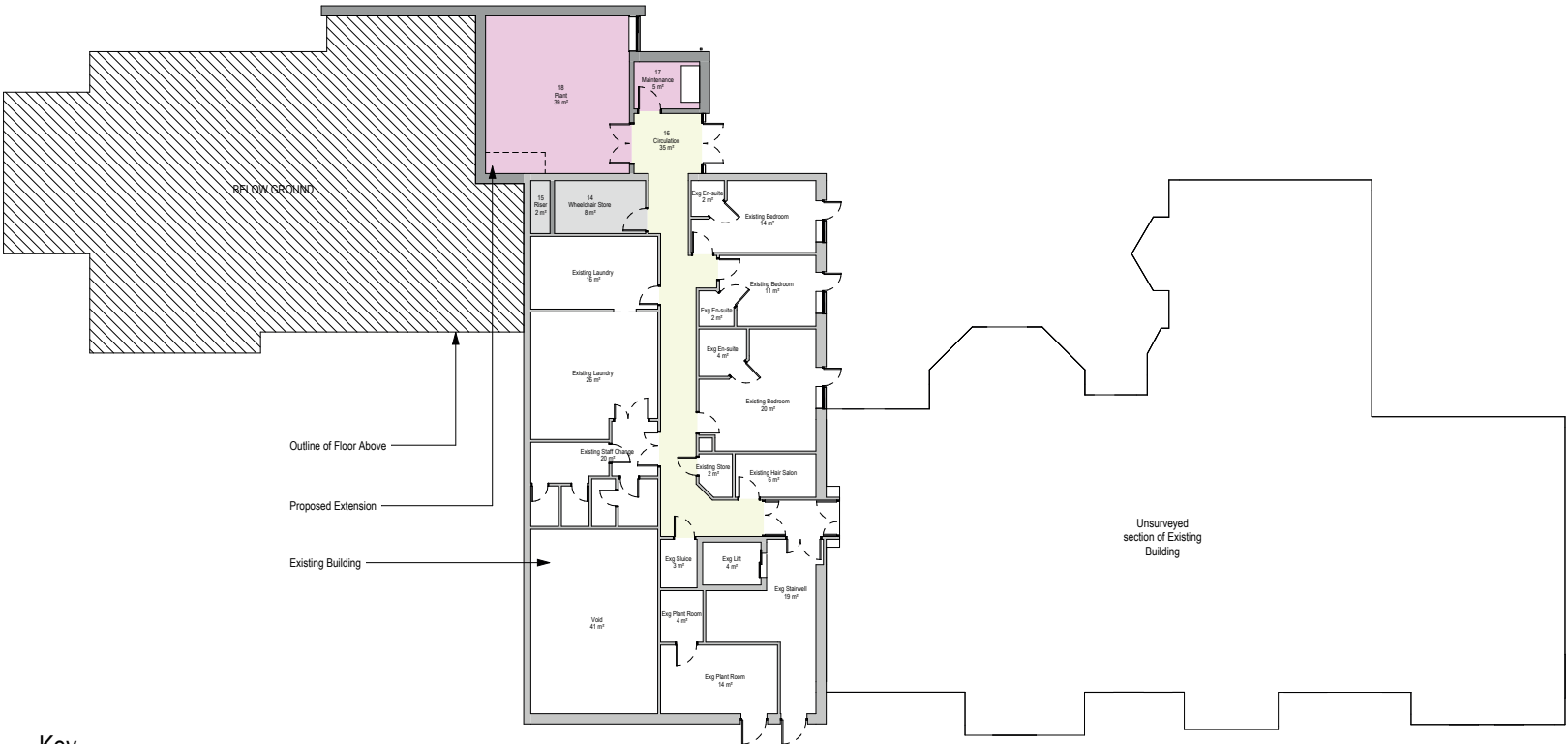
4.7 GROUND FLOOR LAYOUT

The proposed extension is orientated to follow the natural shape of the Western section of the site where space allows for it. The layout connects into the West wing of the existing building. As design for the rest of the building was not necessary the building layout is not shown.

The ground floor layout adapts to the slope of the site, with the majority of the extension on this level subterranean, forming the foundations for the floors above. A plant room and maintenance office are situated with access to the exterior ground level.



Existing Ground Floor Layout



Key

- Existing Walls
- Proposed Walls

Not to scale



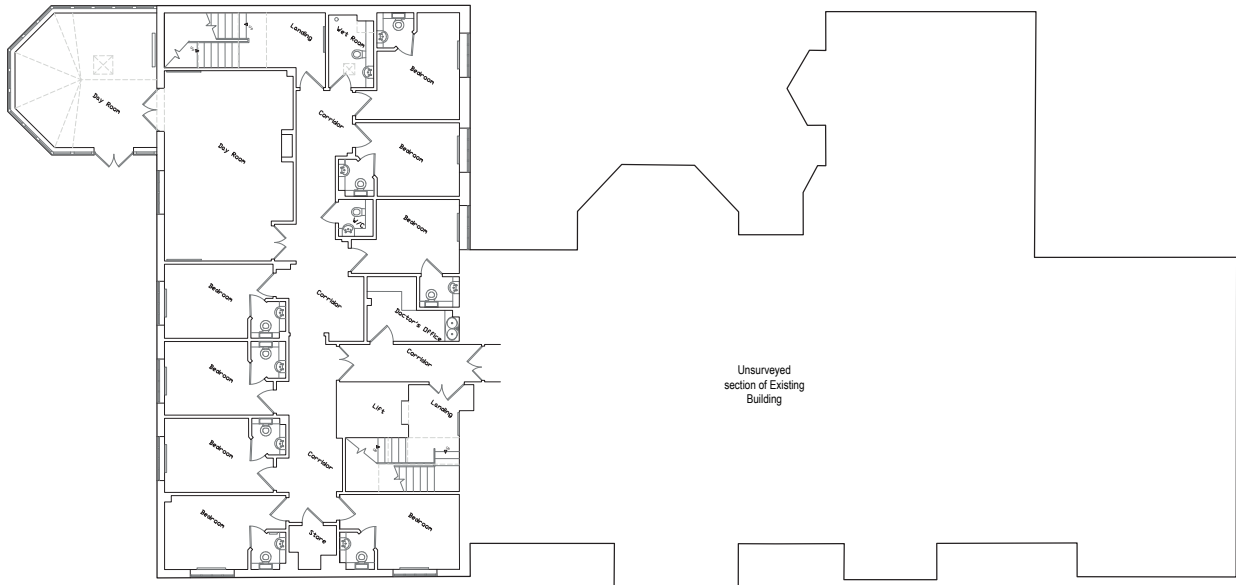
Proposed Ground Floor Layout

4.8 FIRST FLOOR LAYOUT

The first floor extension reaches the higher exterior ground level on the Southern side of the extension. Therefore the spaces on this side open out to an exterior patio overlooking the existing gardens and trees. This includes 4 bedrooms and the lounge as illustrated. The rest of the layout extends the existing care group creating a more efficient space. This includes the addition of 5 new bedrooms and the rearrangement of some of the existing space to provide 2 upgraded bedrooms plus a new nurse station and assisted bathroom.

The propsed staircase takes users down from this level to the exterior level for means of escape. The escape door is illustrated in the North elevation.

The new bedrooms at the North of the plan have windows to the sides instead of to the North to restrict overlooking to the neighbours properties.

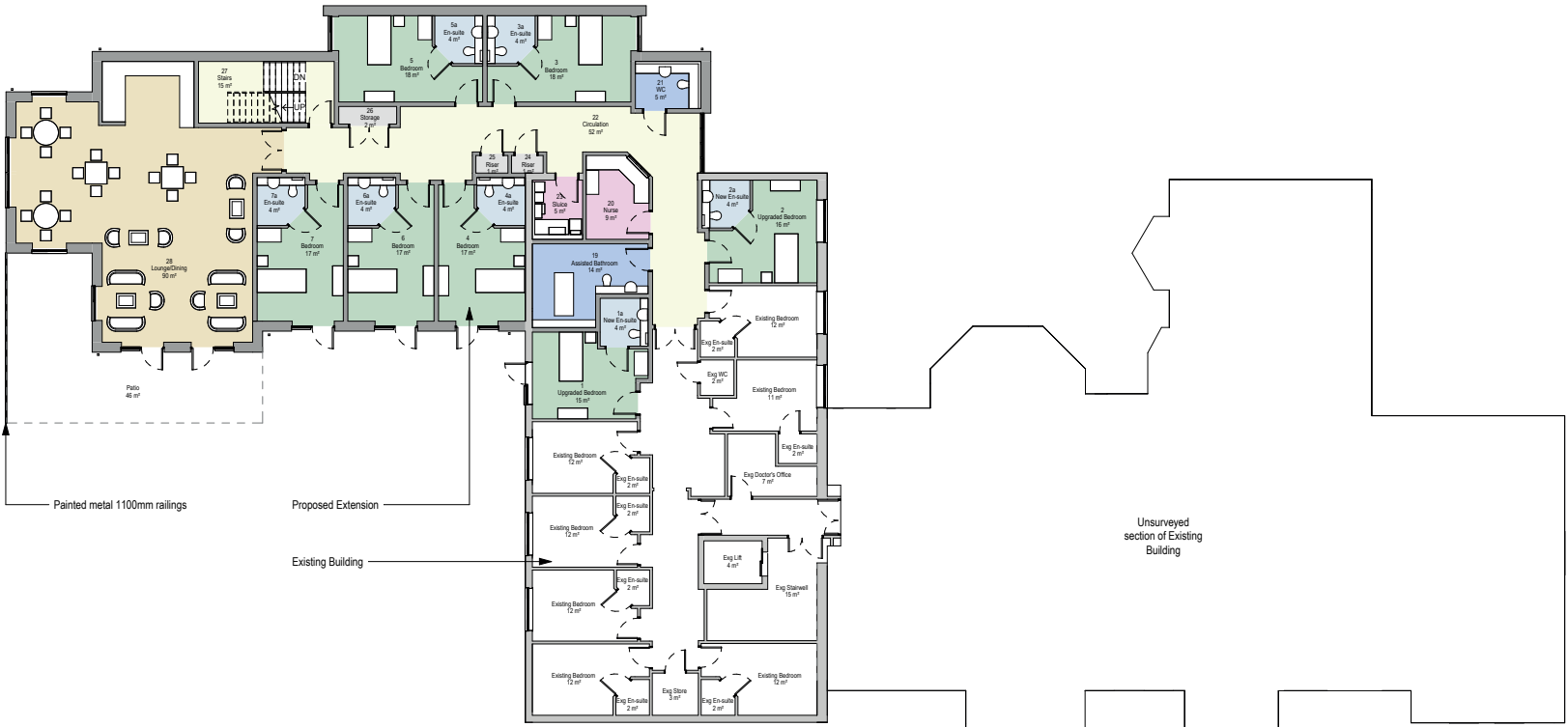


Existing First Floor Layout

Care Group Day
Space Comparison

First Floor

Existing: 67 m²
Proposed: 90 m²



Key

- Existing Walls
- Proposed Walls

Proposed First Floor Layout

Not to scale

4.9 SECOND FLOOR LAYOUT

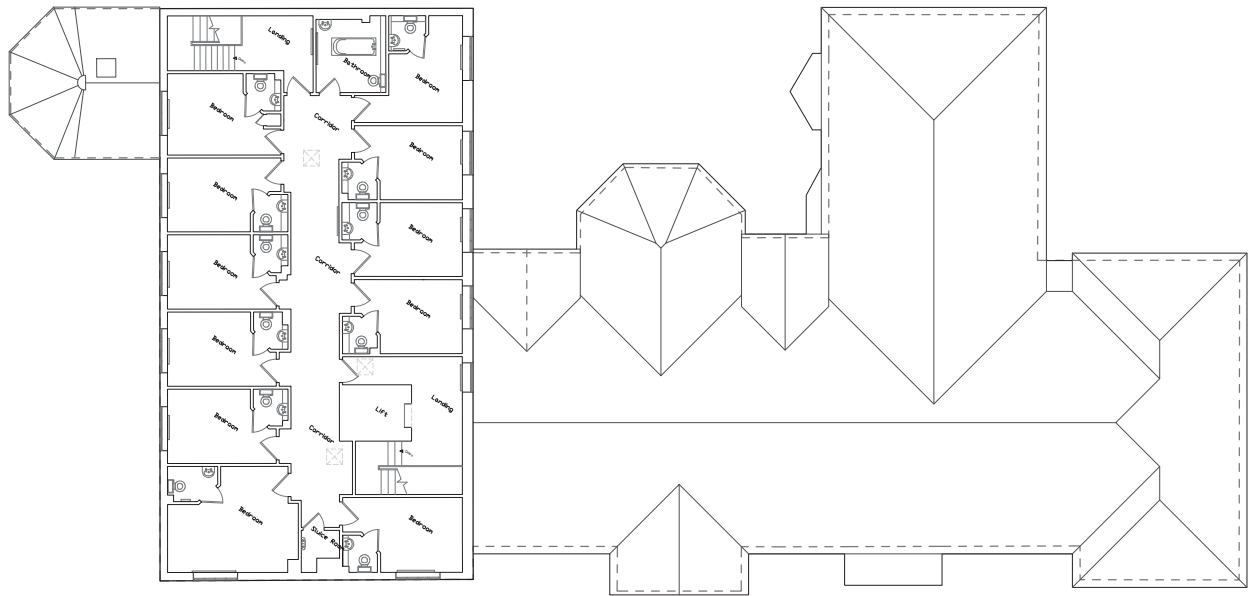
The second floor layout also adapts to the existing floor layout and extends the existing care group, creating a more efficient space. The layout repeats the layout from the floor below except for the lounge which reduces in size and adds a terrace for access to outside space for residents.

5 new bedrooms join this floor layout giving the overall extension a total of 10 bedrooms added to the care home.

