



WATER NEUTRALITY

PROJECT	HORNCastle, EAST GRINSTEAD
PROJECT NUMBER	24 016 – 06
CLIENT	SPLENDID HOSPITALITY GROUP
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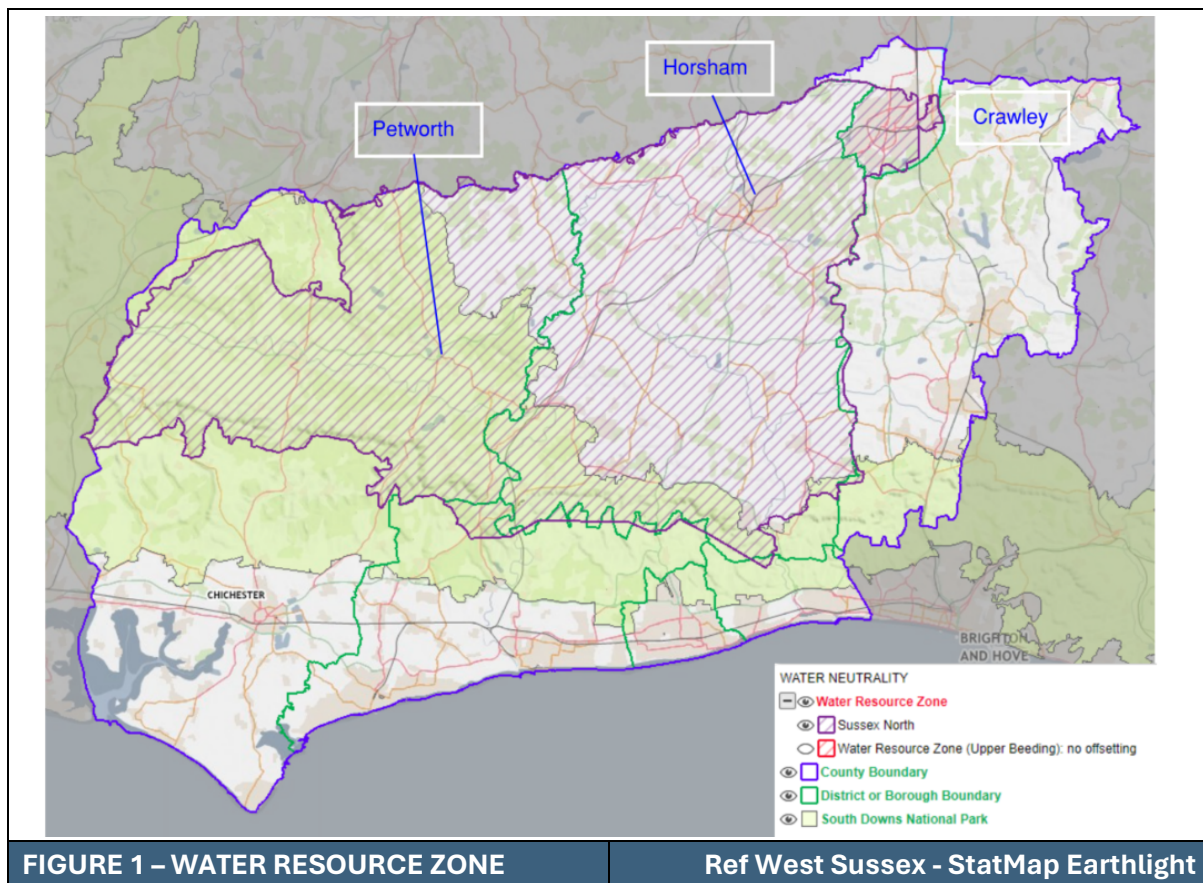
Appendices

- A. Existing site drawing
- B. Not included
- C. Water reduction measures calculation.

1. INTRODUCTION

Splendid Hospitality Group are seeking to develop the site of the former Horncastle Care Centre, which comprises three properties, Horncastle House, Maple Lodge and Willow Lodge. The site is located at Plawhatch Lane, Sharpthorne, East Grinstead, West Sussex, RH19 4JH and falls within the boundary of Mid Sussex District Council.

