Sustainability Statement

Frognal Garages

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1.0 Introduction

1.1 Executive Summary

MES have been commissioned to provide a sustainability statement in order to address the requirements of Camden Council in relation to the proposed development at Frognal Garages, Frognal Lane. The purpose of this sustainability statement is to provide an overview of how sustainability will be promoted, including reducing overheating risk, potable water consumption, the material choices, access to sustainable transport, waste and air quality.

The applicable planning policies this report will address are detailed in the Camden Local Plan 2017 and the London Plan 2021. The relevant policies dovetail, with policies CC2 & CC3 from the Local Plan covering the same ground as the London Plan 2021 policies SI4 & SI5. Camden Local Plan policy CC1 will be addressed in full in an accompanying Energy Statement, so this report concentrates on how the development addresses CC2 & CC3.

In order to assess the overheating risk associated with the current design we have used the Good Homes Alliance Overheating Toolkit – the relevant output of which can be found in Appendix 2. The development has taken steps to minimise solar gain through the careful orientation of upper floor windows on the southern façade to the east and the use of glazing with a low G-Value. Ventilation is currently expected to be via MVHR with purge ventilation via openable windows.

Water use, in line with the requirements of London Plan 2021 policy SI5, will be limited to 105litres/person/day as per the Optional Requirement of Part G of the Building Regulations. This will be achieved through the use of low water consumptions fittings within the development and full details can be found in Section 4 of this report.

The development has been designed to use constructions that are either B, A or A+ rated by the BRE's Green Guide to Specification. Full details can be found in Section 5 of this report.

The use of sustainable transport will be promoted by the lack of car parking provision, the provision of cycle storage and the location of the development near to good public transport – the site achieves a PTAL score of 5 for the base year. Full details can be found in Section 6 of this report.

Waste will be minimised during construction through the use of a Site Waste Management Plan with appropriate targets for diversion of waste from landfill. Facilities will also be provided for the occupants in relation to domestic waste recycling. Full details can be found in Section 7 of this report.

The promotion of sustainable transport and the use of electric ASHPs will ensure that the development is at least air quality neutral in the operational phase. Full details can be found in Section 8 of this report.

1.2 Planning Policy

The main policy in London Borough of Camden's Local Plan that relates to sustainability and climate change adaption are CC2 & CC3. These are reproduced below.

Policy CC2 Adapting to climate change

The Council will require development to be resilient to climate change.

All development should adopt appropriate climate change adaptation measures such as:

a. the protection of existing green spaces and promoting new appropriate green infrastructure;
b. not increasing, and wherever possible reducing, surface water run-off through increasing permeable surfaces and use of Sustainable Drainage Systems;
c. incorporating bio-diverse roofs, combination green and blue roofs and green walls where appropriate; and
d. measures to reduce the impact of urban and dwelling overheating, including application of the cooling hierarchy.

Any development involving 5 or more residential units or 500 sqm or more of any additional floorspace is required to demonstrate the above in a Sustainability Statement.

Sustainable design and construction measures

The Council will promote and measure sustainable design and construction by:

e. ensuring development schemes demonstrate how adaptation measures and sustainable development principles have been incorporated into the design and proposed implementation;
f. encourage new build residential development to use the Home Quality Mark and Passivhaus design standards;
g. encouraging conversions and extensions of 500 sqm of residential floorspace or above or five or more dwellings to achieve “excellent” in BREEAM domestic refurbishment; and
h. expecting non-domestic developments of 500 sqm of floorspace or above to achieve “excellent” in BREEAM assessments and encouraging zero carbon in new development from 2019.

Policy CC3 Water and flooding

The Council will seek to ensure that development does not increase flood risk and reduces the risk of flooding where possible.

We will require development to:

a. incorporate water efficiency measures;
b. avoid harm to the water environment and improve water quality;
c. consider the impact of development in areas at risk of flooding (including drainage);
d. incorporate flood resilient measures in areas prone to flooding;
e. utilise Sustainable Drainage Systems (SuDS) in line with the drainage hierarchy to achieve a greenfield run-off rate where feasible; and
f. not locate vulnerable development in flood-prone areas.

Where an assessment of flood risk is required, developments should consider surface water flooding in detail and groundwater flooding where applicable.

The Council will protect the borough's existing drinking water and foul water infrastructure, including the reservoirs at Barrow Hill, Hampstead Heath, Highgate and Kidderpore.

The London Plan (adopted March 2021)

Policy SI 4 Managing heat risk

A Development proposals should minimise adverse impacts on the urban heat island through design, layout, orientation, materials and the incorporation of green infrastructure.

B Major development proposals should demonstrate through an energy strategy how they will reduce the potential for internal overheating and reliance on air conditioning systems in accordance with the following cooling hierarchy:

1) reduce the amount of heat entering a building through orientation, shading, high albedo materials, fenestration, insulation and the provision of green infrastructure
2) minimise internal heat generation through energy efficient design
3) manage the heat within the building through exposed internal thermal mass and high ceilings
4) provide passive ventilation
5) provide mechanical ventilation
6) provide active cooling systems.

Policy SI 5 Water Infrastructure

A In order to minimise the use of mains water, water supplies and resources should be protected and conserved in a sustainable manner.

B Development Plans should promote improvement to water supply infrastructure to contribute to security of supply. This should be done in a timely, efficient and sustainable manner taking energy consumption into account.

C Development proposals should;

1) through the use of Planning Conditions minimise the use of mains water in line with the Optional Requirement of the Building Regulations (residential development), achieving mains water

consumption of 105 litres or less per head per day (excluding allowance of up to five litres for external water consumption)

2) achieve at least the BREEAM excellent standard for the 'Wat 01' water category or equivalent (commercial development)
3) incorporate measures such as smart metering, water saving and recycling measures, including retrofitting, to help achieve lower water consumption rates and maximise future proofing.

D In terms of water quality, Development Plans should;

1) promote the protection and improvement of the water environment in line with the Thames River Basin Management Plan, and should take account of Catchment Plans
2) support wastewater treatment infrastructure investment to accommodate London's growth and climate change impacts. Such infrastructure should be constructed in a timely and sustainable manner taking account of new, smart technologies, intensification opportunities on existing sites, and energy implications. Boroughs should work with Thames Water in relation to local wastewater infrastructure requirements.

E Development proposals should:

1) seek to improve the water environment and ensure that adequate wastewater infrastructure capacity is provided.
2) take action to minimise the potential for misconnections between foul and surface water networks.

F Development Plans and proposals for strategically or locally defined growth locations with particular flood risk constraints or where there is insufficient water infrastructure capacity should be informed by Integrated Water Management Strategies at an early stage.

2.0 Description of the Development

2.1 Location

The proposed development is located on Frognal Lane, Hampstead. The surrounding area is comprised of a mix of residential and commercial buildings of varying heights and scales. The site location can be found in Figure 2.1, below.

Figure 2.1: Aerial photograph showing site location

2.2 Details of the Development

Application for full planning permission for the demolition of the existing garages and redevelopment of the site to provide a building of three storeys in height, plus lower ground, to include seven residential units (Use Class C3), with excavation of basement, associated amenity space, two replacement garages, front and rear landscaping and associated works.

Floor plans and elevations showing the proposed development can be found in Appendix 1 to this report.