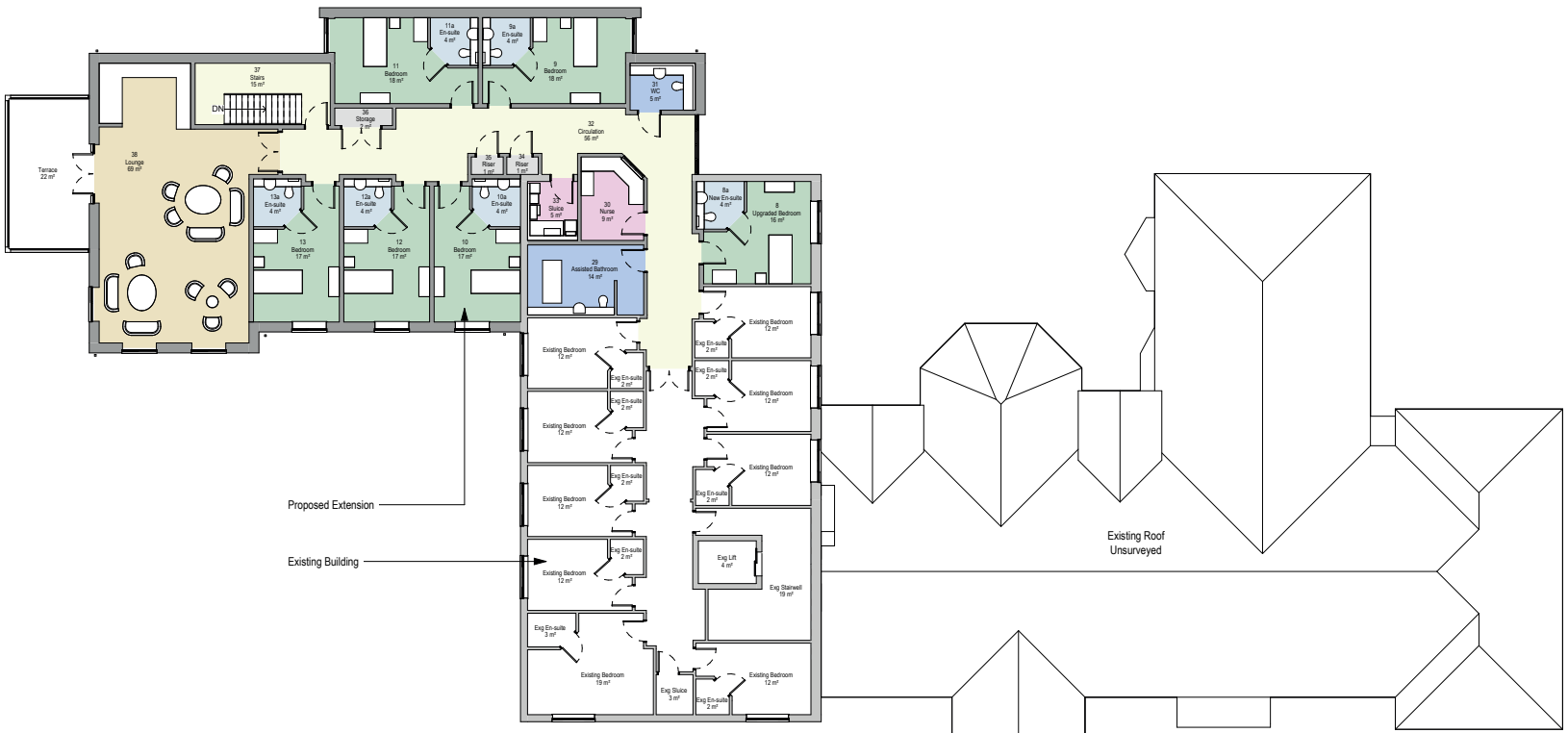
Care Group Day
Space Comparison

Second Floor

Existing: 0 m²
Proposed: 69 m²



Existing Second Floor Layout



Key

- Existing Walls
- Proposed Walls

Proposed Second Floor Layout

Not to scale



5 OTHER MATTERS

5.1 ACCESS AND TRANSPORT

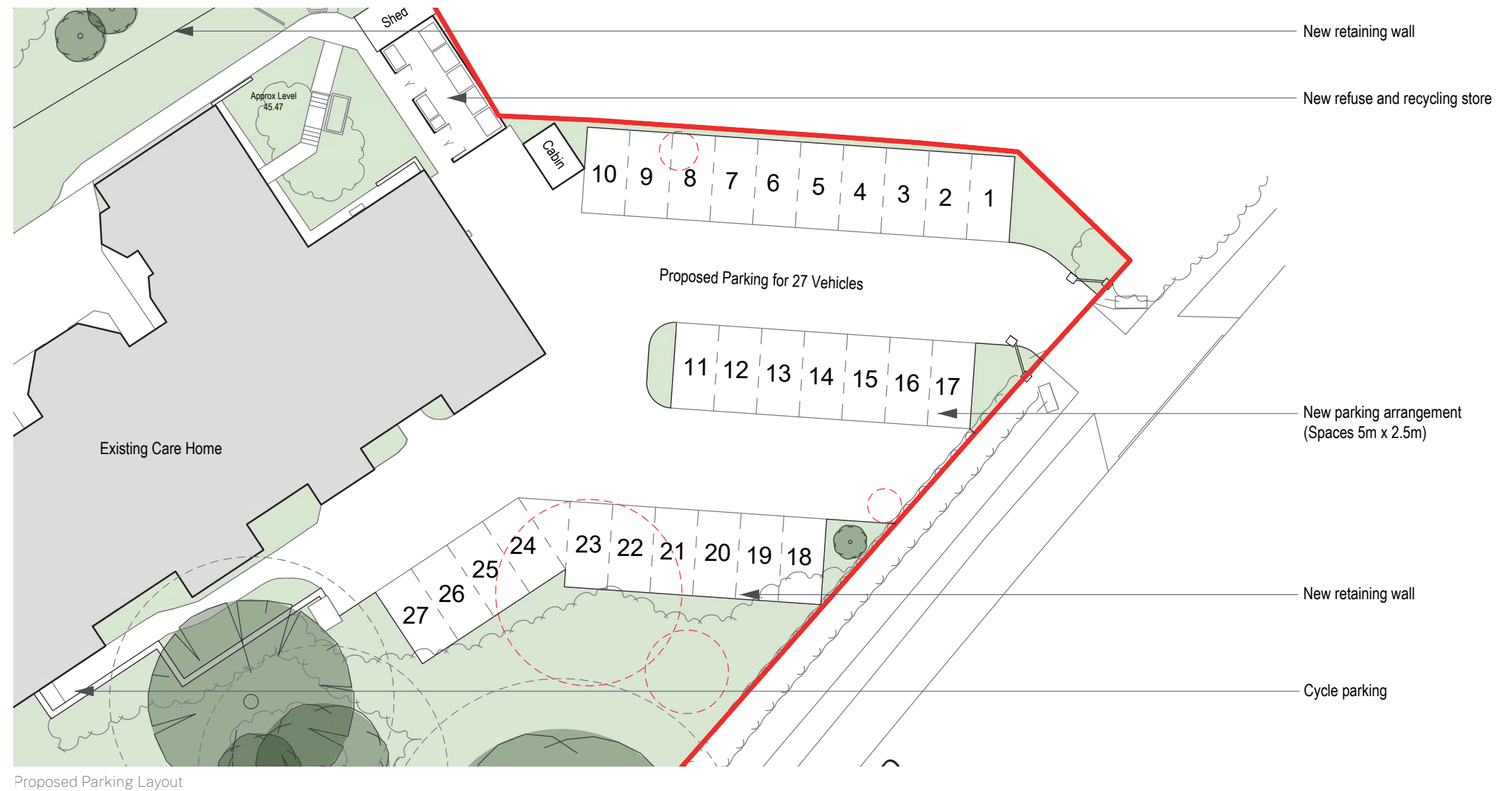
Existing access to the site for vehicles has been retained from Winchester Road. This route provides access for cars, ambulances, delivery vans, refuse vehicles and a fire appliance if required.

Pedestrian access has also been retained to and from the site. The parking layout has been updated to provide 27 parking spaces, all 2.5x5m. This is an improvement to the existing parking layout, as spaces use the standard size required within a more organised arrangement.

An upgraded discrete waste and recycling unit is located alongside the building accessed from the car park.

Resident, guest and staff access to the building has all been retained in the existing layout. All new external doors will be provided with level access and residents will have access to safe and secure external amenity space on ground, first and second floor levels.

Within the extension, floor levels are kept flat and level, connecting to the existing building under level access conditions. All existing connections between floors are retained and a new escape stair is provided at the end of the extension wing.



Proposed Parking Layout

Not to scale



5 OTHER MATTERS

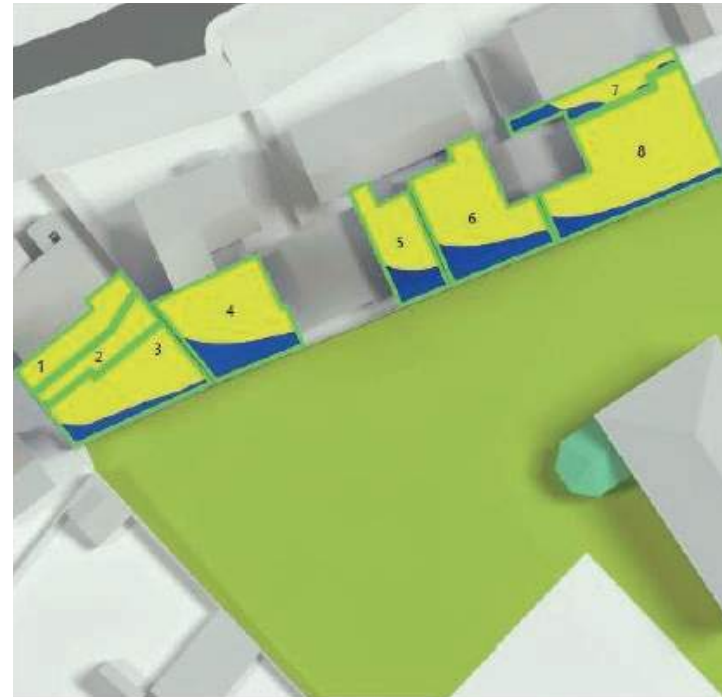
5.2 DAYLIGHT AND SUNLIGHT REPORT

A report by EB7 Ltd. was undertaken to ensure the extension design does not cause overshadowing or loss of light to the neighbouring properties.

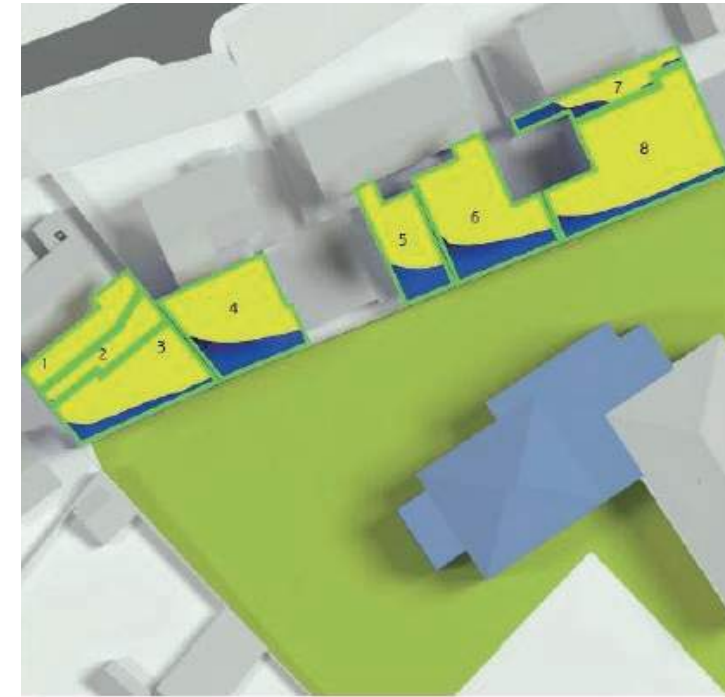
Page 5 of the report concludes;

'The result of our studies confirm excellent levels of retained amenity with the effects to all neighbouring properties fully meeting BRE targets in respect of both daylight and sunlight levels.

In addition to the effects on rooms and windows, our sunlight amenity/overshadowing assessments also confirm that the neighbouring gardens will not be adversely affected by the proposed development. All of the garden spaces will fully satisfy the BRE guidance in terms of overshadowing and experience no material change when compared to the pre-existing position.'

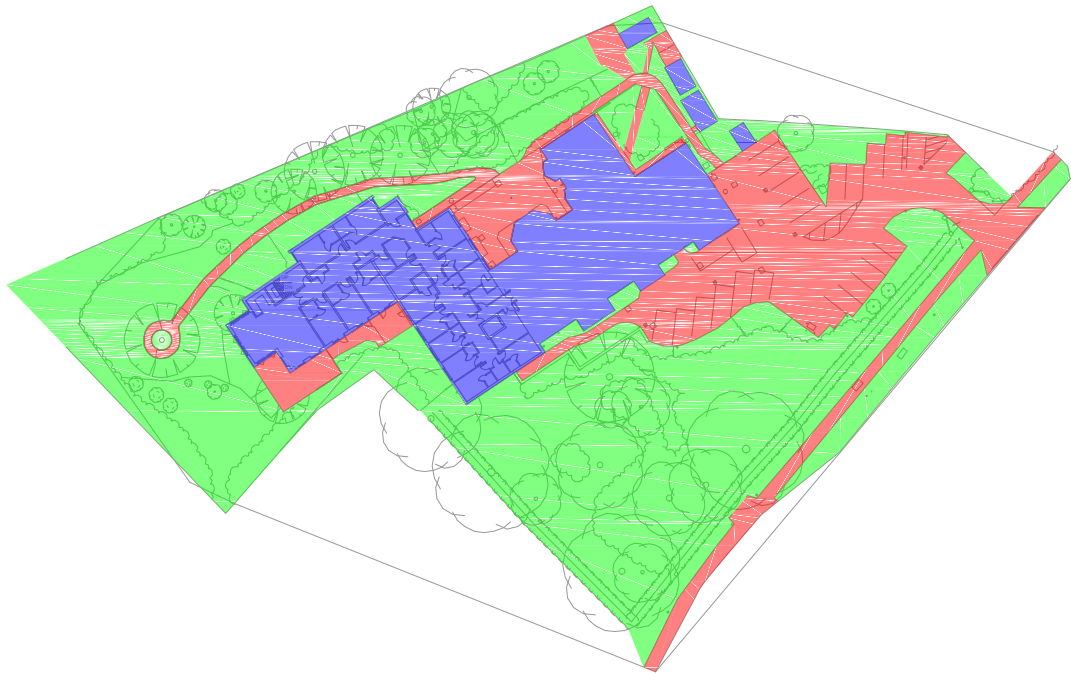
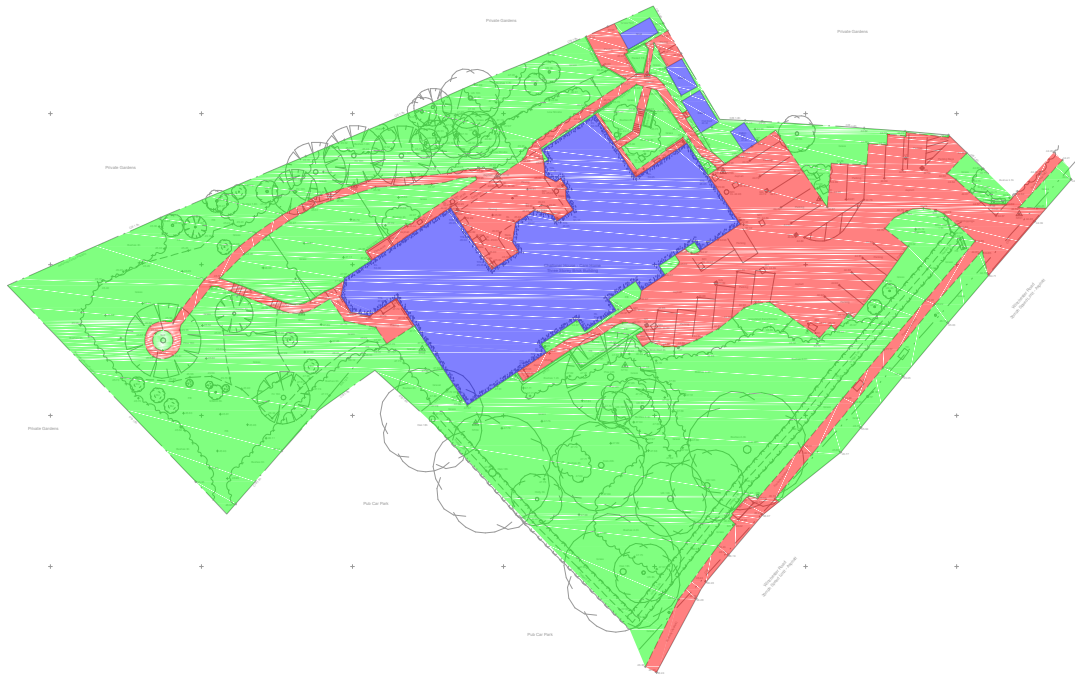
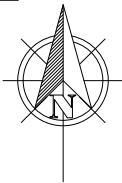