This district is supplied with water by Southern Water from its Sussex North Water Resource Zone, (see Fig.1) which is a supply sourced from groundwater abstraction sites in the Arun Valley. The Arun Valley contains a number of nationally and internationally important nature conservation sites and is an important home to substantial wildlife.



On 14 September 2021, the Council received a Position Statement from Natural England, confirming that it is Natural England's position that *it cannot be concluded that the existing abstraction within the Sussex North Water Resource Zone is not having an impact on the Arun Valley sites*. Natural England's advice is that development within this zone must not add to this impact.

One way of preventing any further negative impact to the Arun Valley is to ensure that all new development which takes place achieves a position of water neutrality. Water neutrality is defined as;

“development that takes place which does not increase the rate of water abstraction for (potable) drinking water supplies above existing levels”

The purpose of this document is to set out the methodology to be followed in assessing the existing consumption of potable water, determining the future demand from the proposed development, identifying possible water reduction measures and offsetting measures along with conclusions and recommendations.

2. METHODOLOGY

The methodology to be followed is set out in this section and is reproduced from Horsham District Council's guidance. [Water neutrality and planning applications | Horsham District Council](#)

BACKGROUND

Outline the background to the statement. This includes details of the site, including its existing or most recent use, any extant permissions, and details of the current proposal.

BASELINE CALCULATIONS

It is critical that the statement clearly establishes what the baseline water consumption rate is for the existing or most recent use. Where historic water bills for the site are not available, alternative data using the Building Regulations Part G or BREAM water calculators should be used, along with appropriate occupancy rates and consumption data for any industrial processes being undertaken at the site. The data should be presented in litres per person per day. Further information is set out separately below. It is critical that existing baseline consumption is fully evidenced to give certainty of the actual mains water being used at a site. Metered water bills are the best way to achieve this certainty.

PROPOSAL DEMAND

This section will calculate what the water demands will be from the proposed development. The data should be presented in litres per person per day and reflect the average occupancy of the development. For business uses, the proposed consumption data must include consumption used for any proposed industrial processes

WATER REDUCTION MEASURES

Where the proposed water consumption is higher than the baseline consumption, you must first consider reducing water consumption in the proposed development through installing more water efficient fixtures and appliances. Completion of the Part G or BREEAM water calculators will help demonstrate the savings to be made. Where highly efficient appliances are to be installed, details of an appliance that meets that high standard of water consumption should be submitted to demonstrate the efficiencies are achievable.

Once all efficiency opportunities have been exhausted, water re-use through rainwater harvesting and/or greywater/blackwater recycling should be then considered. Further details below.

OFFSETTING MEASURES

The use of efficiencies and rain/grey water harvesting technologies alone will be unlikely to make some developments water neutral. In most such cases, such as new build on greenfield sites, offsetting measures to reduce water consumption on other land and property will be required in order to achieve water neutrality.

Where offsetting on third party land, full details and evidence of the third party landowner's existing water consumption must be submitted, along with the full details of the efficiencies to be implemented and how the efficiencies will be maintained in future (this could be through a maintenance contribution to the landowner for instance).

This can include existing water bills and evidence of the efficiency of the existing fixtures and appliances. Where offsetting is to be carried out on third party land, that landowner will be required to enter into a legal agreement to install and retain the measures in perpetuity.

Offsetting cannot be carried out on third party land that does not take its water from the same North West Sussex Supply Zone.

CONCLUSION

It is important the conclusion summarises the water figures in a clear manner and sets out clearly the detail of any mitigation strategy necessary to achieve neutrality.

3. BACKGROUND

3.1 EXISTING SITE USE

The existing site comprises three properties, Horncastle House, Maple Lodge and Willow Lodge, as shown in Fig.2. It is understood that they are not presently operational.