3.0 Overheating

As this development is for 7 residential units it would not usually be considered a major development and, therefore, required to undertake an overheating assessment under London Plan policy SI4. However, to help demonstrate how the development has been designed to adapt to future climate change – in line with Camden Local Plan policy CC2 – an overheating analysis has been undertaken using the Good Homes Alliance Overheating Toolkit. This has been done in line with London Plan policy SI4, from which is taken the below showing the cooling hierarchy;

> *Major development proposals should demonstrate through an energy strategy how they will reduce the potential for internal overheating and reliance on air conditioning systems in accordance with the following cooling hierarchy:*
>
> 1) *reduce the amount of heat entering a building through orientation, shading, high albedo materials, fenestration, insulation and the provision of green infrastructure*
> 2) *minimise internal heat generation through energy efficient design*
> 3) *manage the heat within the building through exposed internal thermal mass and high ceilings*
> 4) *provide passive ventilation*
> 5) *provide mechanical ventilation*
> 6) *provide active cooling systems.*

An initial assessment of the development was undertaken using the Good Homes Alliance Overheating Risk Tool. This approach assesses the impact of all of the above hierarchy on the overheating risk. This identified that the ability to open windows and to limit the was key in mitigating overheating risk. Table 6.1, below, shows the way the proposed design maps against the Cooling Hierarchy as contained in Policy SI4.

Table 6.1: Cooling hierarchy and design aspects

Cooling hierarchy stage	Design aspects
Reduce the amount of heat entering a building	Façade articulation provides shading to a number of windows on the south elevation on the UG and 1st floors. By orienting these to the east, rather than the south, it will reduce the solar gain by reducing the amount of time they are exposed to direct sunlight. A G-Value of 0.40 has been specified to all windows to provide effective shading and to reduce the amount of solar radiation through the glazing itself.
Minimise internal heat generation	The use of individual ASHPs rather than a communal heating system will reduce internal heat gains, particularly in the corridors, to a minimum. DHW Cylinders and all DHW pipework within the units will be well insulated to ensure that heat gains from these sources are kept as low as possible.
Manage the heat within the building	Ceiling heights are reasonable, but coupled with the use of MVHR ventilation limited stratification will occur and heat will not build up in specific rooms or locations. This will even out temperatures across whole units, reducing the temperatures in rooms that more at risk of overheating.
Provide passive ventilation	All units are dual aspect, which provides cross-ventilation. Openable windows are provided for all habitable rooms in all units.
Provide mechanical ventilation	MVHR has been specified for all units in the development.
Provide mechanical cooling	No mechanical cooling is proposed for this development.

The expected risk of overheating associated with the proposed development has been assessed using the Good Homes Alliance Overheating Risk Tool. The completed tool can be found in Appendix 2, but a summary of the key factors likely to increase the likelihood of overheating can be found below;

- The site is located in the South East of the England
- The site is in Central London (as defined in the GHA guidance)
- The site does not have any specific characteristics that would require windows to be closed or non-openable
- The dwellings are flats
- No community heating is proposed
- The amount of glazing on the most glazed façade (rear elevation) is more than 35% but less than 50% of the total façade area
- The proposed dwellings are all dual aspect with openable windows on opposing façades

Similarly, the counterbalancing factors that reduce the likelihood of overheating can be found in the completed tool, but a summary of those proposed for the development can be found below.

- Windows will be designed to provide large opening areas to help dissipate heat – the opening areas of these will provide a more than 100% increase in the purge rate openable areas as required by Part F (2021)

The result of this is that the GHA tool estimates a low likelihood of overheating. It should also be noted that this development will need to comply with the new Part O of the Building Regulations, which was introduced in 2022 to limit the risk of overheating in new residential buildings. As such overheating risk will be designed out of the buildings as part of the Detailed Design process post-planning.

Guidance for Mitigating Overheating

Guidance will be provided to the occupants of the building on how to mitigate overheating via their Home User Guide. In practice there are a number of methods that can be used to reduce overheating and to mitigate its effect;

- Occupants should use blinds or curtains to block out direct sunlight.
- Windows should be kept shut during the hottest parts of the day to keep the warm air out.
- Windows should be opened when the air feels cooler outside than inside – generally in the evening or overnight.
- A similar approach applies to the use of MVHR, summer bypass controls should be set to operate when the internal temperature is greater than the external temperature.
- Ensure space heating is kept off, along with lights and electrical equipment that could create additional internal heat gain.
- Electric fans can help, but only if the temperature is below 35 degrees.
- Rooms can be kept cool without a fan by the use of wet cloths/towels and using evaporative cooling.
- Cool down one or two rooms instead of the whole dwelling.
- Cook at cooler times of the day and avoid using the oven or hob.

Personal actions can also be taken. For example, soaking a t-shirt and keeping it wet can be very effective. Alternatively, using a cooling spray, or having a cool shower will work just as well. A quick way of cooling down is to put hands and feet in cold water. Wrists and ankles have lots of pulse points where blood vessels are close to the skin, which will cool a person down more quickly. It's also important to drink lots of fluids. Both cool and hot drinks will work to keep your core temperature at the same temperature, so consuming hot drinks will not cool a person down more effectively than cold drinks. Avoid drinks containing caffeine, including tea and coffee. It's typically best to stick to water, but isotonic sports drinks can help to replenish lost salts, sugars, and fluids. Alcohol causes dehydration, which can compound problems replacing fluid loss in warm weather. Drinking alcohol can also make it harder to get a good night's sleep, something that's already difficult in warmer temperatures. Finally, with regards to food people should eat light, well-balanced, regular meals. Food with a

high water content like strawberries, cucumber, celery, and lettuce, will also help to keep people hydrated and cool in summer weather.

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4.0 Water Consumption Calculations

Water is a precious commodity even in the UK and with ever increasing demand for clean drinking water measures need to be taken to safeguard future supplies.

Approximately 50% of the water consumed in domestic dwellings is not used for consumption, (the percentage is even higher in many commercial buildings) it is for washing and flushing of toilets etc. Measures to reduce the amount of potable water used for these activities reduce the demand for potable water and make better use of this limited resource.

In line with the requirement of London Plan 2021 policy SI5 water use in the residential units will be reduced to at least 110l/person/day (which includes 5l/person/day for external water use). This reduction in water use will be achieved through specification of water use fittings that do not exceed the following specification;

Taps (other than kitchen taps)		6.00(litres/min)
Kitchen Taps		10.00(litres/min)
Showers		8.00(litres/min)
Baths (with shower over)		n/a
WCs (Flush Volume)	Full Flush:	4.00(litres)
	Part Flush:	2.60(litres)
Washing Machine		8.17(litres/kg dry load)
Dishwasher		1.25(litres/place setting)

For full details of the consumption of this specification please see Appendix 3 to this report.

5.0 Materials

Building materials have a significant impact when the embodied energy and resources used in their manufacture, transport and disposal are considered. Responsible sourcing of materials can have a real beneficial effect on the embodied impact of the final development.

All relevant materials in basic and finishing elements will be responsibly and legally sourced from certified suppliers using sustainable raw materials where possible. 100% of timber and timber based products will be 'Legal' and 'Sustainable' as per the UK Government's Timber Procurement Policy. Wherever possible, reused and recycled materials will be sourced where these provide a viable alternative to virgin material.

All materials will be sourced from local suppliers where possible to reduce transport miles and support the local supply chain. Materials containing chemicals which are harmful to health or the environment will be avoided wherever possible. Consideration will be given to the recycled content of materials, with the aim being that at least 25% of the content of materials will be from recycled sources and best efforts will be made to achieve 50%.

The performance of the proposed specifications for the new elements forming the development can be found in Table 5.1, below. These have been taken from the BRE's Green Guide to Specification[1] - where an exact match cannot be found then the closest representative equivalent has been used.