Existing Scenario-March 21st



Proposed Scenario-March 21st

APPENDIX B – PROPOSED DRAINAGE AND EXCEEDANCE DRAWINGS



EXISTING AREAS:

	HARDSTANDING AREAS = 1248m ²
	ROOF AREAS = 855m ²
	SOFT LANDSCAPING AREAS = 3531m ²
	TOTAL AREA = 5634m ²

THE DEMOLITION OF THE WESTERN WING OF THE BUILDING WILL RESULT IN A LOSS OF 321m² ROOF AREA. HOWEVER, THE AREA WHICH WAS PREVIOUSLY LOST IS TO BE REPLACED BY THE NEW EXTENSION PLUS A GAINED 257m² OF ROOF AREA, THEREFORE THE AREA OF WATER RUN-OFF THE NEW SYSTEM WILL HAVE TO DEAL WITH WILL BE FOR THE WHOLE NEW EXTENSION AREA OF 578m².

PROPOSED AREAS:

	HARDSTANDING AREAS = 1267m ²
	ROOF AREAS = 1112m ²
	SOFT LANDSCAPING AREAS = 3255m ²
	TOTAL AREA = 5634m ²

PRELIMINARY DRAWING
THIS DRAWING IS FOR PRELIMINARY INFORMATION PURPOSES ONLY AND MUST NOT BE READ AS A CONSTRUCTION ISSUE. IT INDICATES DESIGN INTENT ONLY AND IS SUBJECT TO AMENDMENT DURING FINAL DESIGN DEVELOPMENT

SCALE 1:500m
0m 10m 20m 30m 40m 50m

P1	27.09.22	PRELIMINARY ISSUE	CN	CH	LP
Rev	Date	Description	By	Check	App.

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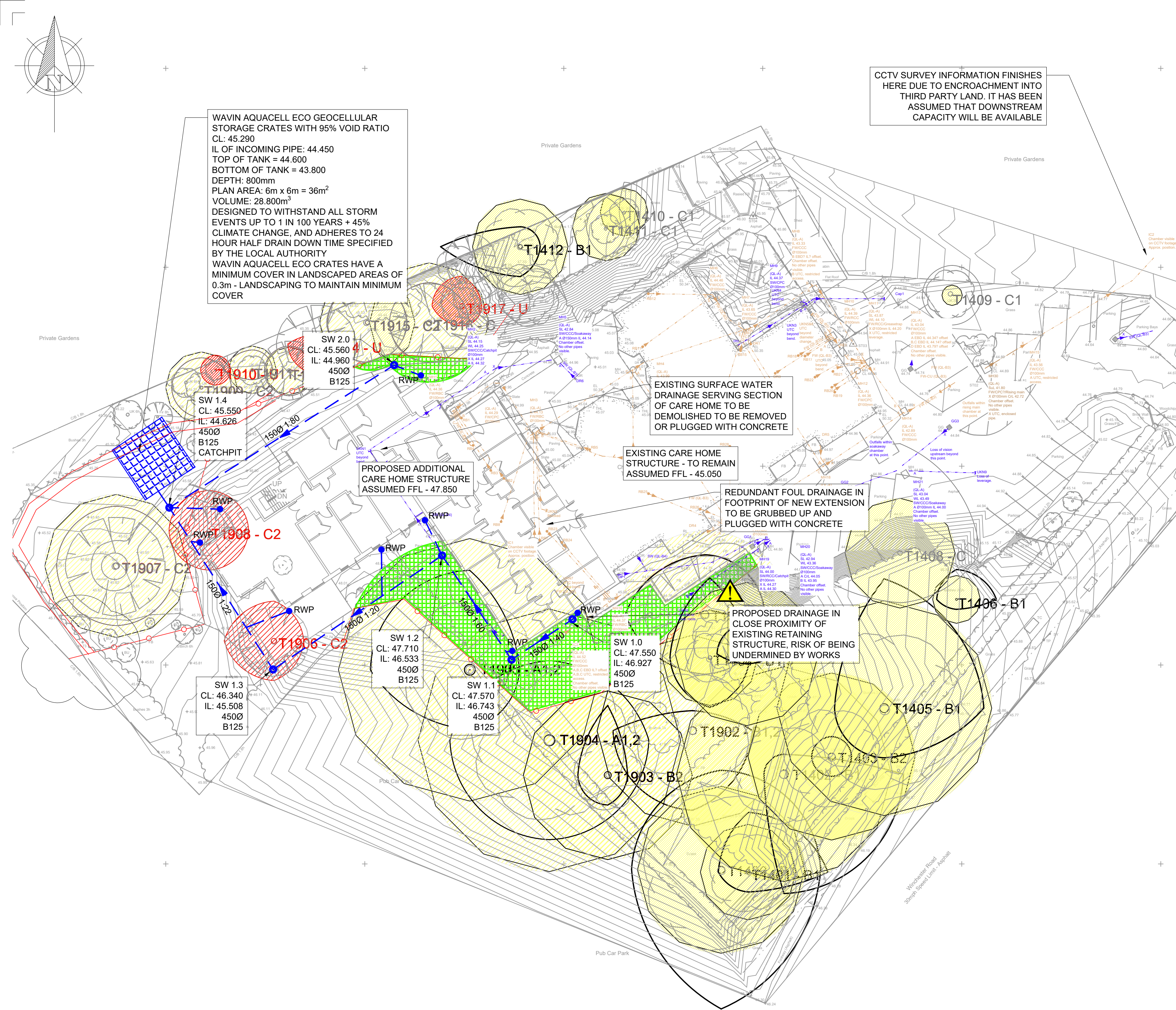
Client	BARCHESTER HEALTHCARE LTD
Project	CHALLONER HOUSE CARE HOME 175 WINCHESTER ROAD EASTLEIGH, SO53 2DU
Office	NORWICH 01603 305190
Discipline	CIVIL ENGINEERING
Title	AREAS PLAN GENERAL ARRANGEMENT
Scale @ A1	1:500
Status	PRELIMINARY



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Originator	Job Number	Discipline	Building/Zone
CCL	8/2762	C	CHA
Type	Level	Drawing No.	Revision
GA	EXT	4000	P1

Birmingham 0121 202 7800, Glasgow 0141 222 2700, London 020 3077 0970, Manchester 0161 616 0000, Newcastle 0191 221 2212, Norwich 01603 305190, Plymouth 01752 478171, Reading 0118 941 1888



LEGEND:

SW

RWP

Tree Root Protection Zone to be Retained

Tree to be Removed

Tree Root Protection Zone - Temporary Ground Protection Refer to Arboricultural Report for Information

Tree Reference. Refer to Arboricultural Information for Further Details

Approximate Location of Bund. Refer to CCL DWG 4450 for Further Details and Location

NEW SURFACE WATER SEWER PIPE AND MANHOLE PIPE 1500 UNO

EXISTING PRIVATE SURFACE WATER SEWER FROM CCTV SURVEY

EXISTING PRIVATE FOUL WATER SEWER FROM CCTV SURVEY

ASSUMED NEW RAINWATER PIPE DOWNPIPE LOCATIONS & SIZES. TBC BY ARCHITECT

PROPOSED SOAKAWAY CRATE LOCATION. GEOCELLULAR CRATES TO BE WAVIN ECO O.S.A

TREE ROOT PROTECTION ZONE TO BE RETAINED

TREE TO BE REMOVED

TREE ROOT PROTECTION ZONE - TEMPORARY GROUND PROTECTION REFER TO ARBORICULTURAL REPORT FOR INFORMATION

TREE REFERENCE. REFER TO ARBORICULTURAL INFORMATION FOR FURTHER DETAILS

APPROXIMATE LOCATION OF BUND. REFER TO CCL DWG 4450 FOR FURTHER DETAILS AND LOCATION

HEALTH SAFETY AND ENVIRONMENTAL RISKS BOX		
CONSTRUCTION RISKS	MAINTENANCE RISKS	DEMOLITION/ ADAPTATION RISKS
1. DUE TO THE STEEP GRADIENT OF THE SITE CONSIDERATION TO SAFETY MUST BE GIVEN TO EACH CONSTRUCTION TASK . 2. REFER TO EXISTING SERVICES DRAWING AND TO ARCHITECTS SERVICES DRAWINGS FOR DETAILS & LOCATION OF EXTG AND PROPOSED DRAINAGE & SERVICES. 3. EXISTING DRAINS SERVING THE DEMOLISHED PORTION OF THE BUILDING TO EITHER BE REMOVED OR GRUBBED UP. 4. CONSTRUCTING NEW CONNECTIONS DRAINAGE, POTENTIAL FOR HAZARDOUS GASES. PERMIT TO ENTER EXISTING MANHOLES SHOULD BE OBTAINED FROM SOUTHERN WATER BEFORE UNDERTAKING THE WORK, RELEVANT P.P.E SHOULD BE WORN AT ALL TIMES. IF ANY ASBESTOS CEMENT PIPES ARE FOUND, THEN SAFE SYSTEM OF WORK NEED TO BE PUT IN PLACE WITH ATTENTION DRAWN TO THE CONTROL ASBESTOS AT WORK (AMENDMENT) REGULATIONS 1992.	1. SOAKAWAY CRATES, GULLIES, CHANNELS AND CHAMBERS REQUIRE THE STANDARD PERIODIC INSPECTION REGIME AND CLEANING ROUTINE TO ENSURE CONTINUED PERFORMANCE. 2. CONFINED SPACE ENTRY. 3. ALL MAINTENANCE MUST COMPLY WITH SOUTHERN WATER AUTHORITY'S REGULATIONS AND PRIVATE APPARATUS SUPPLIER RECOMMENDED MAINTENANCE SCHEDULES	1. APPARATUS LOCATED IN LANDSCAPED AREAS HAS NOT BEEN DESIGNED TO SUPPORT HEAVY VEHICLE LOADING. 2. THE SURFACE WATER DRAINAGE APPARATUS HAS BEEN DESIGNED TO ACCOMMODATE THE DESIGNED CATCHMENT AREA. NO ADDITIONAL AREAS OF HARDSTANDING CAN BE CONNECTED INTO THE SYSTEM WITHOUT RISK OF LOCALIZED FLOODING ON SITE. 3. HAZARDOUS WASTE MATERIALS
IN ADDITION TO THE HAZARDS & RISKS NORMALLY ASSOCIATED WITH THE TYPE OF WORK DETAILED ON THIS DRAWING, TAKE NOTE OF THE ABOVE. IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR, WORKING WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT.		

NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER ENGINEER'S AND ARCHITECT'S DRAWINGS, DETAILS & SPECIFICATIONS.

2. THE EXTERNAL WORKS DESIGN IS BASED UPON HARRIS IRWIN ARCHITECTS PLAN 3307-HIA-01-XX-DR-A-0102 REV P1

3. TOPOGRAPHICAL SURVEY DRAWING 4268YOLS-01 DATED 14/06/2022 BY SURVEY SOLUTIONS HAS ALSO BEEN USED IN THE DESIGN.

4. REFER TO THE ARCHITECT FOR SETTING OUT OF ALL BUILDINGS & INTERNAL DOWN PIPES & RWP'S

5. REFER TO SERVICE ENGINEERS DRAWINGS FOR FINAL SETTING OUT OF RWP AND SVP'S (BASED ON GUTTER SYSTEM).

6. REFER TO SERVICE ENGINEERS DRAWINGS FOR ABOVE GROUND PLUMBING ROUTES FROM APPLIANCES TO STUB STACKS ETC.

7. ALL EXISTING DRAINAGE THAT IS TO BE ABANDONED TO BE 'PLUGGED' IN WITH MASS CONCRETE (150mm MIN) OR REMOVED ENTIRELY.

8. ANY EXISTING SERVICES TO BE LOCATED AND CLEARLY MARKED PRIOR TO EXCAVATIONS BY CONTRACTOR.

9. ALL LEVELS ARE TO BE CONFIRMED BY THE CONTRACTOR ON SITE PRIOR TO CONSTRUCTION.

10. IT IS ASSUMED THAT ALL SINK AND TOILET DRAINAGE POINTS WILL HAVE RODDING ACCESS AT THE APPLIANCE BASE.

11. CONTRACTOR TO AVOID UNDERMINING ANY EXISTING FOOTPATHS/ BUILDINGS DURING WORKS BY ALLOWING ADEQUATE PROTECTION ADJACENT TO THESE AREAS.