Horncastle Care centre was a residential care service, registered to provide accommodation, nursing and personal care for people with learning disabilities or autistic spectrum disorder, physical disabilities, younger adults. The service also provided support for people with acquired brain injury and neurological disabilities. Although the centre was registered to provide care for up to 20 people, the facilities included 52 residential bedrooms as shown in Appendix A

The level of support staff on site is unknown, however given the anticipated level of care residents may require, it would not be unreasonable to expect a minimum of 1:1 care provision being in place. That would equate to at least 20 members of staff, not including administrative staff.



FIGURE 2 – SITE PLAN

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3.2 PROPOSED SITE USE

It is proposed for the existing buildings to be demolished and for the site to be redeveloped to form an 80 bed care home and an 18 bed unit to provide care for people with acute brain injuries. The outline proposal is shown in Fig. 3 below.

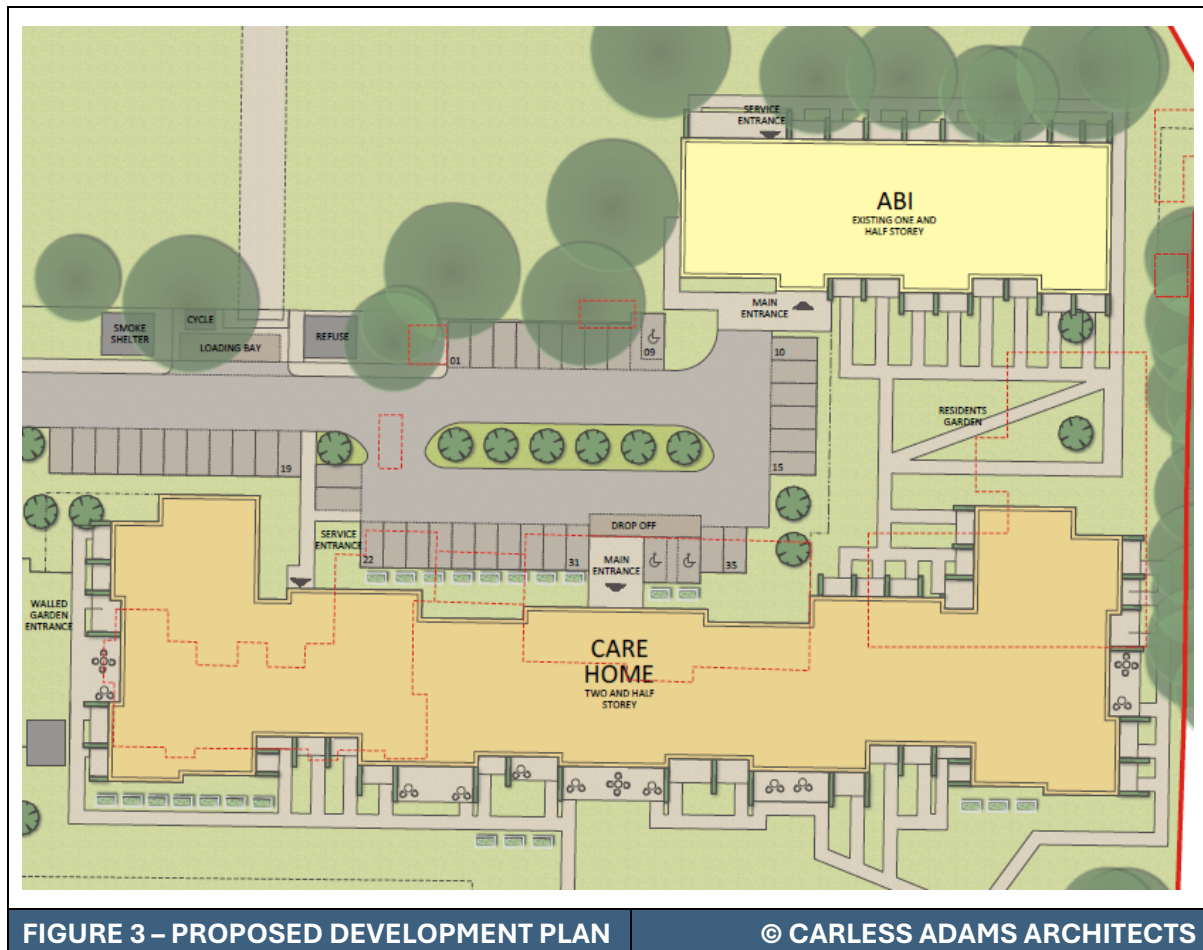


FIGURE 3 – PROPOSED DEVELOPMENT PLAN

© CARLESS ADAMS ARCHITECTS

3.3 EXTANT PLANNING PERMISSIONS

No planning applications have been made for the site within the past 5 years.