Table 5.1: Green Guide Ratings for Proposed Specification

Element	Proposed Specification	Green Guide Reference	Green Guide Rating
Ground Floor	OSB/3 decking on vapour control layer, on timber battens and insulation on in situ 30% PFA concrete (100% RCA) floor on polyethylene DPM on blinded recycled aggregate sub-base	1220100023	B
Party Floors	Robust Detail E-FC-1: Floating Floor Treatment (FFT1/2/3 with 18mm min. OSB/3) on 40mm min. screed (80kg/m² min.) on 150mm (min.) precast prestressed hollow planks (300kg/m² min.) with Ceiling Treatment (CT1/3)	829550106	B
External Walls	Brickwork outer leaf, insulation, medium dense solid blockwork inner leaf, cement mortar, plasterboard on battens, paint	806170047	A+
Party Walls	Robust Detail E-WS-1: twin lightweight steel frames, 200mm min. between wall linings, 50mm mineral wool batts between frames or 25mm mineral wool batts on each side (33-60kg/m³), 2 layers staggered gypsum based board (22kg/m²) and paint to each side	818580013	A
Internal Walls	Galvanised steel stud, plasterboard, paint	809760002	A
Terrace Roofs	Precast prestressed concrete hollow slab, with screed, vapour control layer, insulation, PVC single ply waterproofing membrane	1212540023	B
Flat Roof	Timber joists, plywood (temperate EN 636-2) decking, vapour control layer, insulation, plywood (temperate EN 636-2), building paper, Code 5 100% recycled lead sheet	1212540083	A
Sloped Roof	Timber trussed rafters and joists with insulation, battens, breather membrane, softwood timber boarding, polyester underlay, Code 5 100% recycled lead sheet	1212410009	A
Windows	Powder coated aluminium window (profile < 1.08 kg/m), double glazed	1213100004	A

As can be seen the proposed development only uses B, A or A+ rated elements, with the majority being A+ or A.

[1] https://tools.bregroup.com/greenguide/podpage.jsp?id=2126

6.0 Transport

As around 30% of UK energy use is associated with transport. Developments of this nature that can encourage a reduction in car use have a positive impact on the environment both through a reduced reliance on precious fossil fuel resources and a reduction in harmful emissions.

The development as proposed only incorporates 2 car parking spaces – so the majority of the occupants will be directed to use other forms of transport. Both of these spaces are within garages, so both will be provided with electric car charging points to incentivise the use of low-carbon and low emission vehicle choices. The development also includes secure cycle storage provision adjacent to the front entrance at ground level. The location of the development means that it is close to local amenities and has excellent public transport links, with regular bus services on surrounding streets, West Hampstead and Finchley Road & Frognal tube stations and West Hampstead Thameslink train station in close proximity.

The result of this is that the development has a PTAL score of 5 for the base year, with both the 2021 and 2031 scores being 6a, please see Figure 6.1, below.

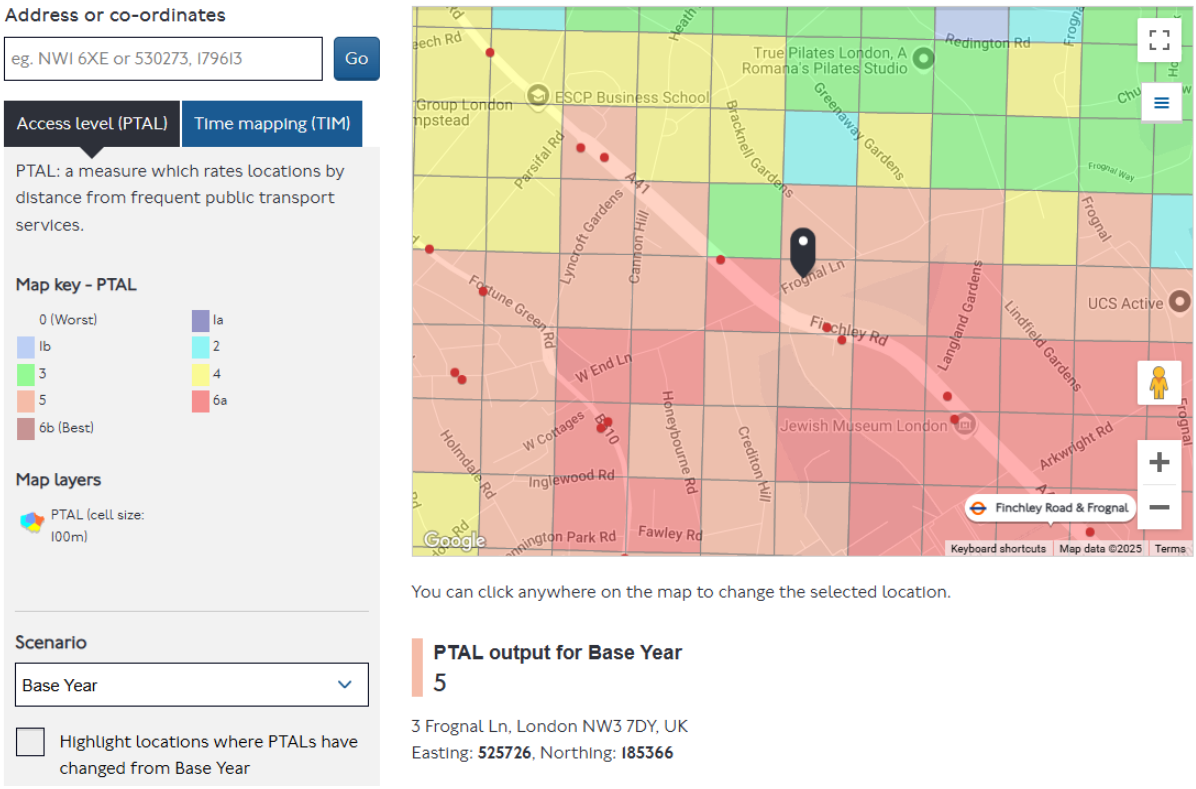

Figure 6.1: PTAL map, Frognal Garages

7.0 Waste

A key part of sustainability is to manage resources efficiently. Reducing the amount of waste created and maximising resource efficiency during demolition, construction and during the building's lifetime is fundamental to providing sustainable developments.

Efforts to reduce construction waste generally will concentrate on reducing site waste together with increasing reuse and recycling of waste that cannot be avoided in an effort to reduce volumes going to landfill. This will be implemented through a Site Waste Management Plan, which will be drawn up by the chosen contractor to enable their input into the detailed operational requirements. Where possible targets will be set in relation to the diversion of waste from landfill and the direct re-use of materials on site where possible.

Adequate facilities will be provided for the storage and recycling of waste and recycling – both within the flats and externally. These will allow the segregation of waste into recyclable schemes in line with the current provision of Camden Council. Internal storage locations will be in the kitchens and will be provided in line with the requirements for kerbside collection from flatted units.

This, in conjunction with the adoption of the Local Authority collection scheme for waste and recycling, will encourage occupants to minimise waste going to landfill.

8.0 Air Quality

The proposed refurbishment will use electricity for all energy demands. Space and DHW heating will be provided by ASHPs running from mains electricity. Cooking and other unregulated energy loads will also use electricity as the energy source. No gas or other fuel will be supplied to the development site. Using electricity produces no local emissions of any kind – no Nox, particulate or carbon dioxide emissions will be produced in the direct locality of the development site.

In addition the limited car parking provision will reduce the opportunity to use transport options with tailpipe emissions. Installation of EV chargers for both spaces will incentivise the users of these to choose low emission vehicles. Promotion of sustainable travel (see Section 6) will help the occupants prioritise options that also do not produce local emissions, such as cycling or the use of public transport.

As such the development should be air quality neutral.