12. ALL RAINWATER DOWN PIPES TO HAVE RODDABLE ACCESS AT THE BASE OF THE VERTICAL SECTION.

13. ALL BELOW GROUND DRAINAGE PIPES WITH LESS THAN 900mm COVER TO SOFFIT LEVEL IN TRAFFICKED AREAS I.E. CAR PARK AND SERVICE YARD AREA TO HAVE CLASS Z BEDDING SURROUND. REFER TO THE MANHOLE SCHEDULE AND DETAIL SHEETS FOR FURTHER DETAILS.

14. ALL BELOW GROUND DRAINAGE WITHIN THE SITE BOUNDARY HAS BEEN DESIGNED TO BSEN 752:2008 AND BUILDING REGULATIONS - PART H:2015.

15. CLIENT AND CONTRACTOR TO REFER TO CCTV REPORT 43174CCTV-01 AND DRAWING 43174BWUG-01 BY SURVEY SOLUTIONS DATED 12/08/2022 FOR CURRENT CONDITION OF EXISTING DRAINAGE NETWORK

16. INFILTRATION RATE USED WAS 2.83x10⁻⁴ AS PER THE PHASE 2 SITE INVESTIGATION REPORT THAT WAS CARRIED OUT BY THE CLANCY GEOTECHNICAL TEAM.

P3	23.01.23	BUND ALIGNMENT UPDATED	CH	CH	CH
P2	17.01.23	APPROX. BUND LOCATION ADDED	CN	CH	LP
P1	27.09.22	PRELIMINARY ISSUE	CN	CH	LP
Rev	Date	Description	By	Check	App.

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Client	BARCHESTER HEALTHCARE LTD				
Project	CHALLONER HOUSE CARE HOME 175 WINCHESTER ROAD EASTLEIGH, SO53 2DU				
Office	NORWICH 01603 305190				
Discipline	CIVIL ENGINEERING				
Title	DRAINAGE STRATEGY GENERAL ARRANGEMENT				
Scale @ A1	1:250	Status PRELIMINARY			

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Originator	Job Number	Discipline	Building/Zone
CCL	8/2762	C	CHA
Type	Level	Drawing No.	Revision
GA	DRN	4400	P3

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SCALE 1:250m

0m

5m

10m

15m

20m

25m

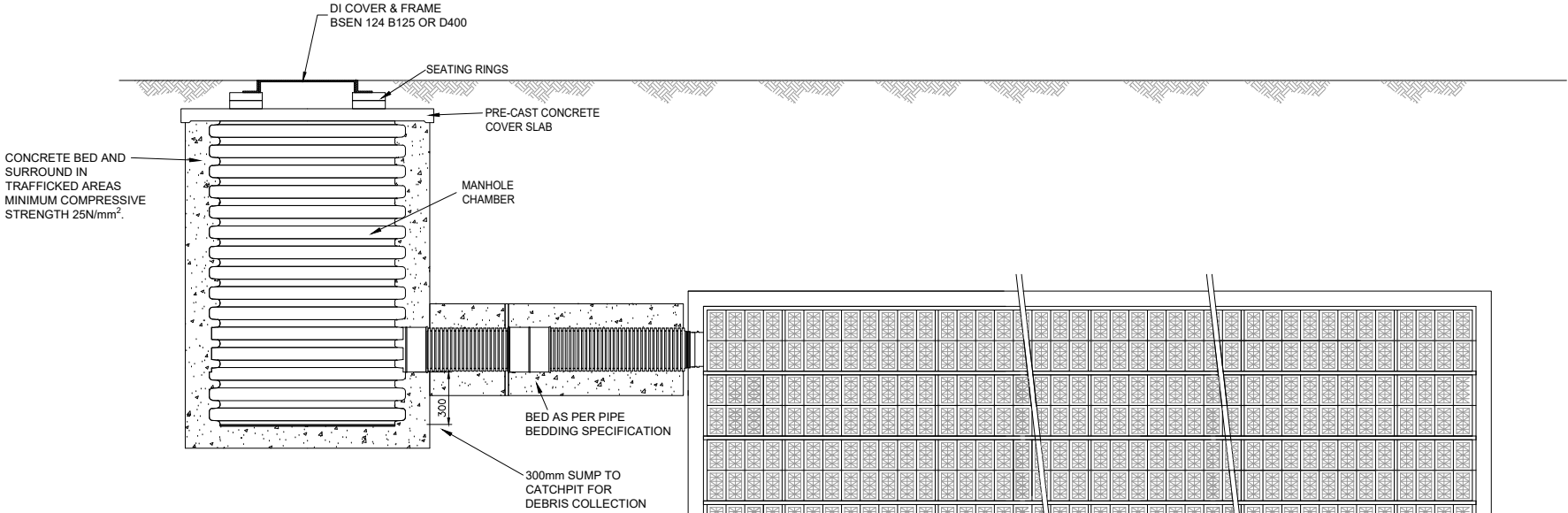
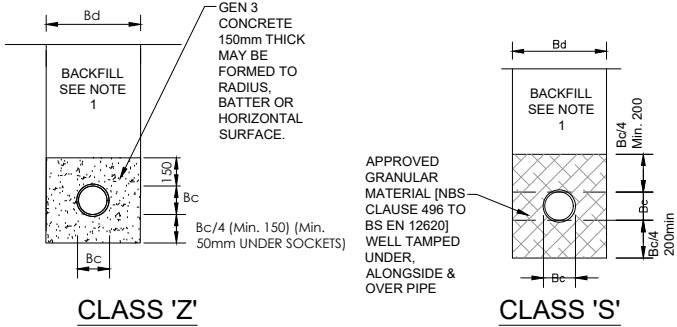
Dia (mm)	Bd (m)	GRANULAR MATERIAL TO NOMINAL SINGLE SIZED AS FOLLOWS.	
100	0.5	100 DIA.	10mm
150	0.6	150 DIA.	10mm/ 14mm.
225	0.7	200 DIA.	
300	0.85	& ABOVE	10mm/ 14mm/ 20mm.
375	1.05		
450	1.15		
525	1.20		
600	1.35		
1050	1.80		

NOTE 1
Bd = TRENCH WIDTH AT CROWN OF PIPE - (NARROW TRENCH WIDTH CONDITIONS)
Bc = OUTSIDE DIAMETER OF PIPE

CLASS 'Z' & CLASS 'S' FOR PIPE DIAMETERS 100 TO 525. GENERAL CASE CLASS 'S'
CLASS 'Z' FOR USE WHERE CROWN OF PIPE IS WITHIN 0.9m OF U/S OF PAVING IN TRAFFICKED AREAS AND 0.6m IN NON TRAFFICKED AREAS.

1. BACK FILL TO TRENCHES TO BE SELECTED GRANULAR MATERIAL. MAX. PARTICLE SIZE NOT EXCEEDING 75mm, AND NOT MORE THAN 10% PASSING 75mm SIEVE. MATERIAL SHALL NOT CONTAIN ANY CLAY LUMPS OR ANY OTHER FOREIGN MATTER.

2. PIPES TO BE VITRIFIED CLAY TO BSEN 295 OR PVC-U TO BSEN 1404-1:1998 TO CONTRACTOR CHOICE



UNITS TO BE WRAPPED IN AN PERMEABLE GEOTEXTILE WRAP AS RECOMMENDED AND SPECIFIED BY THE MANUFACTURER IN WAVINS 'STORMWATER MANAGEMENT -PRODUCT & INSTALLATION' MANUAL. UNITS TO BE SURROUNDED IN 100mm OF SHARP SAND. PIPE ENTRY POINTS AND GEOTEXTILE TO BE SEALED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS, INCLUDING WELDED DOUBLE SEAMS. WAVIN (01249 766600) AQUACELL UNITS TO BE USED UNLESS SPECIFIC AGREEMENT GIVEN BY CLIENT FOR ALTERNATIVE APPROVED PRODUCT.

UNITS TO BE WAVIN AQUACELL ECO OR SIMILAR APPROVED. OTHER UNITS ONLY TO BE AUTHORISED IF APPROVED BY ENGINEER. VERTICAL LOADING CAPACITY 56t/m² HORIZONTAL LOADING CAPACITY 7.7t/m²

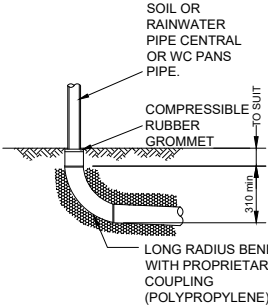
FOR 1 IN 100 (+45%) YEAR STORAGE (PRIVATE)

PIPEWORK SHOWN INDICATIVELY ONLY. SEE GENERAL ARRANGEMENT AND MANHOLE SCHEDULE FOR LOCATIONS AND LEVELS OF PIPEWORK.

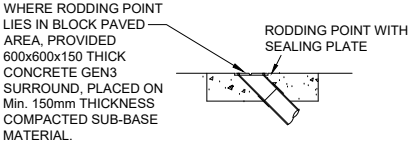
NOTES
CELLULAR UNITS TO HAVE TYPE 1 OR TYPE 2 SUB-BASE BACKFILL OVER THE CELLS ONLY ONCE THEY ARE SURROUND IN 100mm OF SHARP SAND. MATERIAL TO BE COMPACTED IN ACCORDANCE WITH TABLE 6/1 OR 8/1 OF THE SPECIFICATION FOR HIGHWAY WORKS AND TAKING INTO ACCOUNT MAXIMUM ROLLER WEIGHTS AS ADVISED BY WAVIN.

IF 100mm OF SHARP SAND IS NOT ACHIEVABLE THEN THE USE OF A 5-20mm AGGREGATE AROUND THE CELLS IS ACCEPTABLE.

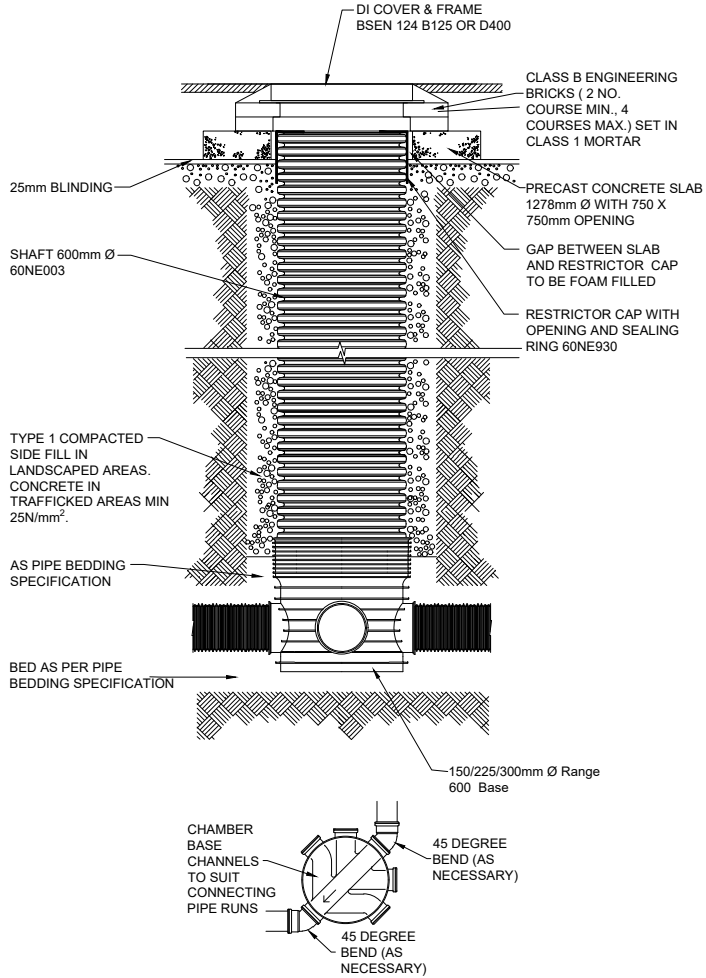
AQUACELL CORE SURFACE WATER SOAKAWAY DETAILS



TYPICAL CONNECTION TO SOIL OR RAINWATER PIPES (uPVC)



RODDING POINT



TYPICAL DETAIL OF WAVIN RANGE 450/600 INSPECTION CHAMBERS FOR DEPTHS UPTO 3.0m (REF TYPE 3)

PRELIMINARY DRAWING
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Rev	Date	Description	CN	CH	LP
P1	27.09.22	PRELIMINARY ISSUE			

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Client	BARCHESTER HEALTHCARE LTD				
Project	CHALLONER HOUSE CARE HOME 175 WINCHESTER ROAD EASTLEIGH, SO53 2DU				
Office	NORWICH - 01603 305 190				
Discipline	CIVIL ENGINEERING				
Title	DRAINAGE CONSTRUCTION DETAILS SHEET				
Scale @ A1	1:20	Status	PRELIMINARY		



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Originator	Job Number	Discipline	Building/Zone
CCL	8/2762	C	CHA
Type	Level	Drawing No.	Revision
DET	DRN	4410	P1

Boarding Block Manhole Schedule - Surface Water											
MH Ref	MH Type	MH Internal Diameter (mm)	Cover Type	No. of Inlets & Outlets	Cover Level (m)	Invert Level (m)	Outgoing Pipe Size (mm)	Depth to Outgoing Pipe Invert (m)	Depth to Outgoing Pipe Soffit (m)	Bedding & Backfill Type	Comments
5W 1.0	PPIC	450	B125	2	47.550	46.927	150	0.623	0.473	Z	
5W 1.1	PPIC	450	B125	2	47.570	46.743	150	0.827	0.677	5	
5W 1.2	PPIC	450	B125	3	47.710	46.533	150	1.177	1.027	5	
5W 1.3	PPIC	450	B125	2	46.340	45.508	150	0.832	0.682	5	
5W 1.4	PPIC	450	B125	4	45.550	44.626	150	0.924	0.774	5	
5W 2.0	PPIC	450	B125	2	45.560	44.960	150	0.600	0.450	Z	

P1	27.09.22	PRELIMINARY ISSUE	CN	CH	LP
Rev	Date	Description	By	Check	App.

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DO NOT THAW LAYERS THAT HAVE BEEN FROZEN.