4. BASELINE CALCULATIONS

Due to changes in ownership and document management systems it has not been possible to obtain historic water bills for the site to assess the more recent rates of potable water consumption on site. Alternative assessments are provided in Table 1 & 2, which summarises two possible alternative scenarios for the existing use as either a 20 person facility for specialist care or a 53 bed room care home setting.

Given the age of the buildings it is expected that existing sanitary fittings will not be as efficient as modern standards and that a water consumption of 150 – 200 l / person / day would be applicable for actual residents.

TABLE 1 –EXISTING WATER CONSUMPTION - 20 PERSON SPECIALIST CARE		
	Maximum Consumption Range	
	150 l / p /day	200 l / p / day
Residents (20)	3,000	4,000
Care Staff (20)*	1,500	2,000
Administrative / housekeeping staff (10)*	750	1,000
Total potential daily consumption	5,250	7,000

TABLE 2 –EXISTING WATER CONSUMPTION - 52 BEDROOM CARE HOME		
	Maximum Consumption Range	
	150 l / p /day	200 l / p / day
Residents (52)	7,800	10,400
Staff (26)*	1,950	2,600
Total potential daily consumption	9,750	13,000

* A figure of 50% of this consumption is likely to apply to staff use as staff members wouldn't use laundry, kitchen and bathing facilities.

From the above, it can be demonstrated that between 5,250 and 13,000 litres of potable water could be consumed on a daily basis for the most recent site operations.

5. PROPOSAL DEMAND

Water Efficiency requirements are set out in Part G2 of Schedule 1 and Regulation 36 to the Building Regulations 2010, as amended. These requirements are set out below, as extracted from Approved Document G, Sanitation, hot water safety and water efficiency.

Water efficiency

G2. Reasonable provision must be made by the installation of fittings and fixed appliances that use water efficiently for the prevention of undue consumption of water.

Water efficiency of new dwellings

36. – (1) The potential consumption of wholesome water by persons occupying a new dwelling must not exceed the requirement in paragraph (2).

(2) The requirement referred to in paragraph (1) is either –

- (a) **125 litres per person per day**; or
- (b) in a case to which paragraph (3) applies, the optional requirement of **110 litres per person per day**,

as measured in either case in accordance with a methodology approved by the Secretary of State.

(3) This paragraph applies where the planning permission under which the building work is carried out—

- (a) specifies the optional requirement in paragraph (2)(b); and
- (b) makes it a condition that that requirement must be complied with

At the present time it is not known if the 110 or 125 litres/person/day will apply and as such, and assessment has been made for both situations as shown in Table 3.

TABLE 3 – PROPOSED DEMAND		
	Maximum Consumption Range	
	110 l / p /day	125 l / p / day
Care Home Residents (80)	8,800	10,000
Care Home Staff (40) (note 1)	2,200	2,500
ABI Unit Residents (18)	1,980	2,250
ABI Unit Staff (36) (note 1 & 2)	1,980	2,250
Total potential daily consumption	14,960	17,000

Note 1 A figure of 50% of this consumption is likely to apply to staff use as staff members wouldn't use laundry, kitchen and bathing facilities.

Note 2 Staff provision estimated at 2:1 (staff : patient)

6. WATER REDUCTION MEASURES

Should water reduction measures be required, it is considered possible to introduce efficient sanitary fittings to reduced the consumption of potable water to 105.83 l / p / day for residents.