Appendix 1

Drawings

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01 GA Plan - level 01

1 : 100

scale (m)

0 1 2 5

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- Residential - Living/Dining/Kitchen
- Residential - Bedroom
- Residential - Bathroom
- Residential - Communication
- Residential - Storage amenities
- Retained car parking space for 1 Frognal Lane (on Long Leasehold)
- Retained car parking space for 3 Frognal Lane (on Long Leasehold)
- Main entrance

01 Cycle storage (X spaces)
02 Bin enclosure
03 Angled windows
04 Planter
05 Lightweight bridge
06 Lightwell
07 Skylight
08 Hit & miss brickwork
09 Plant area
10 Canopy
XX* at high level
Assumed site boundary

Rev:	Date:	Description:	Drwn by:	Chkd by:
P01	28/02/25	Planning Issue	JV	TB

Status: S2 - Information

Revision: P01

Dwn by: JV | Ckd by: TB

Scale: 1 : 100 | Page: A3

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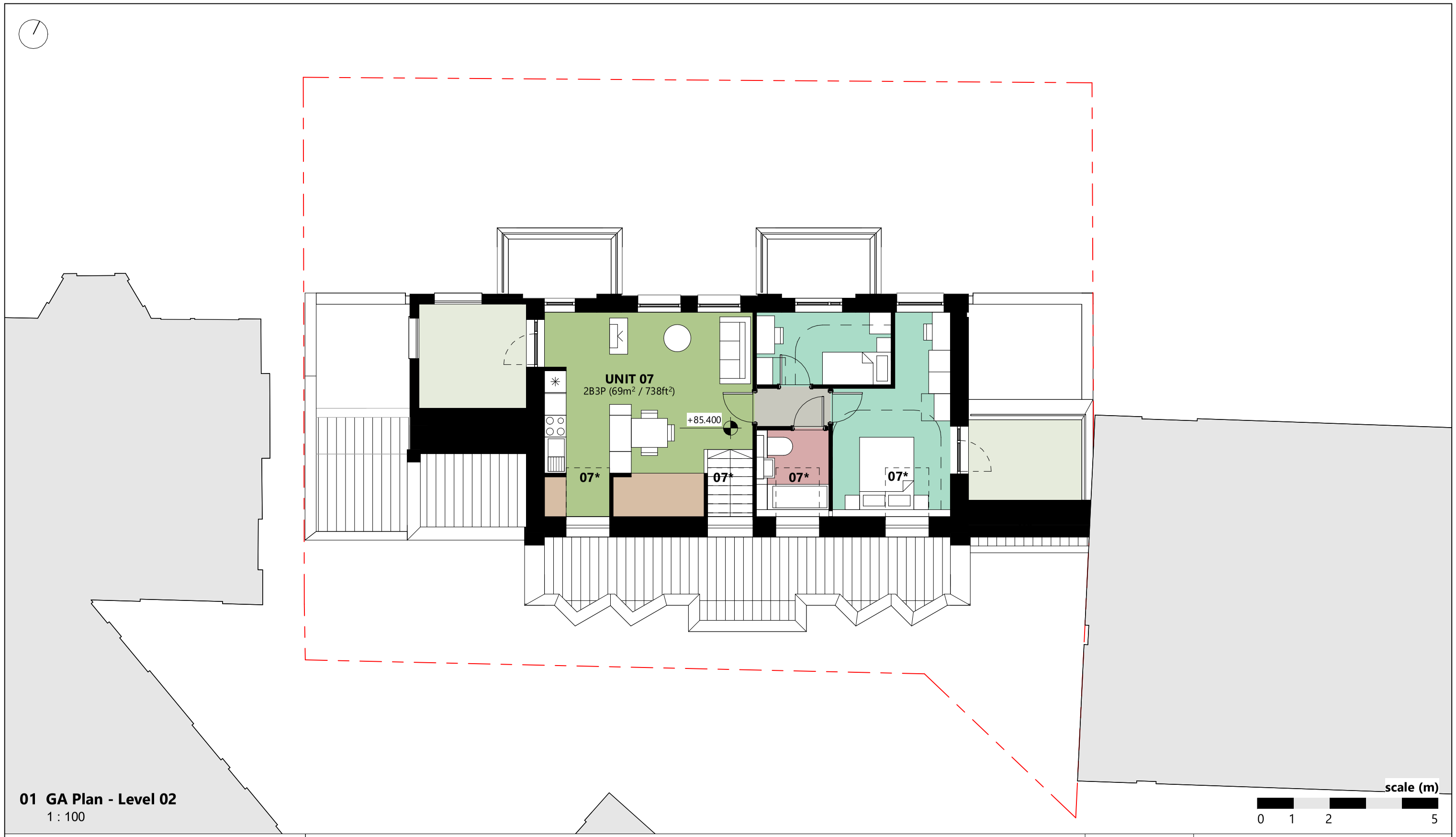
Project Name: Frognal Garages

Drawing Title: GA Plan - Level 01

Drawing Number: FGG-TOD-20-01-DR-A-20003



01 GA Plan - Level 02

1 : 100

scale (m)

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- Residential - Living/Dining/Kitchen
- Residential - Bedroom
- Residential - Bathroom
- Residential - Communication
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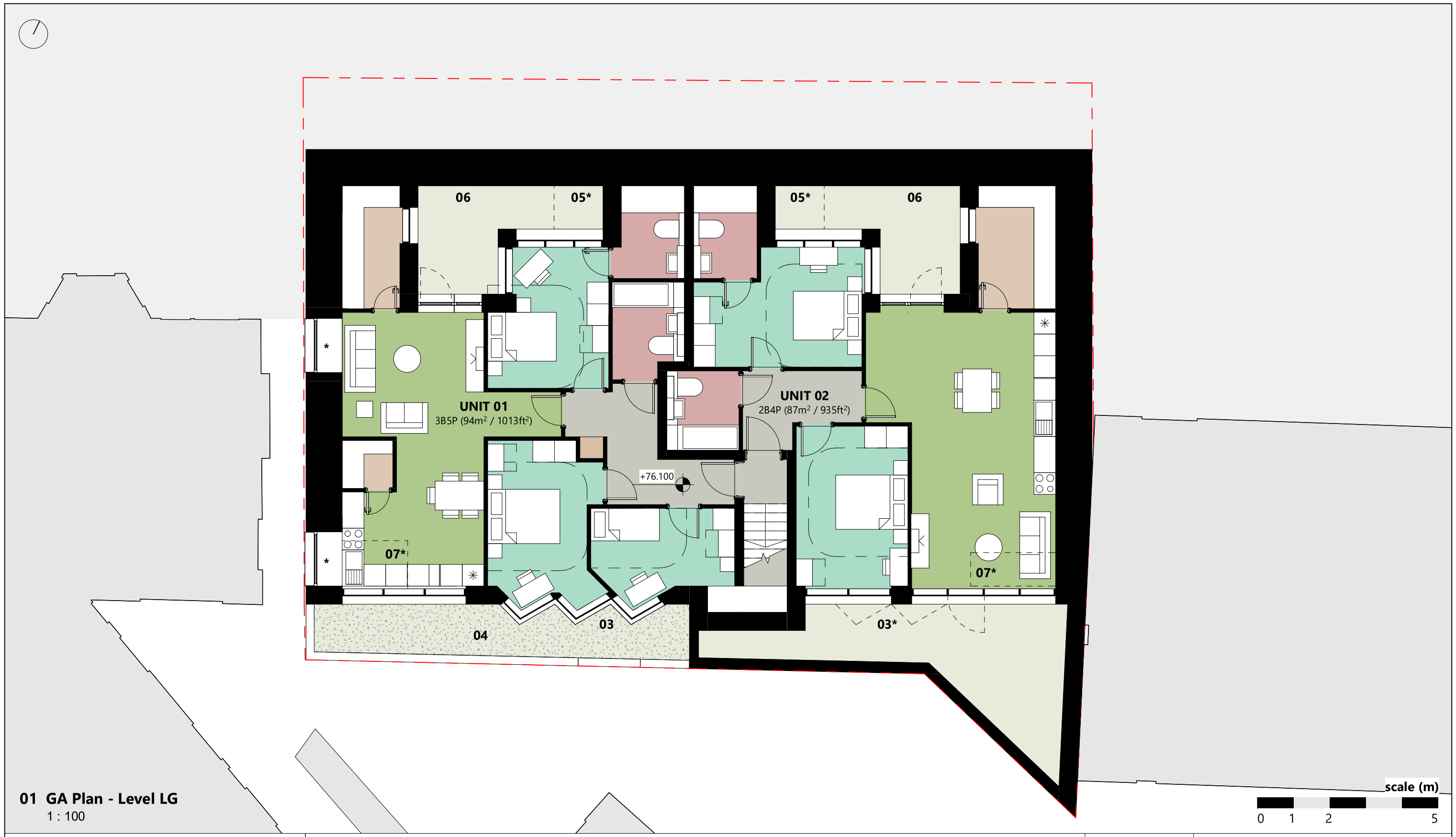
Project Name: Frognal Garages
Drawing Title: GA Plan - Level 02
Drawing Number: FGG-TOD-20-02-DR-A-20004