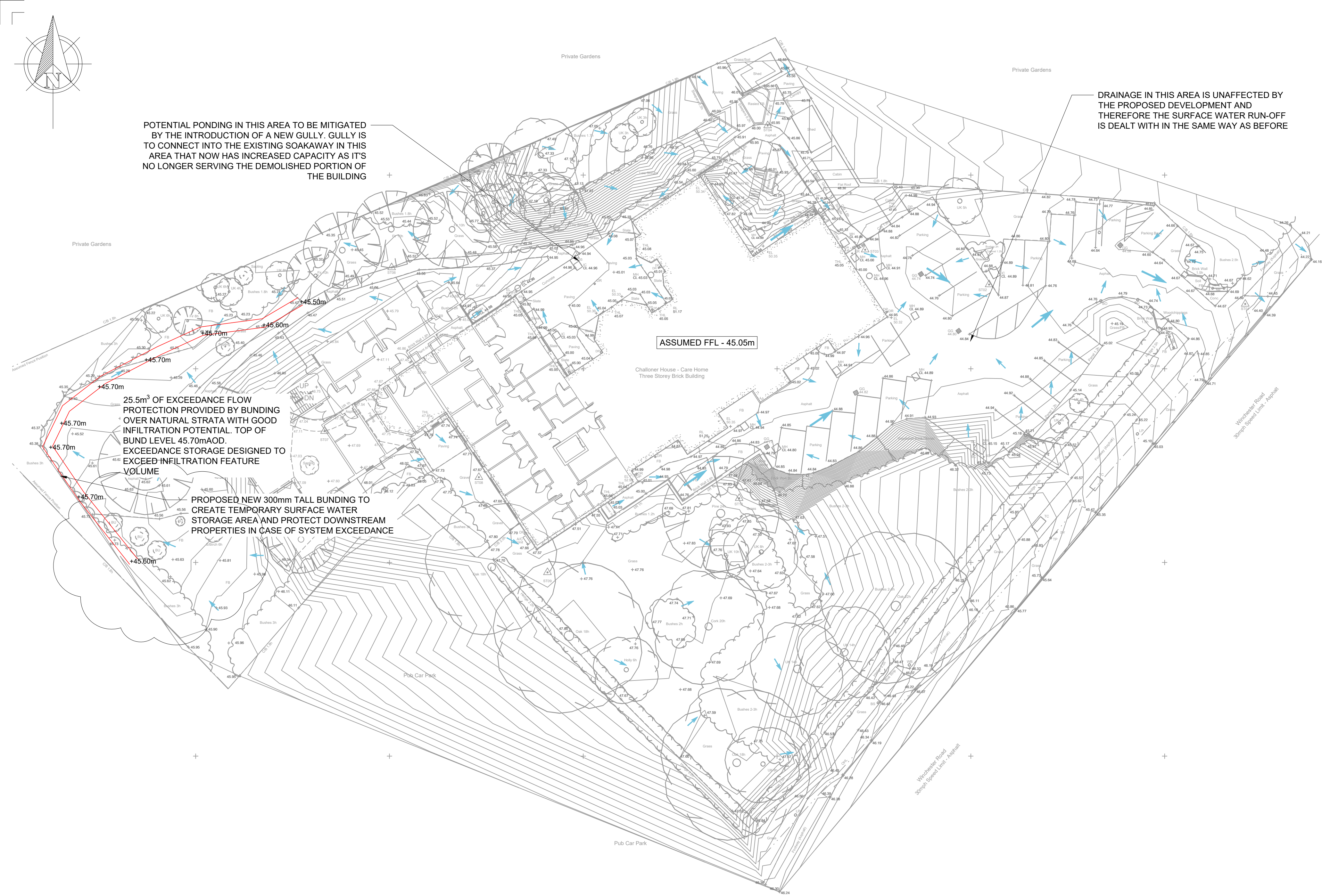
Client	BARCHESTER HEALTHCARE LTD
Project	CHALLONER HOUSE CARE HOME 175 WINCHESTER ROAD EASTLEIGH, SO53 2DU
Office	NORWICH - 01603 305 190
Discipline	CIVIL ENGINEERING
Title	MANHOLE SCHEDULE
Scale @ A1	N/A
Status	PRELIMINARY



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Originator	Job Number	Discipline	Building/Zone
CCL	8/2762	C	CHA
Type	Level	Drawing No.	Revision
SCH	DRN	4415	P1



- NOTES:**
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER ENGINEER'S AND ARCHITECT'S DRAWINGS, DETAILS & SPECIFICATIONS.
 2. THE EXTERNAL WORKS DESIGN IS BASED UPON HARRIS IRWIN ARCHITECTS' PLAN 3307-HIA-01-XX-DR-A-0102 REV P1
 3. TOPOGRAPHICAL SURVEY DRAWING 4268YOLS-01 DATED 14/06/2022 BY SURVEY SOLUTIONS HAS ALSO BEEN USED IN THE DESIGN.
 4. ALL LEVELS ARE TO BE CONFIRMED BY THE CONTRACTOR ON SITE PRIOR TO CONSTRUCTION.

HEALTH SAFETY AND ENVIRONMENTAL RISKS BOX		
CONSTRUCTION RISKS	MAINTENANCE RISKS	DEMOLITION/ ADAPTATION RISKS
1. DUE TO THE STEEP GRADIENT OF THE SITE CONSIDERATION TO SAFETY MUST BE GIVEN TO EACH CONSTRUCTION TASK.	1. SOAKAWAY CRATES, GULLIES, CHANNELS AND CHAMBERS REQUIRE THE STANDARD PERIODIC INSPECTION REGIME AND CLEANING ROUTINE TO ENSURE CONTINUED PERFORMANCE.	1. APPARATUS LOCATED IN LANDSCAPED AREAS HAS NOT BEEN DESIGNED TO SUPPORT HEAVY VEHICLE LOADING.
2. REFER TO EXISTING SERVICES DRAWING AND TO ARCHITECTS SERVICES DRAWINGS FOR DETAILS & LOCATION OF EXTG AND PROPOSED DRAINAGE & SERVICES.	2. CONFINED SPACE ENTRY.	2. THE SURFACE WATER DRAINAGE APPARATUS HAS BEEN DESIGNED TO ACCOMMODATE THE DESIGNED CATCHMENT AREA. NO ADDITIONAL AREAS OF HARDSTANDING CAN BE CONNECTION INTO THE SYSTEM WITHOUT RISK OF LOCALIZED FLOODING ON SITE.
3. EXISTING DRAINS SERVING THE DEMOLISHED PORTION OF THE BUILDING TO EITHER BE REMOVED OR GRUBBED UP.	3. ALL MAINTENANCE MUST COMPLY WITH SOUTHERN WATER AUTHORITY'S REGULATIONS AND PRIVATE APPARATUS SUPPLIER RECOMMENDED MAINTENANCE SCHEDULES	3. HAZARDOUS WASTE MATERIALS
4. CONSTRUCTING NEW CONNECTIONS DRAINAGE, POTENTIAL FOR HAZARDOUS GASES. PERMIT TO ENTER EXISTING MANHOLES SHOULD BE OBTAINED FROM SOUTHERN WATER BEFORE UNDERTAKING THE WORK. RELEVANT P.P.E SHOULD BE WORN AT ALL TIMES. IF ANY ASBESTOS CEMENT PIPES ARE FOUND, THEN SAFE SYSTEM OF WORK NEED TO BE PUT IN PLACE WITH ATTENTION DRAWN TO THE CONTROL ASBESTOS AT WORK (AMENDMENT) REGULATIONS 1992.		
IN ADDITION TO THE HAZARDS & RISKS NORMALLY ASSOCIATED WITH THE TYPE OF WORK DETAILED ON THIS DRAWING, TAKE NOTE OF THE ABOVE. IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR, WORKING WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT.		

EXCEEDANCE FLOW ROUTE:

1. EXCEEDANCE AT THE FRONT OF THE SITE WILL COLLECT IN A LOCAL LOW-POINT IN THE EXISTING FRONT CAR PARK. IF THE EXCEEDANCE FLOW BECOMES TOO DEEP, FLOWS WILL DISCHARGE TO 'WINCHESTER ROAD' TO THE SOUTH.
2. EXCEEDANCE AT THE WEST OF THE PROPERTY WILL FLOW NORTH-WEST TOWARDS ADJACENT HOUSING. BUNDING PROPOSED TO CREATE TEMPORARY EXCEEDANCE STORAGE OVER GROUND WITH GOOD INFILTRATION POTENTIAL.

LEGEND:

+ XX.XXm	EXISTING LEVELS
	EXCEEDANCE DIRECTION ARROWS
	PROPOSED EXCEEDANCE PROTECTION BUND TO BE 300mm TALL TO PROTECT ADJACENT HOUSING
+ XX.XXm	PROPOSED LEVEL OF BUNDING

P3	23.01.23	MOVED BUND ARB COMMENT	CH	CH	CH
P2	17.01.23	RE-ALIGNMENT OF BUNDING TO CN	CH	CH	GS
P1	27.09.22	PRELIMINARY ISSUE	CN	CH	LP
Rev	Date	Description	By	Check	App.

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Client	BARCHESTER HEALTHCARE LTD
Project	CHALLONER HOUSE CARE HOME 175 WINCHESTER ROAD EASTLEIGH, SO53 2DU
Office	NORWICH 01603 305190
Discipline	CIVIL ENGINEERING
Title	EXCEEDANCE FLOW ROUTES GENERAL ARRANGEMENT
Scale @ A1	1:250
Status	PRELIMINARY



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PRELIMINARY DRAWING
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SCALE 1:250m
0m 5m 10m 15m 20m 25m

Originator	Job Number	Discipline	Building/Zone
CCL	8/2762	C	CHA
Type	Level	Drawing No.	Revision
GA	DRN	4450	P3

APPENDIX C – TOPOGRAPHICAL SURVEY, CCTV SURVEY & INFILTRATION TEST RESULTS

PAS 128: 2014 QUALITY LEVEL GUIDE

Q-LEVEL	DESCRIPTION	ACC	Q-LEVEL	DESCRIPTION
Q1-Q	Service available later from records	Assumed	Q1-B2	Internal & external location using only one
Q1-C	Assumed to be present on site	Assumed	Q1-B1	Assumed to be present on site
Q1-B4	Assumed to be present on site	Assumed	Q1-A	Assumed to be present on site
Q1-B3	Assumed to be present on site	Assumed	Q1-A	Assumed to be present on site

DETECTION METHOD
IN ACCORDANCE WITH PAS 128: 2014 SURVEY TYPE B

DRAINAGE SURVEY

All accessible Manholes and Inspection chambers have had their respective covers lifted with pipe sizes, inverts, chamber sizes/types and service data recorded from ground level. All connections from DPs, Gullies, Drains, VPs, RE's and lampholes have been proven wherever possible using audible connections (AC) and/or sonde instrumentation where applicable. Where these methods have proved unsuccessful then assumed (AR) straight line connections will be shown.

CCTV DRAINAGE SURVEY

All accessible Manholes and Inspection chambers have had their respective covers lifted with pipe sizes, inverts, chamber sizes/types and service data recorded from ground level. Pipework has been traced, accessed and collected for post processing. Drainage layout, including manhole covers not located by topographical survey, may be taken from CCTV chainage and will be shown as indicative only.

Electricity

Elec cables will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required.

British Telecoms

BT cables will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required. Due to current laws and legislation protecting all BT apparatus, cabling can only be located remotely. We therefore compare all our telecom findings against record information to produce the final service layout. In some instances, where high amount of cable ducts are present, we may only be able to identify a linear centre peak signal rather than identifying all the individual duct positions. For further information regarding Telecoms apparatus, please contact Openreach directly.

Cable TV & Communications

CTV and/or Com cables will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required.

Fibre Optic

FO cables will have been predominantly located using GPR methodology. This is due to the materials used within fibre optic cabling. In some rare instances, tracer cabling or conductible non fibre optic cabling will be present within some or all ducting. When this is the case, both EML and GPR methodology will be combined to identify service network and achieve greater quality levels.

Lighting, Traffic Signal & Security Cables

LC, TS and/or Sec cables will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required.

Gas & Water Inc. Fuel Pipes and Hot Water Pipes

GM/GS and/or WM/WS pipe work will have been attempted and located using both EML & GPR methodology with electronically derived depths shown for the former and depths to crown levels shown for the latter. When the Gas/Water pipe work is constructed using conductible materials, then we are able to employ multiple geophysical techniques to identify service network and achieve greater quality levels. When a non conductible material is used, GPR methodology will be employed to locate and plot the final service layout.

Ground Penetrating Radar

GPR methodology is used to identify and locate all non metallic, non conductible piping and cabling. We also employ GPR to obtain a greater accuracy levels on EML located services. The GPR has a greater success rate on pipe or service diameter upward of Ø63mm, C63mm, as size increments increase, so does the chance of detection. The GPR can produce varying results and as such, wouldn't be used as an independent utility surveying instrument.

Unidentified Traces

All UTLs will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required. Every effort has been made to identify the service but in this instance, is not achievable. We recommend excavation work to determine identity and depth where applicable.

Scarring (Q1-C)

Scarring has been identified on site with a potential of an undetectable service present.

Assumed Routes & Taken from Records (Q1-B4/D)

Assumed routes (AR) are shown if there is evidence that a service exists but we are unable to trace it whilst on site. The surveyor will attempt to locate various (service evidence) etc. around site area to successfully determine an assumed route between these points. If there is little evidence on site but they believe a service is still present, then a common sense approach to an assumed route shall be employed.

Taken from records (TFR) are service routes that are taken from STAT record plans or previous survey information and overlaid onto our drawings.