This can be shown using the calculation method set out in Approved Document G and included in Appendix C. If the reduced consumption figure of 105.83 l / p / day were to be incorporated, this would lead to an overall consumption of 10,583 litres / day as shown in Table 4.

TABLE 4 – DEMAND AFTER IMPLEMENTATION OF WATER REDUCTION MEASURES	
	Maximum Consumption Range
	105.83 l / p /day
Care Home Residents (80)	8,466.40
Care Home Staff (40) (note 1)	2016.80
ABI Unit Residents (18)	1,904.94
ABI Unit Staff (36) (note 1 & 2)	1,815.12
Total potential daily consumption	14,203.26

Based on the above, further reduction measures are considered to be necessary.

In the first instance, consideration should be given to rainwater harvesting* for the purposes of irrigation of external landscaping. The Building Regulation calculation for water consumption includes an allowance of 5 l / p / day for residents for external use. In the proceeding calculations, the total number of residents has been determined to be 98 people (80 care home, 18 Acute Brain Injury) which equates to a daily reduction of 490 litres.

This reduces the calculated daily consumption of potable water to be 13,713.26 litres / day.

* Consideration does need to be given to ensure that harvested water is suitably treated and stored to prevent any bacterial growth that could be harmful to the health of residents. Specialist advice would need to be sought if this solution were to be incorporated.

7. OFF SETTING MEASURES

At the present time, offsetting measures are not considered to be necessary for the re-development of this site. It is considered possible to reduce the daily consumption rate of potable water by introducing additional, efficient, water-saving sanitary fittings.

8. CONCLUSION

The existing site has been subject to a variety of use as a care setting, with the ability to function as a 52 bed residential care home. Based on calculations of the anticipated water use for a facility of this type and age a likely figure of potable water consumption will range between 9,750 and 13,000 litres / day, with an average of 11,375 litres / day. Table 5 shows the requirement for an additional reduction in the daily consumption of potable water .

TABLE 5 – ADDITIONAL REDUCTION IN POTABLE WATER DEMAND			
	Proposed Consumption L / day	Existing Consumption L / day	Additional reduction L / day
High	13,713**	13,000	713
Average		11,375	2,338
Low		9,750	3,963

**Assuming rainwater harvesting for irrigation of garden areas

Based on Table 5 it is considered that the proposed development can become Water Neutral with the inclusion of additional water reduction measures. These will be developed in conjunction with the Mechanical Engineering strategy for the development.

It should then be possible to demonstrate that the proposed development will not increase the rate of water abstraction for (potable) drinking water supplies above existing levels.

9. RECOMMENDATIONS

It is recommended that consideration is given to;