01 GA Plan - Level LG

1 : 100

- Residential - Living/Dining/Kitchen
- Residential - Bedroom
- Residential - Bathroom
- Residential - Communication
- Residential - Storage
- amenities
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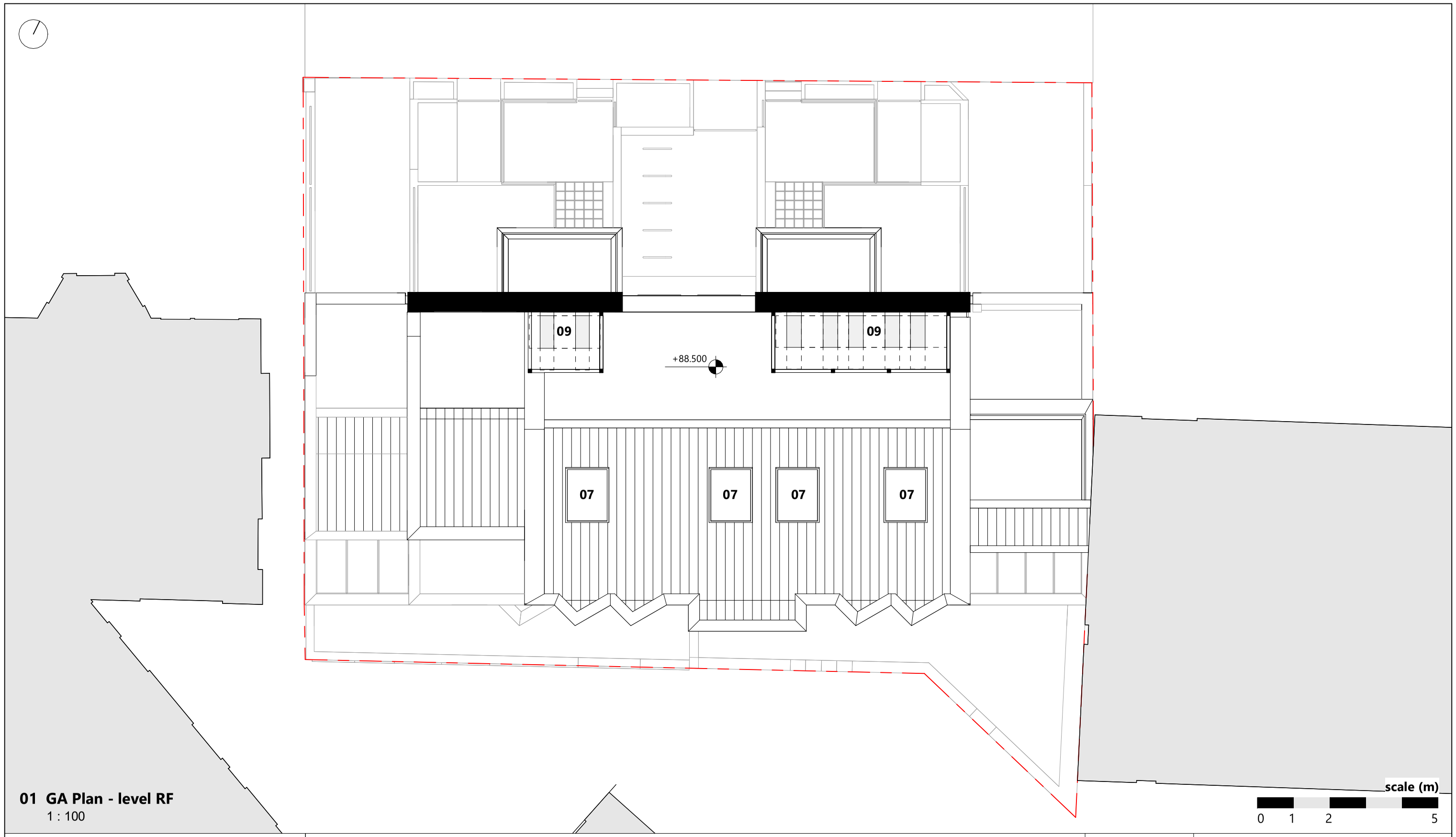
Drawing Title: GA Plan - Level LG
Drawing Number: FGG-TOD-20-LG-DR-A-20001



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Status: S2 - Information

Revision: P01

Dwn by: JV | Ckd by: TB

Scale: 1 : 100 | Page: A3

Project No: 21033V

Date: 28/02/25

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Client: Pollyshire Ltd

Project Name: Frognal Garages

Drawing Title: GA Plan - Level RF

Drawing Number: FGG-TOD-20-RF-DR-A-20005

01 GA Plan - Level UG

1 : 100

scale (m)

0 1 2 5

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Contractors are responsible for the verification of all dimensions on site and the architect is to be informed of any discrepancy.
Do not scale from this drawing.
Use figured dimensions only.

- Residential - Living/Dining/Kitchen
- Residential - Bedroom
- Residential - Bathroom
- Residential - Communication
- Residential - Storage
- amenities
- Retained car parking space for 1 Frognal Lane (on Long Leasehold)
- Retained car parking space for 3 Frognal Lane (on Long Leasehold)
- Main entrance

01 Cycle storage (X spaces)
02 Bin enclosure
03 Angled windows
04 Planter
05 Lightweight bridge
06 Lightwell
07 Skylight
08 Hit & miss brickwork
09 Plant area
10 Canopy
XX* at high level
Assumed site boundary

Rev:	Date:	Description:	Drwn by:	Chkd by:
P01	28/02/25	Planning Issue	JV	TB

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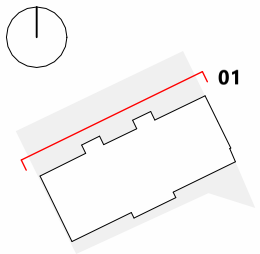
Client: Pollyshire Ltd
Project Name: Frognal Garages
Drawing Title: GA Plan - Level UG
Drawing Number: FGG-TOD-20-UG-DR-A-20002



key plan

01 GA Elevation - North

1 : 100

scale (m)

0 1 2 5

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Do not scale from this drawing.
Use figured dimensions only.

01 Light grey louvred screen
02 Frosted glass
03 Hit & Miss brickwork

notes:

- Window frames, sills and railings have a black PPC finish.
- The building is clad in red bricks with light grey GRC details.
- Cappings have a light grey PPC finish.