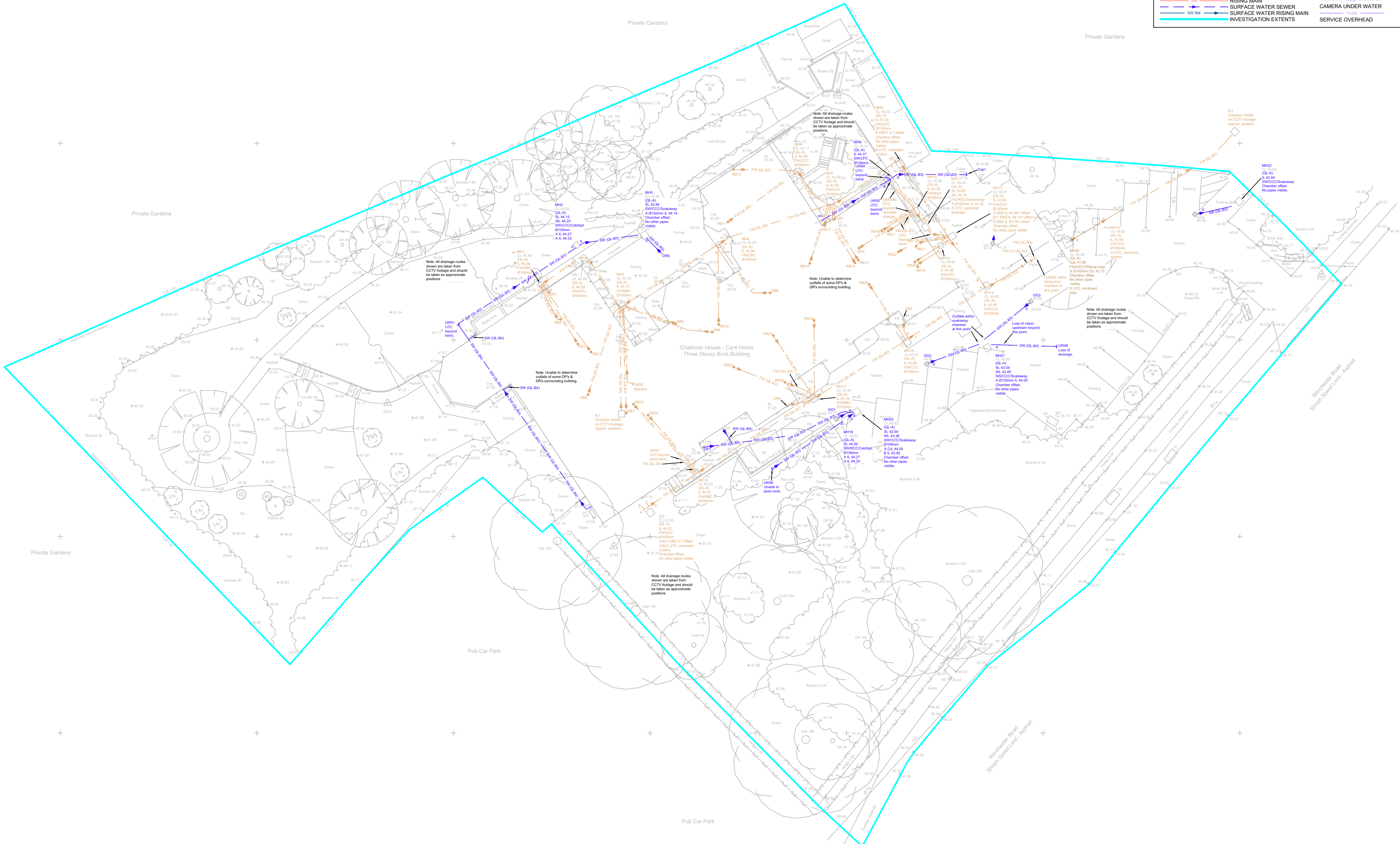
SURVEY RECOMMENDATIONS

We recommend a PAS utility survey of the entire site to establish the position of underground services.

The sewers with high levels of silt or blockages to be jetted to extend the CCTV drainage survey, if any of these areas are deemed critical or of high importance.

We recommend full statutory record information be obtained to confirm site findings and to position undetectable which may be present.

Due to the geophysical nature of subsurface technology, we always recommend excavation works to be carried out within critical areas for verification and to eliminate the possibility of undetectable services present.



UTILITIES & UNDERGROUND INVESTIGATIONS

ABBREVIATIONS & SYMBOLS

1D SC	1 Duct & Cables	DCr	Depth To Crown	RBC	Rectangular Brick Chamber
Ø	Diameter	DI	Depth To Invert	RCC	Rectangular Concrete Chamber
AC	Assumed Connection	DS	Depth To Silt	RE	Rodding Eye
AG	Above Ground	DTB	Depth To Base	SA	Survey Abandoned
AR	Assumed Route	DTW	Depth To Water	SL	Silt Level
BL	Base Level	DTS	Depth To Surface	SuL	Surface Level
CB	Concrete Batching	EBD	External Backdrop	TFR	Taken From Records
CBC	Circular Brick Chamber	EOT	End Of Trace	UTC	Unable To CCTV
CCC	Circular Concrete Chamber	IBD	Internal Backdrop	UTDO	Unable To Determine Outfall
CL	Cover Level	IL	Invert Level	UTL	Unable To Lift
CPC	Circ Plastic Chamber	OH	Overhead	UTS	Unable To Survey
CL	Crown Level	POR	Pour Depth Response	UTT	Unable To Trace
CU	Camera Under Water	RB	Rest Bend	WL	Water Level

BT	BT CABLE(S)	BT	BT CABLE(S)
COM	COMMUNICATIONS CABLE(S)	COM	COMMUNICATIONS CABLE(S)
CTV	CABLE TV CABLE(S)	CTV	CABLE TV CABLE(S)
EL	ELECTRIC CABLE(S)	EL	ELECTRIC CABLE(S)
FO	FIBRE OPTIC CABLE(S)	FO	FIBRE OPTIC CABLE(S)
FUEL	FUEL PIPE(S)	FUEL	FUEL PIPE(S)
GAS	GAS MAIN	GAS	GAS MAIN
GPR	GROUND PENETRATING RADAR (GPR) TRACE	GPR	GROUND PENETRATING RADAR (GPR) TRACE
HOT	HOT WATER PIPE	HOT	HOT WATER PIPE
LC	LIGHTING CIRCUIT	LC	LIGHTING CIRCUIT
OL	OIL PIPE(S)	OL	OIL PIPE(S)
SEC	SECURITY CABLE(S)	SEC	SECURITY CABLE(S)
TS	TRAFFIC SIGNAL	TS	TRAFFIC SIGNAL
UT	UNIDENTIFIED SERVICE	UT	UNIDENTIFIED SERVICE
UTL	UNIDENTIFIED TRACE	UTL	UNIDENTIFIED TRACE
WATER	WATER MAIN	WATER	WATER MAIN
COMB	COMBINED SEWER	COMB	COMBINED SEWER
WRI	WATER RISING MAIN	WRI	WATER RISING MAIN
FW	FULL WATER RISING MAIN	FW	FULL WATER RISING MAIN
SW	SURFACE WATER RISING MAIN	SW	SURFACE WATER RISING MAIN
INVEST	INVESTIGATION EXTENTS	INVEST	INVESTIGATION EXTENTS

UTILITIES & UNDERGROUND INVESTIGATIONS

DRAWING NOTES

All below ground details shown have been identified from above ground without excavation. Survey Solution use electro-magnetic and/or ground penetrating radar (GPR) methods to investigate for underground utilities, services and features. Results using these methods are not infallible and we recommend that excavations are carried out to confirm any identifications, positions and depths.

Any areas on the drawing where services or features have not been shown are not necessarily clear of services or features but are an indication that no items have been identified during our investigations. All reasonable care and normal good practice should still be employed during design and construction processes.

Certain types of services such as plastic or concrete pipes, some conduit and ducting where direct access can not be achieved for tracing may not be shown and alternative locating methods should be used.

Survey Solutions has used all reasonable care to research available service records but the completeness or use of the service records supplied to or by Survey Solutions cannot be guaranteed. Therefore Survey Solutions cannot be held responsible for any features annotated as 'taken from records' (TFR).

Depths obtained using electro-magnetic or GPR are effected by ground conditions and should be treated as indicative only. Electro-magnetic depths to utilities and services are generally taken to the centre of a feature. GPR depths to the top of a feature and drainage depth shown to inverts, unless otherwise indicated.

Drainage pipe sizes will be obtained without entering the chamber and therefore should be treated as approximate. Pipe dimensions which have not been obtained visually will be taken from records when available.

All services, drainage and utilities routes are assumed straight between access points, unless otherwise stated. The numbers of cables in runs will not be shown unless specifically requested. All services are below ground unless indicated.

Services, utilities and features may not have been surveyed if obstructed or not reasonably visible or accessible at the time of survey.

Survey Solutions accept no responsibility for the completeness or accuracy of either the topographical survey or base mapping on this project.

All critical dimensions and measurements should be checked and verified with any errors or discrepancies notified to Survey Solutions immediately. The accuracy of the digital data is the same as the plotting scale implies. All dimensions are in metres unless otherwise stated.

The contractor must check and verify all site and building dimensions, levels, utilities and drainage details and connections prior to commencing work.

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Do not scale from this drawing.

GENERAL SYNOPSIS

This survey has been carried out in accordance with PAS 128: 2014 & our version of the Royal Institution of Chartered Surveyors (RICS) specification for Measured Surveys of Land, Buildings and Utilities. Our survey extents have been agreed and confirmed with formal acceptance of 43174NGUG from Clancy Consulting Ltd. If you have any queries regarding the final services layout, please may we ask you to carefully read all the information within this title block in its entirety before continuing to do so.

TOPOGRAPHICAL/DWG DRAWING INFORMATION		
TOPOGRAPHICAL SURVEY DATE - 14/06/2022		
SURVEY TYPE	DESCRIPTION	EFFECT ON SURVEY RESULTS
TOPO	Survey Solutions	None
QUOTED		
OS		
NTS		

GENERAL SITE CONDITIONS	
EXCELLENT	
ADDITIONAL INFORMATION	EFFECT ON SURVEY RESULTS

DESKTOP UTILITY RECORDS (PAS 128: 2014 SURVEY TYPE D)		
PREREQUISITE FOR PAS 128: 2014 SURVEY TYPE B		
COMMISSIONED: NO		
UTILITY	AVAILABILITY	UTILITY COMPANY PROVIDER
SEWER	NO	N/A
WATER MAIN	N/A	N/A
GAS MAIN	N/A	N/A
TELECOM	N/A	N/A
CABLE TV	N/A	N/A
ELECTRICITY	N/A	N/A
OIL PIPES	N/A	N/A
OTHER	NO	N/A

REV	DESCRIPTION	DRAWN	CHECKED	APPR	SURVEY DATE



SURVEY SOLUTIONS

LAND SURVEYING
BUILDING SURVEYING
UNDERGROUND SURVEYING
SITE ENGINEERING
MONITORING

0845 040 5969
survey-solutions.co.uk

IPSWICH BEDFORD COVENTRY GLASGOW LONDON MANCHESTER NORMICH NOTTINGHAM YEOVIL

PROJECT TITLE 175 WINCHESTER ROAD, EASTLEIGH, HAMPSHIRE, SO53 2DU.					
DRAWING DETAIL CCTV DRAINAGE SURVEY. SHEET 1 OF 1					
CLIENT CLANCY CONSULTING LTD		SCALE 1:250			
SURVEYOR SJH	SURVEY DATE 12/08/2022	CHECKED BY AJM	APPROVED BY GSB	DWG STATUS FINAL	
DRAWING NUMBER 43174BWUG-01			REVISION	ISSUE DATE 22/08/2022	



Client **Barchester Healthcare**

Project **Challoner House Care Home**

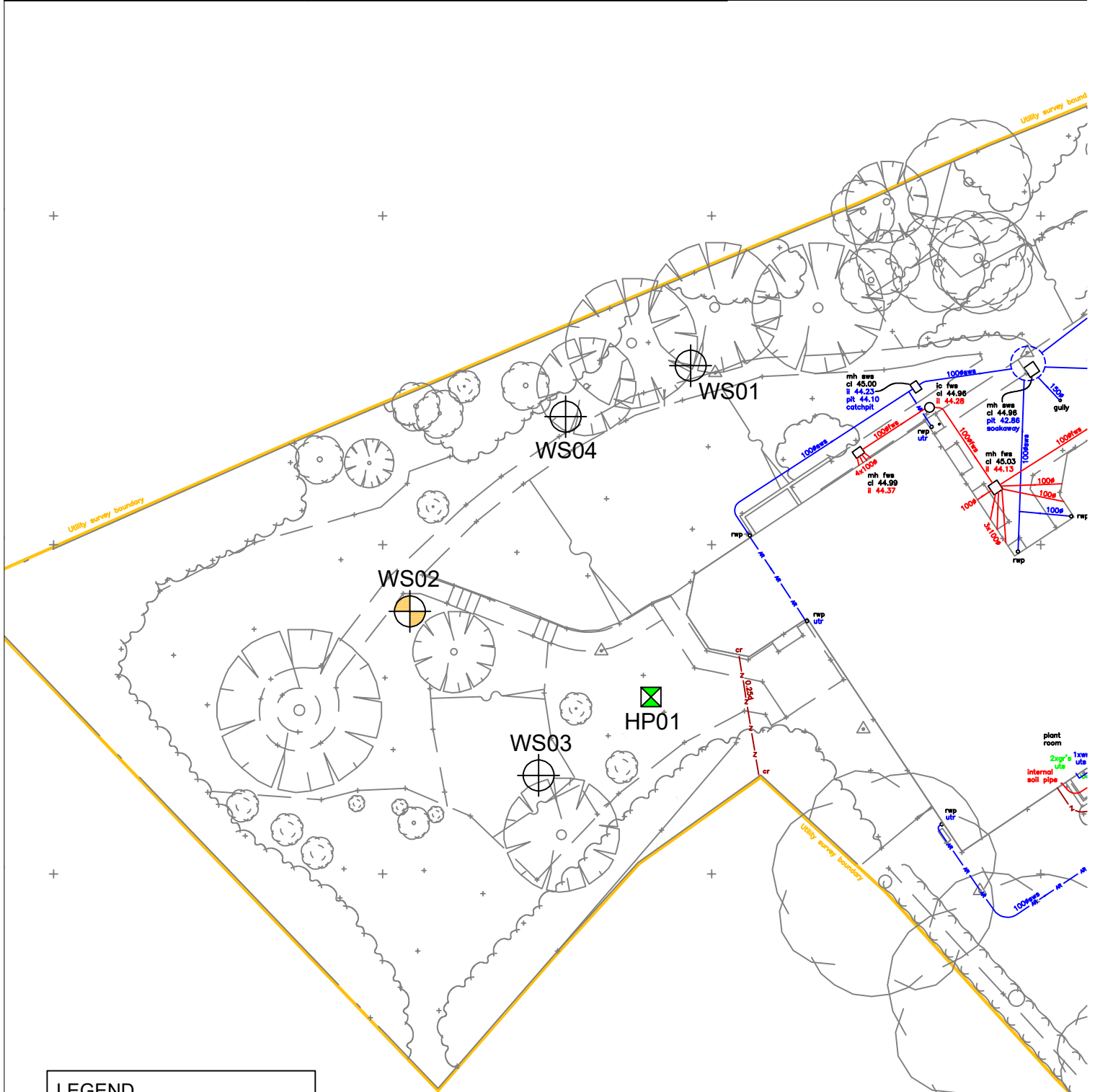
Title **Exploratory Hole Location Plan**