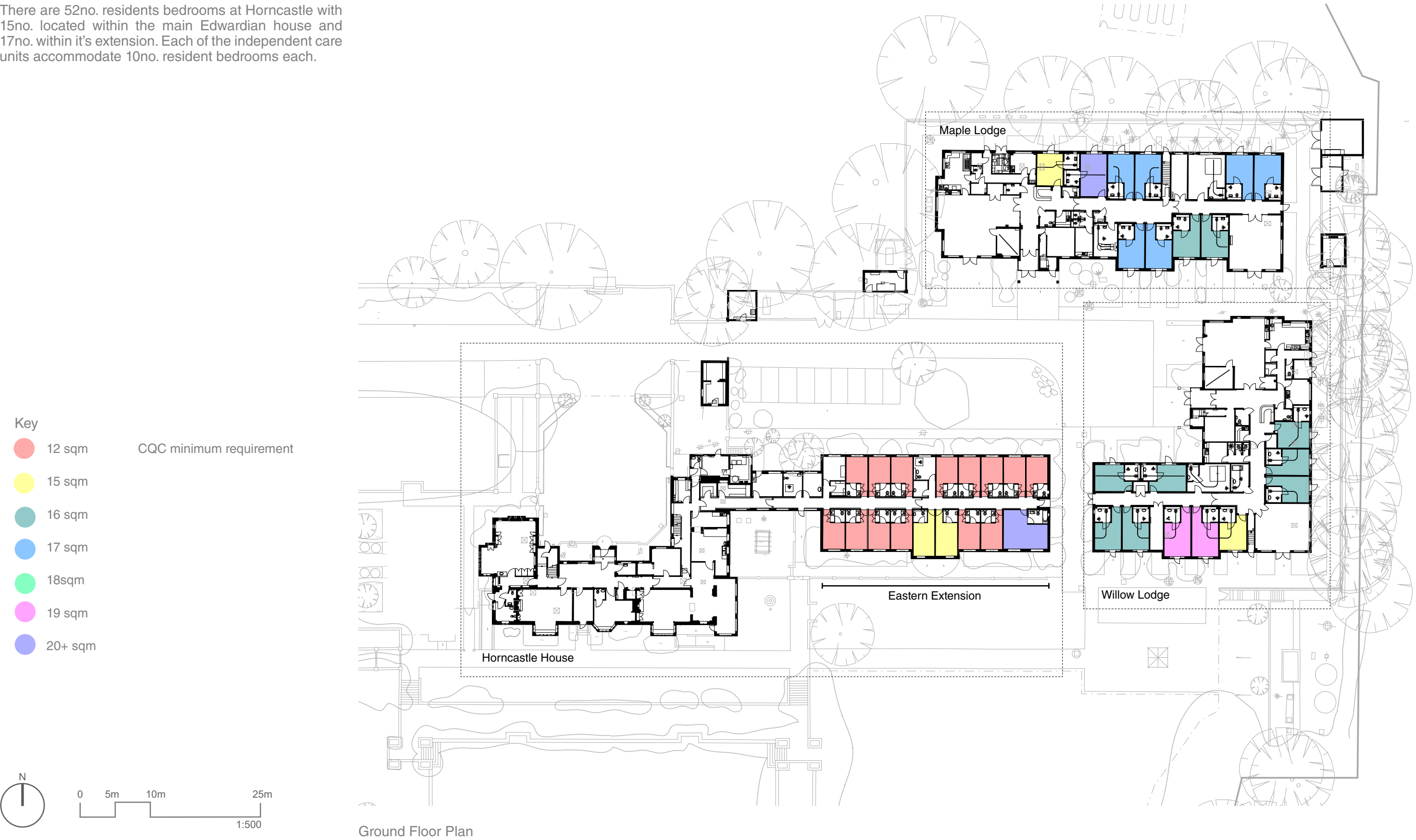
- Grey water harvesting and treatment for use with toilet flushing.
- Inclusion of further water-saving sanitary fittings.

 Consulting Civil & Structural Engineering		Project: HORNCastle			
		Details:			Project Number: 24 016 - 06
		Produced By: ARC	Date: MAR. '24	Checked By:	Date:
Ref.	Calculations				Output
APPENDIX A					

1.0 SITE ANALYSIS

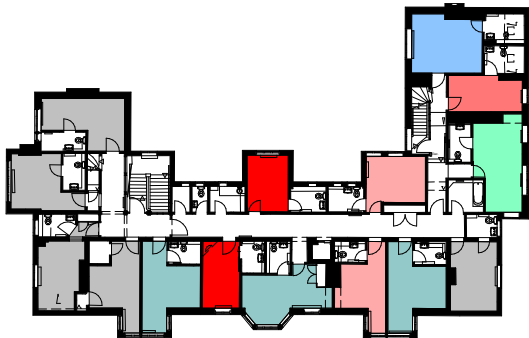
1.04 Existing Building Bedroom Sizes

There are 52no. residents bedrooms at Horncastle with 15no. located within the main Edwardian house and 17no. within it's extension. Each of the independent care units accommodate 10no. resident bedrooms each.