Rev:	Date:	Description:	Drwn by:	Chkd by:
P01	28/02/25	Planning Issue	JV	TB

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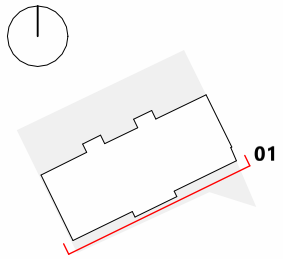
E: info@toddarch.co.uk

Client: Pollyshire Ltd
Project Name: Frognal Garages
Drawing Title: GA Elevation - North
Drawing Number: FGG-TOD-30-ZZ-DR-A-30001



key plan

01 GA Elevation - South

1 : 100

scale (m)

0 1 2 5

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Do not scale from this drawing.
Use figured dimensions only.

01 Light grey louvred screen
02 Frosted glass
03 Hit & Miss brickwork

notes:

- Window frames, sills and railings have a black PPC finish.
- The building is clad in red bricks with light grey GRC details.
- Cappings have a light grey PPC finish.

Rev:	Date:	Description:	Drwn by:	Chkd by:
P01	28/02/25	Planning Issue	JV	TB

Status: S2 - Information
Revision: P01
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Project No: 21033V
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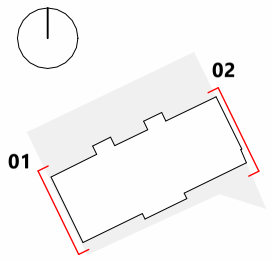
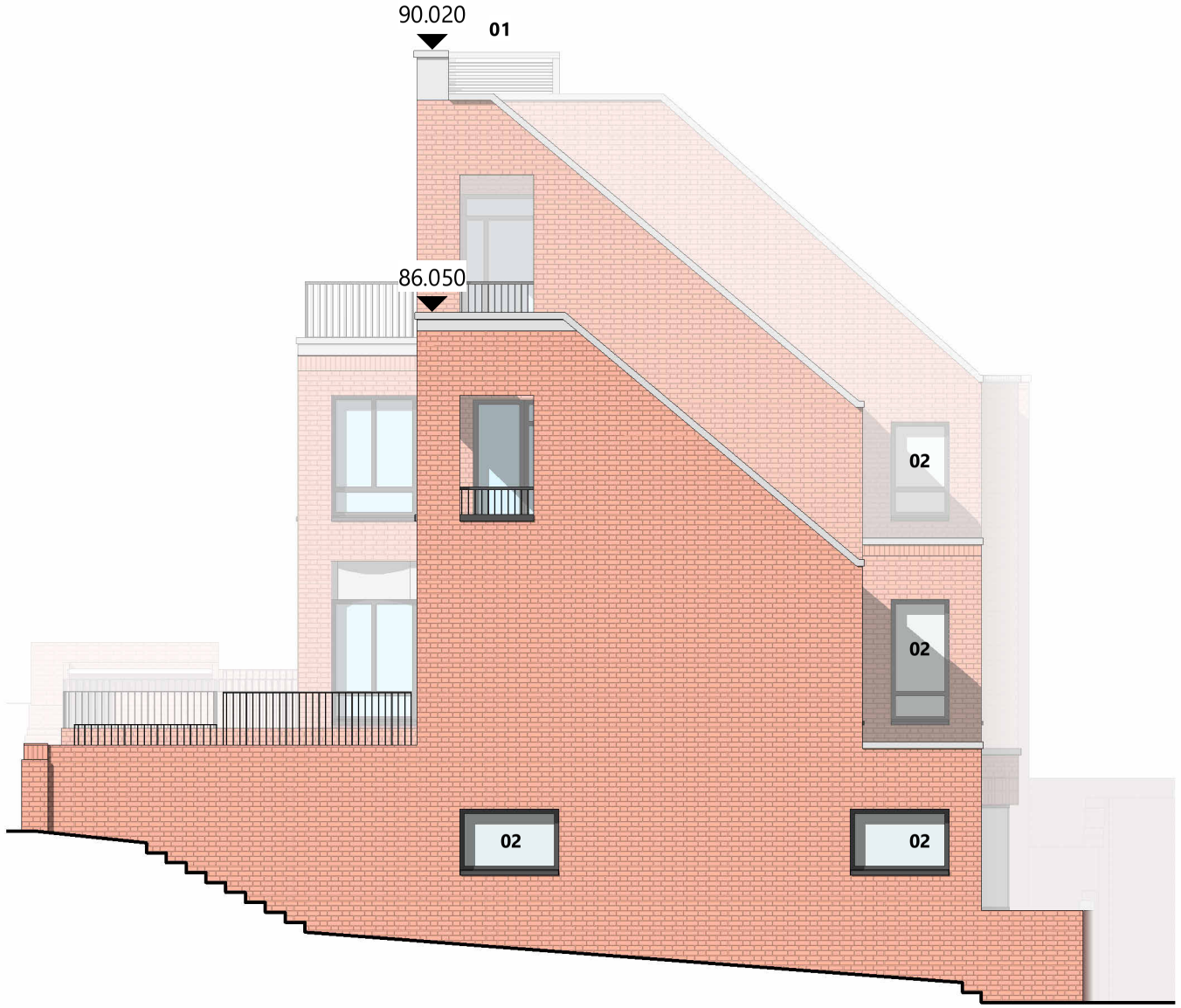
Client: Pollyshire Ltd
Project Name: Frognal Garages
Drawing Title: GA Elevation - South
Drawing Number: FGG-TOD-30-ZZ-DR-A-30002