Office **London**

Discipline **Geo-environmental**



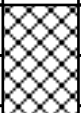
www.clancy.co.uk



LEGEND

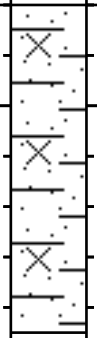
-  Installed window sample location
-  Window sample with falling head testing
-  Hand dug inspection pit

00 Rev	July 22 Date	Exploratory Hole Location Plan Description	EB By	RP Check	NR App.	Drawn EB Checked RP Approved NR	Date July 22 Scale @ A4 NTS Status LIVE	COPYRIGHT: THE COPYRIGHT OF THIS DRAWING IS VESTED IN CLANCY CONSULTING. IT SHALL NOT BE USED WITHOUT PERMISSION BY ANYONE FOR ANY PURPOSE. DO NOT SCALE THIS DRAWING ELECTRONICALLY OR MANUALLY. WORK TO FIGURED DIMENSIONS ONLY. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE. DO NOT TURN ON LAYERS THAT HAVE BEEN TURNED OFF. DO NOT THAW LAYERS THAT HAVE BEEN FROZEN.	Job number 10/2125	Drawing number 02	Revision 00
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			Project Title: Challoner House Care Home				HP01																																																							
			Project Number: 10/2125		Client: Barchester Healthcare Ltd.					Sheet 1 Of 1																																																				
			GL (mAOD): 47.76		N Coord: 121392		E Coord: 444219																																																							
Date: 11/07/2022			Method: Hand Excavated		Driller: CK Drilling Ltd		Logged By: EB																																																							
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe																																																						
0.50	ES		47.51		0.25	MADE GROUND: Grass over soft brown silty slightly sandy slightly gravelly CLAY, with rootlets. sand is fine. Gravel is fine to coarse, subrounded to subangular of flint.																																																								
						MADE GROUND: Brown clayey sandy GRAVEL. Sand is medium. Gravel is fine to coarse, rounded to subangular of flint and rare charcoal.																																																								
			46.76		1.00	Firm orangish brown sandy CLAY. Sand is fine to medium. (WITTERING FORMATION)																																																								
			46.56		1.20	End Of Borehole At 1.20 m																																																								
			45.76		2.00																																																									
KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level 			REMARKS No Groundwater Encountered Location scanned with CAT prior to excavation. Hand pit dug to 1.20m bgl and backfilled with arisings upon completion. Scale: 1:15			Water Strikes <table border="1"> <thead> <tr> <th>Date</th> <th>Strike</th> <th>Level</th> <th>Minutes</th> <th>Casing</th> <th>Sealed</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="3">Daily Log Of Depths</th> <th colspan="3">Chiselling</th> </tr> <tr> <th>Date</th> <th>Casing</th> <th>Water</th> <th>From</th> <th>To</th> <th>Hours</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>			Date	Strike	Level	Minutes	Casing	Sealed																									Daily Log Of Depths			Chiselling			Date	Casing	Water	From	To	Hours												
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			Project Title: Challoner House Care Home				WS01																																																
			Project Number: 10/2125		Client: Barchester Healthcare Ltd.					Sheet 1 Of 3																																													
			GL (mAOD): 45.49		N Coord: 121411		E Coord: 444220																																																
Date: 11/07/2022			Method: Window Sampler		Driller: CK Drilling Ltd		Logged By: EB																																																
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe																																															
0.25	ES	N=17	45.19		0.30	TOPSOIL: Grass over soft brown silty sandy gravelly CLAY, with roots and rootlets. Sand is fine to coarse. Gravel is fine to coarse, subrounded to subangular of flint.																																																	
						Orangish brown clayey silty gravelly fine to coarse, predominantly medium SAND, with roots, rootlets, lenses of increased clay content and occasional cobbles. Gravel is fine to coarse, subrounded to subangular of flint. Cobbles are subrounded of flint. (WITTERING FORMATION)																																																	
			44.69		0.80	Orangish brown becoming light brown medium SAND. (WITTERING FORMATION)																																																	
			44.49		1.00																																																		
			44.29		1.20	Orangish brown mottled reddish brown slightly clayey fine to medium SAND, with localised iron staining and lenses of increased clay content. (WITTERING FORMATION)																																																	
			43.69		1.80	Firm to stiff light grey mottled orangish brown becoming light grey silty sandy CLAY, with localised iron staining and iron nodules. Sand is fine. (WITTERING FORMATION)																																																	
			43.49		2.00																																																		
			43.24		2.25	Light grey slightly clayey silty fine SAND, with black organic material. (WITTERING FORMATION)																																																	
			43.09		2.40	Firm orangish brown to light grey silty slightly sandy CLAY., with localised iron staining. Sand is fine. (WITTERING FORMATION)																																																	
						Borehole Continues																																																	
KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level 			REMARKS No Groundwater Encountered Location scanned with CAT prior to excavation. Hand pit dug to 1.20m bgl. Borehole installed to a depth of 5.00m bgl. Scale: 1:15			Water Strikes <table><tr><th>Date</th><th>Strike</th><th>Level</th><th>Minutes</th><th>Casing</th><th>Sealed</th></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>						Date	Strike	Level	Minutes	Casing	Sealed																																						
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Printed By GeoLogs (www.GeoLogs.com)

			Project Title: Challoner House Care Home				WS01																															
			Project Number: 10/2125		Client: Barchester Healthcare Ltd.					Sheet 3 Of 3																												
			GL (mAOD): 45.49		N Coord: 121411		E Coord: 444220																															
Date: 11/07/2022			Method: Window Sampler		Driller: CK Drilling Ltd		Logged By: EB																															
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe																														
		N=16	40.04		5.45	Stiff becoming firm dark grey mottled dark green silty sandy CLAY. Sand is fine. (LONDON CLAY FORMATION)																																
						End Of Borehole At 5.45 m																																
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Date	Casing	Water	From	To	Hours																																	

		Project Title: Challoner House Care Home				WS02	
		Project Number: 10/2125		Client: Barchester Healthcare Ltd.			
		GL (mAOD): 45.55		N Coord: 121395		E Coord: 444203	
Date: 11/07/2022		Method: Window Sampler		Driller:		Logged By: EB	

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
0.30	ES					TOPSOIL: Grass over soft dark brown very sandy gravelly CLAY, with roots and rootlets. Sand is fine to medium. Gravel is fine to coarse, subrounded to subangular of flint.		
			45.15	0.40	Soft brown very sandy gravelly CLAY, with rootlets and black organic material. Sand is fine to medium. Gravel is fine to coarse, subrounded to subangular of flint. (WITTERING FORMATION)			
			44.75	0.80	Orangish brown slightly clayey slightly gravelly fine to medium, predominantly medium SAND, with black organic material and lenses of increased gravel content. Gravel is fine to coarse, rounded to subrounded of flint. Increasing clay content with depth. (WITTERING FORMATION)			
			44.55	1.00	Light grey slightly clayey medium SAND. (WITTERING FORMATION)			
			43.70	1.85	Orangish brown slightly clayey medium SAND, with lenses of increased clay content. (WITTERING FORMATION)			
			43.55	2.00	2.31 - 2.34 Firm light grey clay lense.			
			43.35	2.20	Borehole Continues			
			43.15	2.40				

KEY

D - Disturbed Sample
B - Bulk Sample
U - Undisturbed
W - Water Sample
S - Standard Penetration Test
C - Cone Penetration Test
N - Penetration Test 'N' Value
V - Hand Shear Vane kPa
 - Groundwater Strike
 - Groundwater Level



REMARKS

No Groundwater Encountered
Location scanned with CAT prior to excavation. Hand pit dug to 1.20m bgl. Borehole installed to a depth of 4.50m bgl.

Scale: 1:15

Water Strikes

Date	Strike	Level	Minutes	Casing	Sealed

Daily Log Of Depths

Date	Casing	Water	From	To	Hours



Project Title: Challoner House Care Home

Project Number: 10/2125

GL (mAOD): 45.55

Client: Barchester Healthcare Ltd.

N Coord: 121395

E Coord: 444203

WS02

Sheet 2 Of 3

Date: 11/07/2022

Method: Window Sampler

Driller:

Logged By: EB

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
4.50 - 4.60	GT	N=20	43.00		2.55	Stiff light grey to orangish brown silty slightly sandy CLAY. Sand is fine. (WITTERING FORMATION)		
			42.85		2.70	Orangish brown becoming light grey slightly clayey medium SAND, with black organic material and lenses of increased clay content. (WITTERING FORMATION)		
			42.78		2.77	Firm light grey to orangish brown silty slightly sandy CLAY, with localised iron staining. Sand is fine. (WITTERING FORMATION)		
			42.40		3.15	Light orangish brown fine to medium SAND. (WITTERING FORMATION)		
			42.15		3.40	Light grey very clayey silty fine SAND. (WITTERING FORMATION)		
			42.10		3.45	Light grey medium SAND. (WITTERING FORMATION)		
			41.85		3.70	Firm orangish brown silty sandy CLAY, with lenses of increased sand content. Sand is fine to medium. (WITTERING FORMATION)		
			41.70		3.85	3.45 - 3.47 Light grey very clayey silty fine sand lense. (WITTERING FORMATION)		
			41.35		4.20	Light brown mottled orangish brown fine to medium SAND. (WITTERING FORMATION)		
			4.70 - 4.80	GT	N=14	40.80		
						Light brown mottled orangish brown fine to medium SAND. (WITTERING FORMATION)		
						Firm orangish brown mottled light grey silty slightly sandy CLAY. Sand is fine. (WITTERING FORMATION)		
						Firm to stiff dark grey mottled dark green silty slightly sandy CLAY. (LONDON CLAY FORMATION)		
						Borehole Continues		

KEY

D - Disturbed Sample
B - Bulk Sample
U - Undisturbed
W - Water Sample
S - Standard Penetration Test
C - Cone Penetration Test
N - Penetration Test 'N' Value
V - Hand Shear Vane kPa
 - Groundwater Strike
 - Groundwater Level



REMARKS

No Groundwater Encountered
Location scanned with CAT prior to excavation. Hand pit dug to 1.20m bgl. Borehole installed to a depth of 4.50m bgl.

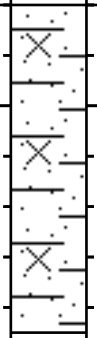
Scale: 1:15

Water Strikes

Date	Strike	Level	Minutes	Casing	Sealed

Daily Log Of Depths

Date	Casing	Water	From	To	Hours

		Project Title: Challoner House Care Home				WS02																																																								
		Project Number: 10/2125		Client: Barchester Healthcare Ltd.																																																										
		GL (mAOD): 45.55		N Coord: 121395		E Coord: 444203																																																								
Date: 11/07/2022		Method: Window Sampler		Driller:		Logged By: EB																																																								
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe																																																						
		N=15	40.10		5.45	Firm to stiff dark grey mottled dark green silty slightly sandy CLAY. (LONDON CLAY FORMATION)																																																								
						End Of Borehole At 5.45 m																																																								
KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level			REMARKS No Groundwater Encountered Location scanned with CAT prior to excavation. Hand pit dug to 1.20m bgl. Borehole installed to a depth of 4.50m bgl.			Water Strikes <table border="1"> <thead> <tr> <th>Date</th> <th>Strike</th> <th>Level</th> <th>Minutes</th> <th>Casing</th> <th>Sealed</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table> Daily Log Of Depths <table border="1"> <thead> <tr> <th>Date</th> <th>Casing</th> <th>Water</th> <th>From</th> <th>To</th> <th>Hours</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>			Date	Strike	Level	Minutes	Casing	Sealed																									Date	Casing	Water	From	To	Hours																		
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		Project Title: Challoner House Care Home				WS03	
		Project Number: 10/2125		Client: Barchester Healthcare Ltd.			
		GL (mAOD): 45.96		N Coord: 121388		E Coord: 444209	
Date: 11/07/2022		Method: Window Sampler		Driller: CK Drilling Ltd		Logged By: EB	

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
0.15	ES	N=4	45.81		0.15	TOPSOIL: Grass over soft silty sandy gravelly CLAY, with roots and rootlets. Sand is fine to medium. Gravel is fine to coarse, subrounded to subangular of flint.		
			45.56		0.40	Dark orangish brown very clayey silty slightly gravelly fine to medium SAND. Gravel is fine to coarse, rounded to subrounded of flint. (WITTERING FORMATION)		
			44.96		1.00	Light orangish brown slightly clayey slightly gravelly fine to medium, predominantly medium SAND, with lenses of increased clay content and black organic material. Gravel is fine to coarse, rounded to subrounded of flint. (WITTERING FORMATION)		
			44.51		1.45	Orangish brown clayey fine to medium SAND, with lenses of increased clay content and localised iron staining. (WITTERING FORMATION)		
			43.96		2.00	Soft grey mottled brown silty sandy CLAY, with localised iron staining. Sand is fine to medium. (WITTERING FORMATION)		
		N=12	43.66		2.30	Orangish clayey fine to medium SAND, with lenses of increased clay content and black organic material. (WITTERING FORMATION)		
						Borehole Continues		

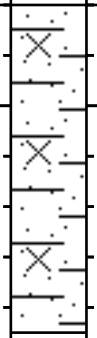
KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level		REMARKS No Groundwater Encountered Location scanned with CAT prior to excavation. Hand pit dug to 1.20m bgl. Borehole installed to a depth of 5.00m bgl. 		Water Strikes																															
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		Project Title: Challoner House Care Home				WS03	
		Project Number: 10/2125		Client: Barchester Healthcare Ltd.			
		GL (mAOD): 45.96		N Coord: 121388		E Coord: 444209	
Date: 11/07/2022		Method: Window Sampler		Driller: CK Drilling Ltd		Logged By: EB	