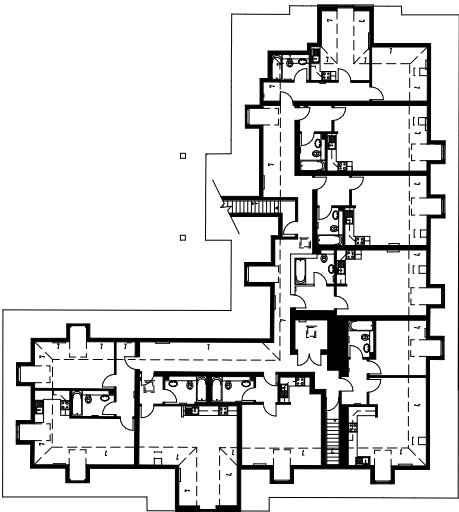
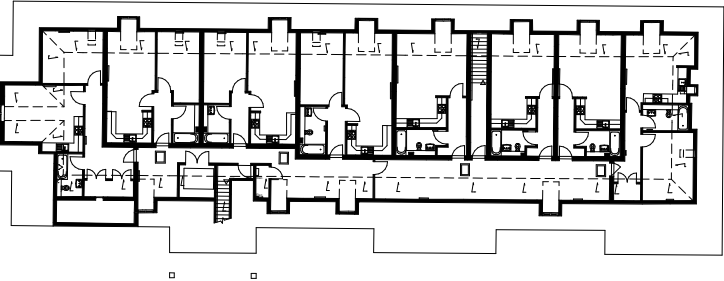
1.0 SITE ANALYSIS

1.04 Existing Building Bedroom Sizes

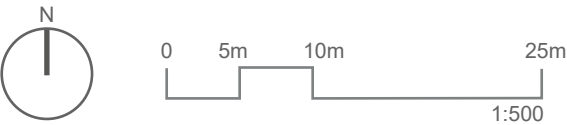


Horncastle House

Maple Lodge



Willow Lodge



First Floor Plan

 Consulting Civil & Structural Engineering		Project: HORNCastle			
		Details: WATER CONSUMPTION			Project Number: 24 016 - 06
		Produced By: ARC	Date: Feb-24	Checked By:	Date:
Ref.	Calculations				Output
APPENDIX C WATER REDUCTION MEASURES					
ALL DIMENSIONS ARE FOR DESIGN PURPOSES ONLY					

 Consulting Civil & Structural Engineering		Project: HORNCastle				
		Details: WATER REDUCTION MEASURES				Project Number: 24 016 - 06
		Produced By: ARC	Date: Feb-24	Checked By:	Date:	Sect/Pg No/Rev 3 / 2 /
Ref.	Calculations				Output	

WATER CONSUMPTION

TABLE A1: The water efficiency calculator - Approved Document G					
INSTALLATION TYPE	UNIT OF MEASURE	(1) CAPACITY FLOW RATE	(2) USE FACTOR	(3) FIXED USE (L/Person/Day)	((1) X (2)) + (3) TOTAL (L/Person/Day)
WC (single flush)	Flush volume (L)		4.42	0	
WC (dual flush)	Full flush volume (L)		1.46	0	
	Part flush volume (L)		2.96	0	
WC's (multi fittings)	Ave effective flush volume (L)	3.3	4.42	0	14.59
Taps (excluding kitchen / utility room taps)	Flow rate (L/m)	4.0	1.58	1.58	7.90
Bath (where shower also present)	Capacity to overflow (L)	170	0.11	0	18.70
Shower (where bath also present)	Flow rate (L/m)	8	4.37	0	34.96
Bath only	Capacity to overflow (L)		0.50	0	
Shower only	Flow rate (L/m)		5.60	0	
Kitchen utility room sink taps	Flow rate (L/m)	6	0.44	10.36	13.00
Washing machine	L/kg	8.17	2.10	0	17.16
Dishwasher	L / Place setting	1.25	3.60	0	4.50
Water disposal unit	L/use		3.08	0	
Water softner	L/person /day		1.00	0	
TOTAL CALCULATED USE (L / Person / day)					110.80
Normalisation factor					0.91
TOTAL WATER CONSUMPTION					100.83
EXTERNAL WATER USE					5.00
RESIDENTS	TOTAL WATER CONSUMPTION (L / PERSON / DAY)				105.83
STAFF (50%)	TOTAL WATER CONSUMPTION (L / PERSON / DAY)				50.42