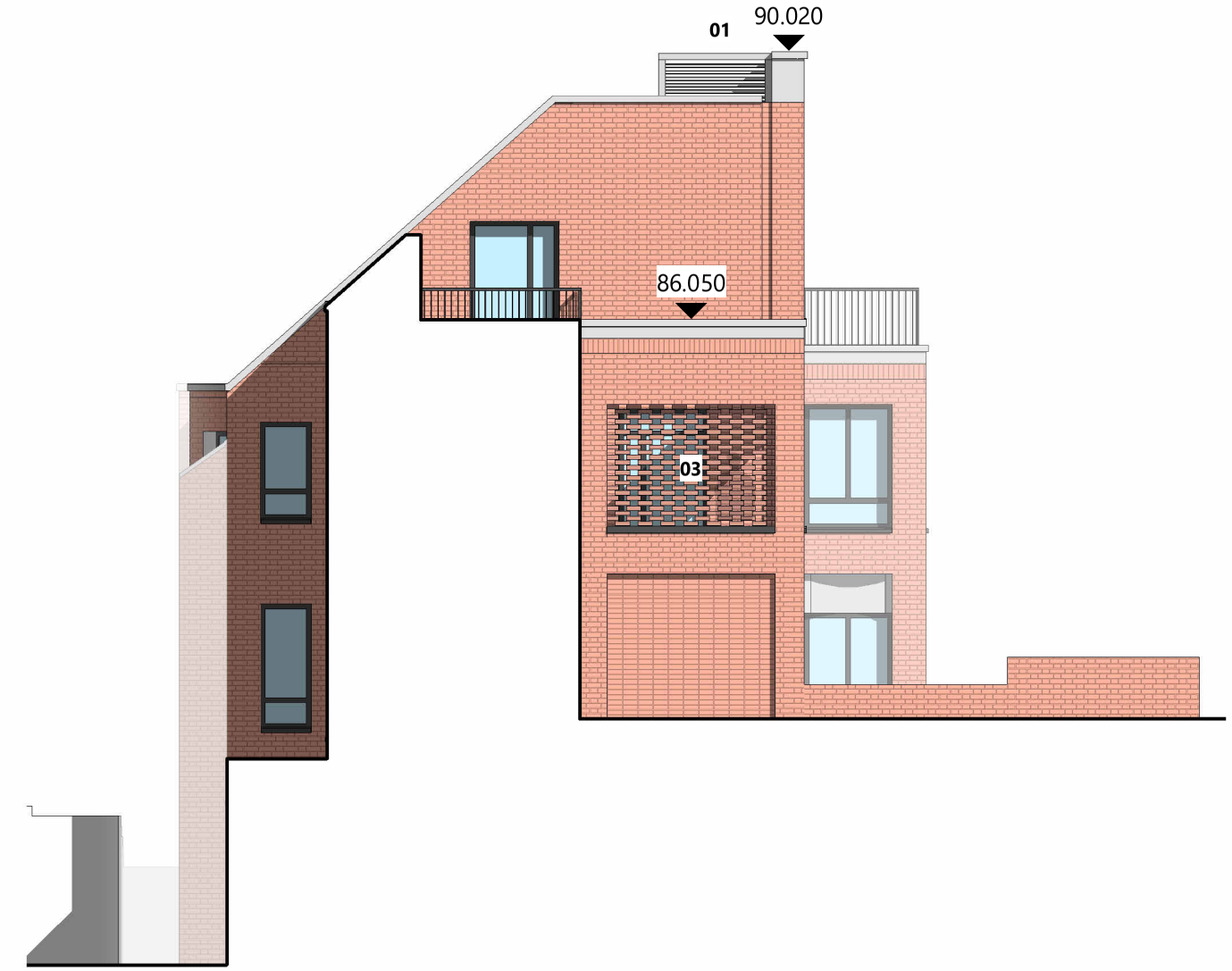


key plan



01 GA Elevation - West

1 : 100



02 GA Elevation - East

1 : 100

scale (m)

0 1 2 5

01 Light grey louvred screen
02 Frosted glass
03 Hit & Miss brickwork

notes:

- Window frames, sills and railings have a black PPC finish.
- The building is clad in red bricks with light grey GRC details.
- Cappings have a light grey PPC finish.

Rev:	Date:	Description:	Drwn by:	Chkd by:
P01	28/02/25	Planning Issue	JV	TB

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Client: Pollyshire Ltd
Project Name: Frognal Garages
Drawing Title: GA Elevation - East & West
Drawing Number: FGG-TOD-30-ZZ-DR-A-30003

Appendix 2

GHA Overheating Toolkit

mesbuildingsolutions.co.uk
Newark Beacon, Cafferata Way, Newark, Nottinghamshire NG24 2TN

EARLY STAGE OVERHEATING RISK TOOL

Version 1.0, July 2019

This tool provides guidance on how to assess overheating risk in residential schemes at the early stages of design. It is specifically a pre-detail design assessment intended to help identify factors that could contribute to or mitigate the likelihood of overheating.

The questions can be answered for an overall scheme or for individual units. Score zero wherever the question does not apply. Additional information is provided in the accompanying guidance, with examples of scoring and advice on next steps.

Find out more information and download accompanying guidance at goodhomes.org.uk/overheating-in-new-homes.

Good Homes Alliance

KEY FACTORS INCREASING THE LIKELIHOOD OF OVERHEATING | **KEY FACTORS REDUCING THE LIKELIHOOD OF OVERHEATING**

Geographical and local context

#1 Where is the scheme in the UK?
See guidance for map

South east	4	4
Northern England, Scotland & NI	0	
Rest of England and Wales	2	

#2 Is the site likely to see an Urban Heat Island effect?
See guidance for details

Central London (see guidance)	3	3
Grtr London, Manchester, B'ham	2	
Other cities, towns & dense sub-urban areas	1	

#8 Do the site surroundings feature significant blue/green infrastructure?
Proximity to green spaces and large water bodies has beneficial effects on local temperatures; as guidance, this would require at least 50% of surroundings within a 100m radius to be blue/green, or a rural context

1	0

Site characteristics

#3 Does the site have barriers to windows opening?
- Noise/Acoustic risks
- Poor air quality/smells e.g. near factory or car park or very busy road
- Security risks/crime
- Adjacent to heat rejection plant

Day - reasons to keep all windows closed	8	0
Day - barriers some of the time, or for some windows e.g. on quiet side	4	
Night - reasons to keep all windows closed	8	0
Night - bedroom windows OK to open, but other windows are likely to stay closed	4	

#9 Are immediate surrounding surfaces in majority pale in colour, or blue/green?
Lighter surfaces reflect more heat and absorb less so their temperatures remain lower; consider horizontal and vertical surfaces within 10m of the scheme

1	0

#10 Does the site have existing tall trees or buildings that will shade solar-exposed glazed areas?
Shading onto east, south and west facing areas can reduce solar gains, but may also reduce daylight levels

1	0

Scheme characteristics and dwelling design

#4 Are the dwellings flats?
Flats often combine a number of factors contributing to overheating risk e.g. dwelling size, heat gains from surrounding areas; other dense and enclosed dwellings may be similarly affected - see guidance for examples

3	3

#5 Does the scheme have community heating?
i.e. with hot pipework operating during summer, especially in internal areas, leading to heat gains and higher temperatures

3	0

#11 Do dwellings have high exposed thermal mass AND a means for secure and quiet night ventilation?
Thermal mass can help slow down temperature rises, but it can also cause properties to be slower to cool, so needs to be used with care - see guidance

1	0

#12 Do floor-to-ceiling heights allow ceiling fans, now or in the future?
Higher ceilings increase stratification and air movement, and offer the potential for ceiling fans

>2.8m and fan installed	2	0
> 2.8m	1	

Solar heat gains and ventilation

#6 What is the estimated average glazing ratio for the dwellings?
(as a proportion of the facade on solar-exposed areas i.e. orientations facing east, south, west, and anything in between). Higher proportions of glazing allow higher heat gains into the space

>65%	12	0
>50%	7	
>35%	4	

#7 Are the dwellings single aspect?
Single aspect dwellings have all openings on the same facade. This reduces the potential for ventilation

Single-aspect	3	0
Dual aspect	0	

#13 Is there useful external shading?
Shading should apply to solar exposed (E/S/W) glazing. It may include shading devices, balconies above, facade articulation etc. See guidance on "full" and "part". Scoring depends on glazing proportions as per **#6**

	Full	Part	
>65%	6	3	0
>50%	4	2	
>35%	2	1	

#14 Do windows & openings support effective ventilation?
Larger, effective and secure openings will help dissipate heat - see guidance

	Openings compared to Part F purge rates		
	= Part F	+50%	+100%
Single-aspect	minimum required	3	4
Dual aspect		2	3

3

TOTAL SCORE 7 = Sum of contributing factors: 10 *minus* Sum of mitigating factors: 3

High 12 **Medium** 8 **Low**

score >12:
Incorporate design changes to reduce risk factors and increase mitigation factors
AND Carry out a detailed assessment (e.g. dynamic modelling against CIBSE TM59)

score between 8 and 12:
Seek design changes to reduce risk factors and/or increase mitigation factors
AND Carry out a detailed assessment (e.g. dynamic modelling against CIBSE TM59)

score <8:
Ensure the mitigating measures are retained, and that risk factors do not increase (e.g. in planning conditions)

Appendix 3

Water Consumption Calculations

mesbuildingsolutions.co.uk
Newark Beacon, Cafferata Way, Newark, Nottinghamshire NG24 2TN

breglobal

Job no:	
Date:	21/02/2025
Assessor name:	Tom Reynolds
Registration no:	
Development name:	Frognal Garages
Issue Date:	

Rainwater | Greywater | Results

WATER EFFICIENCY CALCULATOR FOR NEW DWELLINGS

(for use with the Code for Sustainable Homes issues Wat 1 for the May 2009 and subsequent versions)

Dwelling Description	Units 1 & 2

1st step - Select from options below:

Is a Rain and/or Greywater system specified?	**No**
Is a shower AND bath present?	**Yes**
Has a washing machine been specified?	**No**
Has a dishwasher been specified?	**No**

2nd step - Build spreadsheet (click button below)

BUILD SPREADSHEET

As soon as this button is pressed the spreadsheet will change according to the options selected previously in the 1st step. Scroll down to see the changes.