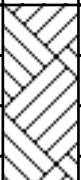
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
2.50 - 2.60	GT	N=20	43.41		2.55	Orangish clayey fine to medium SAND, with lenses of increased clay content and black organic material. (WITTERING FORMATION) Stiff orangish brown mottled light grey silty slightly sandy CLAY. Sand is fine. (WITTERING FORMATION) Orangish brown becoming light grey medium SAND, with localised iron staining. (WITTERING FORMATION) Firm to stiff orangish brown mottled light grey silty slightly sandy CLAY. Sand is fine. (WITTERING FORMATION) Light grey medium SAND. (WITTERING FORMATION) Orangish brown clayey silty fine to medium, predominantly fine SAND, with localised iron staining and lenses of increased clay content. (WITTERING FORMATION) Orangish brown mottled light grey slightly clayey fine to medium, predominantly medium SAND, with lenses of increased clay content. (WITTERING FORMATION) Stiff orangish brown silty slightly sandy CLAY, with localised iron staining and iron nodules. Sand is fine. (WITTERING FORMATION) Firm to stiff dark grey mottled dark green silty slightly sandy CLAY. Sand is fine. (LONDON CLAY FORMATION)		
			43.31		2.65			
			43.16		2.80			
			42.81		3.15			
			42.41		3.55			
			41.86		4.10			
			41.51		4.45			
4.70 - 4.90	GT	N=13						
						Borehole Continues		

KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level		REMARKS No Groundwater Encountered Location scanned with CAT prior to excavation. Hand pit dug to 1.20m bgl. Borehole installed to a depth of 5.00m bgl. 	Water Strikes <table border="1"> <thead> <tr> <th>Date</th> <th>Strike</th> <th>Level</th> <th>Minutes</th> <th>Casing</th> <th>Sealed</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="3">Daily Log Of Depths</th> <th colspan="3">Chiselling</th> </tr> <tr> <th>Date</th> <th>Casing</th> <th>Water</th> <th>From</th> <th>To</th> <th>Hours</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	Date	Strike	Level	Minutes	Casing	Sealed																									Daily Log Of Depths			Chiselling			Date	Casing	Water	From	To	Hours												
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		Project Number: 10/2125		Client: Barchester Healthcare Ltd.																												
		GL (mAOD): 45.96		N Coord: 121388		E Coord: 444209																										
Date: 11/07/2022		Method: Window Sampler		Driller: CK Drilling Ltd		Logged By: EB																										
Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe																								
		N=14	40.51		5.45	Firm to stiff dark grey mottled dark green silty slightly sandy CLAY. Sand is fine. (LONDON CLAY FORMATION)																										
						End Of Borehole At 5.45 m																										
KEY D - Disturbed Sample B - Bulk Sample U - Undisturbed W - Water Sample S - Standard Penetration Test C - Cone Penetration Test N - Penetration Test 'N' Value V - Hand Shear Vane kPa  - Groundwater Strike  - Groundwater Level			REMARKS No Groundwater Encountered Location scanned with CAT prior to excavation. Hand pit dug to 1.20m bgl. Borehole installed to a depth of 5.00m bgl.			Water Strikes <table border="1"> <thead> <tr> <th>Date</th> <th>Strike</th> <th>Level</th> <th>Minutes</th> <th>Casing</th> <th>Sealed</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>			Date	Strike	Level	Minutes	Casing	Sealed																		
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Date	Casing	Water	From	To	Hours																											

		Project Title: Challoner House Care Home				WS04	
		Project Number: 10/2125		Client: Barchester Healthcare Ltd.			
		GL (mAOD): 45.42		N Coord: 121409		E Coord: 444215	
Date: 11/07/2022		Method: Window Sampler		Driller: CK Drilling Ltd		Logged By: EB	

Depth (m)	Type	Test Result	Level	Legend	Depth (m)	Description	Water	Standpipe
0.30	ES					TOPSOIL: Grass over soft brown silty sandy gravelly CLAY, with roots and rootlets. Sand is fine. Gravel is fine to coarse, rounded to subangular of flint.		
			45.02	0.40	Orangish brown slightly clayey slightly gravelly medium SAND. Gravel is fine to coarse, rounded to subangular of flint. (WITTERING FORMATION)			
			44.67	0.75	Orangish brown mottled light grey slightly clayey silty medium SAND, with lenses of increased clay content and localised iron staining. (WITTERING FORMATION)			
			44.42	1.00	Orangish brown very clayey fine to coarse, predominantly medium SAND, with localised iron staining. (WITTERING FORMATION)			
			44.22	1.20	Soft grey mottled orangish brown silty very sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is fine to coarse, subrounded to subangular of flint. (WITTERING FORMATION)			
			43.9	1.50	Firm light grey mottled orangish brown becoming light grey CLAY. (WITTERING FORMATION)			
			43.72	1.70		End Of Borehole At 2.00 m		
			43.42	2.00				

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Geotechnical

Based upon SPT results, the Wittering Formation is likely to provide a suitable bearing stratum for traditional foundations supporting light to moderately loaded structures, where it is at least medium dense granular or firm cohesive material at foundation bearing depth (assessed to be from approximately 2.00m bgl based on boreholes drilled within the development footprint).

In accordance with the guidance set out in Eurocode 7, a 2.00m wide concrete pad foundation placed at a depth of 2.00m bgl should be capable of supporting building loads of up to 100kN/m².

The formation should be inspected by the site engineer before placing foundations. If Made Ground, low strength cohesive or loose granular material is encountered at the target bearing depth, foundations should be taken deeper to an appropriate formation level or unsuitable material should be excavated and replaced with compacted granular fill.

DCP testing was undertaken from ground surface level at each exploratory hole locations. CBR values derived at depths ranging from approximately 0.30m to 0.60m bgl in each location generally ranged from approximately 5% to 38%. A conservative characteristic CBR value of 5% is recommended for preliminary design purposes.

The formation layer should be proof rolled prior to placing subgrade material and any soft spots excavated and replaced with compacted granular material. If pavement formation levels change as part of the development, it is recommended that further CBR testing is undertaken at the proposed formation level to confirm design CBR values.

Testing indicates that that a Design Sulphate Class of DS1 and an Aggressive Chemical Environment for Concrete (ACEC) Classification of AC2Z would be suitable for all buried concrete structures.

Infiltration Drainage

A falling head test was undertaken in borehole WS04 in accordance with the method specified within BS 5930:2015:A1:2020. The indicative draft permeability rate obtained from the test was 2.83×10^{-05} m/s.

On this basis, infiltration drainage may be suitable to discharge surface water runoff from the proposed development. However, this should be confirmed by a drainage engineer. Furthermore, the Local Planning Authority will likely require trial pit soakaway testing in accordance with BRE Special Digest 365 to confirm infiltration rates and provide information for detailed drainage design.

APPENDIX D – CALCULATIONS

Design Settings

Rainfall Methodology	FEH-13	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	0.450
Time of Entry (mins)	4.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	200.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1.0	0.007	4.00	47.550	450	444245.078	121387.385	0.623
1.1	0.007	4.00	47.570	450	444234.743	121380.537	0.827
1.2	0.011	4.00	47.710	450	444227.764	121391.014	1.177
1.3	0.007	4.00	46.340	450	444210.782	121379.547	0.832
2.0	0.016	4.00	45.560	450	444222.939	121410.159	0.600
1.4	0.009	4.00	45.550	450	444200.358	121395.829	0.924
1.5	0.000		45.290	450	444198.504	121398.623	0.840

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	1.0	1.1	7.355	0.600	46.927	46.743	0.184	40.0	150	4.08	55.2
1.001	1.1	1.2	12.589	0.600	46.743	46.533	0.210	60.0	150	4.24	55.2
1.002	1.2	1.3	20.491	0.600	46.533	45.508	1.025	20.0	150	4.39	55.2
1.003	1.3	1.4	19.333	0.600	45.508	44.626	0.882	21.9	150	4.54	55.2
2.000	2.0	1.4	26.744	0.600	44.960	44.626	0.334	80.0	150	4.40	55.2
1.004	1.4	1.5	2.000	0.600	44.626	44.450	0.176	11.4	150	4.55	55.2

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.596	28.2	1.0	0.473	0.677	0.007	0.0	20	0.757
1.001	1.301	23.0	2.1	0.677	1.027	0.014	0.0	31	0.814
1.002	2.262	40.0	3.7	1.027	0.682	0.025	0.0	31	1.419
1.003	2.160	38.2	4.8	0.682	0.774	0.032	0.0	36	1.487
2.000	1.125	19.9	2.4	0.450	0.774	0.016	0.0	35	0.758
1.004	3.005	53.1	8.5	0.774	0.690	0.057	0.0	41	2.219

Simulation Settings

Rainfall Methodology	FEH-13	Skip Steady State	✓	Check Discharge Volume	✓
Summer CV	0.750	Drain Down Time (mins)	240	100 year 360 minute (m³)	
Winter CV	0.840	Additional Storage (m³/ha)	20.0		
Analysis Speed	Normal	Check Discharge Rate(s)	✓		

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	------

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0
30	0	0	0
100	0	0	0
100	45	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.95
Greenfield Method	IH124	Growth Factor 100 year	2.48
Positively Drained Area (ha)		Betterment (%)	0
SAAR (mm)		QBar	
Soil Index	1	Q 1 year (l/s)	
SPR	0.10	Q 30 year (l/s)	
Region	1	Q 100 year (l/s)	
Growth Factor 1 year	0.85		

Pre-development Discharge Volume

Site Makeup	Greenfield	Return Period (years)	100
Greenfield Method	FSR/FEH	Climate Change (%)	0
Positively Drained Area (ha)		Storm Duration (mins)	360
Soil Index	1	Betterment (%)	0
SPR	0.10	PR	
CWI		Runoff Volume (m³)	

Node 1.5 Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.10188	Invert Level (m)	44.450	Depth (m)	0.800
Side Inf Coefficient (m/hr)	0.10188	Time to half empty (mins)	256	Inf Depth (m)	
Safety Factor	2.0	Pit Width (m)	6.000	Number Required	1
Porosity	0.95	Pit Length (m)	6.000		

Results for 2 year Critical Storm Duration. Lowest mass balance: 98.53%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1.0	10	46.947	0.020	1.1	0.0078	0.0000	OK
15 minute summer	1.1	10	46.775	0.032	2.2	0.0105	0.0000	OK
15 minute winter	1.2	10	46.565	0.032	3.9	0.0109	0.0000	OK
15 minute winter	1.3	10	45.545	0.037	5.0	0.0120	0.0000	OK
15 minute winter	2.0	10	44.995	0.035	2.4	0.0243	0.0000	OK
15 minute summer	1.4	10	44.677	0.051	8.7	0.0179	0.0000	OK
180 minute winter	1.5	148	44.617	0.167	2.3	5.7482	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute winter	1.0	1.000	1.1	1.1	0.536	0.039	0.0153
15 minute summer	1.1	1.001	1.2	2.2	0.807	0.096	0.0343
15 minute winter	1.2	1.002	1.3	3.9	1.294	0.097	0.0616
15 minute winter	1.3	1.003	1.4	5.0	1.199	0.130	0.0807
15 minute winter	2.0	2.000	1.4	2.4	0.593	0.120	0.1092
15 minute summer	1.4	1.004	1.5	8.9	2.218	0.168	0.0111
180 minute winter	1.5	Infiltration		0.6			

Results for 30 year Critical Storm Duration. Lowest mass balance: 98.53%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1.0	10	46.958	0.031	2.6	0.0118	0.0000	OK
15 minute summer	1.1	10	46.793	0.050	5.2	0.0165	0.0000	OK
15 minute winter	1.2	10	46.582	0.049	9.2	0.0170	0.0000	OK
15 minute winter	1.3	10	45.565	0.057	11.8	0.0187	0.0000	OK
15 minute winter	2.0	10	45.016	0.056	5.9	0.0387	0.0000	OK
120 minute winter	1.4	120	44.842	0.216	6.4	0.0765	0.0000	SURCHARGED
120 minute winter	1.5	120	44.842	0.392	8.3	13.4667	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute winter	1.0	1.000	1.1	2.6	0.678	0.092	0.0286
15 minute summer	1.1	1.001	1.2	5.2	1.023	0.226	0.0640
15 minute winter	1.2	1.002	1.3	9.2	1.649	0.230	0.1144
15 minute winter	1.3	1.003	1.4	11.8	1.425	0.309	0.1602
15 minute winter	2.0	2.000	1.4	5.9	0.735	0.297	0.2190
120 minute winter	1.4	1.004	1.5	8.3	1.566	0.156	0.0352
120 minute winter	1.5	Infiltration		0.6			

Results for 100 year Critical Storm Duration. Lowest mass balance: 98.53%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1.0	10	46.961	0.034	3.2	0.0131	0.0000	OK
15 minute winter	1.1	10	46.799	0.056	6.4	0.0185	0.0000	OK
15 minute winter	1.2	10	46.588	0.055	11.5	0.0191	0.0000	OK
15 minute summer	1.3	10	45.573	0.065	14.7	0.0211	0.0000	OK
15 minute winter	2.0	10	45.023	0.063	7.3	0.0434	0.0000	OK
120 minute winter	1.4	120	44.965	0.339	7.8	0.1200	0.0000	SURCHARGED
120 minute winter	1.5	120	44.965	0.515	7.0	17.6947	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute summer	1.0	1.000	1.1	3.2	0.716	0.113	0.0333
15 minute winter	1.1	1.001	1.2	6.4	1.075	0.278	0.0750
15 minute winter	1.2	1.002	1.3	11.5	1.755	0.288	0.1344
15 minute summer	1.3	1.003	1.4	14.7	1.475	0.385	0.1941
15 minute winter	2.0	2.000	1.4	7.3	0.760	0.367	0.2726
120 minute winter	1.4	1.004	1.5	7.0	1.621	0.132	0.0352
120 minute winter	1.5	Infiltration		0.7			

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 98.53%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	1.0	10	46.968	0.041	4.7	0.0159	0.0000	OK
15 minute winter	1.1	10	46.813	0.070	9.4	0.0231	0.0000	OK
15 minute winter	1.2	10	46.601	0.068	16.7	0.0235	0.0000	OK
15 minute winter	1.3	10	45.588	0.080	21.4	0.0263	0.0000	OK
180 minute winter	2.0	176	45.233	0.273	2.3	0.1887	0.0000	SURCHARGED
180 minute winter	1.4	176	45.233	0.607	8.2	0.2148	0.0000	SURCHARGED
180 minute winter	1.5	176	45.233	0.783	7.6	26.8898	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
15 minute winter	1.0	1.000	1.1	4.7	0.787	0.167	0.0444
15 minute winter	1.1	1.001	1.2	9.4	1.186	0.409	0.0998
15 minute winter	1.2	1.002	1.3	16.7	1.927	0.418	0.1777
15 minute winter	1.3	1.003	1.4	21.4	1.521	0.561	0.2630
180 minute winter	2.0	2.000	1.4	2.3	0.611	0.115	0.4708
180 minute winter	1.4	1.004	1.5	7.6	1.570	0.144	0.0352
180 minute winter	1.5	Infiltration		0.8			