3rd step - Enter consumption details for the specified fittings

TAPS (excluding kitchen taps)	Fitting type	Flow rate (litres/min)	Number of fittings
1	Basin Taps	6.00	2
2			
3			
4			
	Proportionate flow rate (litres/min)		4.20

	Consumption / person / day (Litres)	**11.06**

BATHS		Fitting type	Capacity to overflow (litres)	Number of fittings
	1	Bath	170.00	2
	2			
	3			
	4			
			Proportionate capacity to overflow (litres)	119.00
			Consumption / person / day (Litres)	**18.70**

SHOWERS		Fitting type	Flow rate (litres/min)	Number of fittings
	1	Shower	8.00	2
	2			
	3			
	4			
			Proportionate flow rate (litres/min)	5.60
			Consumption / person / day (Litres)	**34.96**

DISHWASHER				
Where no dishwasher is specified, a default consumption figure of 1.25 litres per place setting is used.				
			Consumption / person / day (Litres)	**4.50**

WASHING MACHINES	Number of fittings
Where no washing machine is specified, a default consumption figure of 8.17 litres per kilogram of dry load is used.	
Where no washing machines have been specified but plumbing for future supply of grey/rainwater was installed, please enter details:	
Consumption / person / day (Litres)	17.16

WC's	Fitting Type	Flush Type	Volume**	Number of fittings
1	WCs	Full Flush	4.00	2
		Part Flush	2.60	
2		Full Flush		
		Part Flush		
3		Full Flush		
		Part Flush		
4		Full Flush		
		Part Flush		
		Average effective flushing volume (litres)		3.06
		Consumption / person / day (Litres)		13.53

KITCHEN SINK TAPS	Fitting Type	Flow rate (litres/minute)	Number of fittings
1	Kitchen Taps	10.00	1
2			
3			
4			
	Proportionate flow rate (litres/min)		7.00
	Consumption / person / day (Litres)		**14.76**

WASTE DISPOSAL UNIT	
Is a waste disposal unit specified for the dwelling?	No
Consumption / person / day (Litres)	**0.00**

WATER SOFTENER	
Water Softener in use?	No
Total capacity used per regeneration (%)	
Water consumed per regeneration (litres)	
Average number of regeneration cycles per day (No.)	
Number of occupants served by the system (No.)	
Water consumed beyond 4% person / day (Litres)	**0.00**

4th step - Analyse Results

Go to Start

INTERNAL WATER CONSUMPTION		
NET INTERNAL WATER CONSUMPTION	(litres/person/day)	114.67
RAINWATER ONLY COLLECTION SAVING	(litres/person/day)	0.00
GREYWATER ONLY RECYCLING SAVING	(litres/person/day)	0.00
RAIN/GREYWATER COLLECTION SAVING (combined system)	(litres/person/day)	0.00
NORMALISATION FACTOR	(litres/person/day)	0.91
TOTAL WATER CONSUMPTION	(litres/person/day)	104.4
CSH CREDITS ACHIEVED		3
CSH MANDATORY LEVEL:		Level 3/4

17. K COMPLIANCE		
EXTERNAL WATER USE	(litres / person / day)	5.00
TOTAL WATER CONSUMPTION	(litres / person / day)	109.4
17. K COMPLIANCE?		Yes

PRINTING: before printing please make sure that in "Page Setup" you have selected the page to be as "Landscape" and that the Scale has been set up to 75% (maximum)

breglobal

Job no:	
Date:	21/02/2025
Assessor name:	Tom Reynolds
Registration no:	
Development name:	Frognal Garages
Issue Date:	

Rainwater | Greywater | Results

WATER EFFICIENCY CALCULATOR FOR NEW DWELLINGS

(for use with the Code for Sustainable Homes issues Wat 1 for the May 2009 and subsequent versions)

Dwelling Description	Units 3 - 7

1st step - Select from options below:

Is a Rain and/or Greywater system specified?	**No**
Is a shower AND bath present?	**Yes**
Has a washing machine been specified?	**No**
Has a dishwasher been specified?	**No**

2nd step - Build spreadsheet (click button below)

BUILD SPREADSHEET

As soon as this button is pressed the spreadsheet will change according to the options selected previously in the 1st step. Scroll down to see the changes.

3rd step - Enter consumption details for the specified fittings

TAPS (excluding kitchen taps)	Fitting type	Flow rate (litres/min)	Number of fittings
1	Basin Taps	6.00	1
2			
3			
4			
	Proportionate flow rate (litres/min)		4.20

		Consumption / person / day (Litres)	**11.06**

BATHS	**Fitting type**	**Capacity to overflow (litres)**	**Number of fittings**
1	Bath	170.00	1
2			
3			
4			
	Proportionate capacity to overflow (litres)		119.00
	Consumption / person / day (Litres)		**18.70**

SHOWERS	**Fitting type**	**Flow rate (litres/min)**	**Number of fittings**
1	Shower	8.00	1
2			
3			
4			
	Proportionate flow rate (litres/min)		5.60
	Consumption / person / day (Litres)		**34.96**

DISHWASHER			
Where no dishwasher is specified, a default consumption figure of 1.25 litres per place setting is used.			
	Consumption / person / day (Litres)		**4.50**

WASHING MACHINES	Number of fittings
Where no washing machine is specified, a default consumption figure of 8.17 litres per kilogram of dry load is used.	
Where no washing machines have been specified but plumbing for future supply of grey/rainwater was installed, please enter details:	
Consumption / person / day (Litres)	17.16

WC's	Fitting Type	Flush Type	Volume**	Number of fittings
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		Part Flush	2.60	
2		Full Flush		
		Part Flush		
3		Full Flush		
		Part Flush		
4		Full Flush		
		Part Flush		
		Average effective flushing volume (litres)		3.06
		Consumption / person / day (Litres)		13.53

KITCHEN SINK TAPS	Fitting Type	Flow rate (litres/minute)	Number of fittings
1	Kitchen Taps	10.00	1
2			
3			
4			
	Proportionate flow rate (litres/min)		7.00
	Consumption / person / day (Litres)		**14.76**

WASTE DISPOSAL UNIT	
Is a waste disposal unit specified for the dwelling?	No
Consumption / person / day (Litres)	**0.00**

WATER SOFTENER	
Water Softener in use?	No
Total capacity used per regeneration (%)	
Water consumed per regeneration (litres)	
Average number of regeneration cycles per day (No.)	
Number of occupants served by the system (No.)	
Water consumed beyond 4% person / day (Litres)	**0.00**

4th step - Analyse Results

Go to Start

INTERNAL WATER CONSUMPTION		
NET INTERNAL WATER CONSUMPTION	(litres/person/day)	114.67
RAINWATER ONLY COLLECTION SAVING	(litres/person/day)	0.00
GREYWATER ONLY RECYCLING SAVING	(litres/person/day)	0.00
RAIN/GREYWATER COLLECTION SAVING (combined system)	(litres/person/day)	0.00
NORMALISATION FACTOR	(litres/person/day)	0.91
TOTAL WATER CONSUMPTION	(litres/person/day)	104.4
CSH CREDITS ACHIEVED		3
CSH MANDATORY LEVEL:		Level 3/4

17. K COMPLIANCE		
EXTERNAL WATER USE	(litres / person / day)	5.00
TOTAL WATER CONSUMPTION	(litres / person / day)	109.4
17. K COMPLIANCE?		Yes

PRINTING: before printing please make sure that in "Page Setup" you have selected the page to be as "Landscape" and that the Scale has been set up to 75% (maximum)