

Project:	Chalton Street and Churchway, London	Scheme No:	13657
Subject:	LLFA Comments Response	Revision:	01
Client:	RangePAY Ltd	Date:	21/03/2025
Doc Ref:	13657-Technical Note-01		
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Introduction

This Technical Note has been prepared in response to comments made by the Lead Local Flood Authority (LLFA) with respect to discharging drainage conditions for a proposed hotel at 53-55 Chalton Street and 60 Churchway, London.

Comments

The LLFA comments are provided below together with the Waterco response.

1) LLFA Comment: *‘Further justification and rationale on removal of blue roof from the proposal and move to basement tanks.’*

Waterco Response: The suitability of blue roof attenuation has been assessed. Blue roofs are not considered feasible due to the significant risk of structural damage to the underlying tube line (due to additional loading).

A supporting letter provided by SWAL Engineering Ltd (Consulting Structural Engineers) is included as Appendix A. SWAL Engineering conclude that the roof structure is currently designed for an imposed loading of 0.75kN/m² however, an imposed loading of 2.04kN/m² would be required to attenuate rainwater at roof level. The site is located above subterranean TfL tunnels therefore, strict control over foundation loadings and ground settlements must be maintained to prevent potential damage.

2) LLFA Comment: *‘Completed SuDS proforma and details of exceedance events (diagram of flows in the event of rainfall in exceedance of 1 in 100 rainfall event).’*

Waterco Response: Exceedance flows are normally contained within access roads and landscaped areas and directed away from properties however, in this case all drainage is internal within freestanding tanks in the basement. As such, an exceedance flow diagram is not provided as there are no external areas on site for water to flow (apart from the roof). To minimise exceedance risk and subsequent flooding of the basement rooms which will hold the freestanding storm tanks, suitable precautions are provided. These including installing a non-return valve to prevent backflow, high level water alarm on each tank, high level overflow within the tanks, and a sump point within each room containing an attenuation tank for ease of water removal in an emergency.

The SUDS proforma has been completed and is provided separately.

Appendix A SWAL Engineering Ltd Letter

19 March 2025
Our Ref: 338

Escon Construction Ltd
17 Meadow Drive
London
NW4 1SD

Dear Rikin,

RE: Blue Roof Loading to Churchway/Charlton Street, London

The following letter report summarises our findings and recommendations with regard to the impact of providing a blue roof system to the roof structure of the building at 53-55 Charlton Street and 60 & 70 Churchway, London.

A review of the design package produced by Simple Works, indicate that the roof structure is currently designed for a permanent load of 1.5kN/m^2 and an imposed loading of 0.75kN/m^2 , which are in accordance with the imposed loading requirements for maintenance and snow loading provided within the current UK design codes for roof structures.

The proposal for the inclusion of a blue roof system at roof level appears to exceed the original design loading. The blue roof proposal produced by Bauder, appended to this report, indicate that a blue roof system would require an imposed loading of 2.04kN/m^2 to attenuate rainwater at roof level. This uplift in loading is 2.7 times increase in load. To achieve the proposed roof loadings associated with the blue roof system, significant re-design of the roof carcass and supporting structural elements would be required. This would likely result in having to remove a significant portion of the original structure and reinstate new columns and beams to resist the uplift in load. Further, the increase in load would change the distribution of the load path across the foundations which the structure has not been designed for.

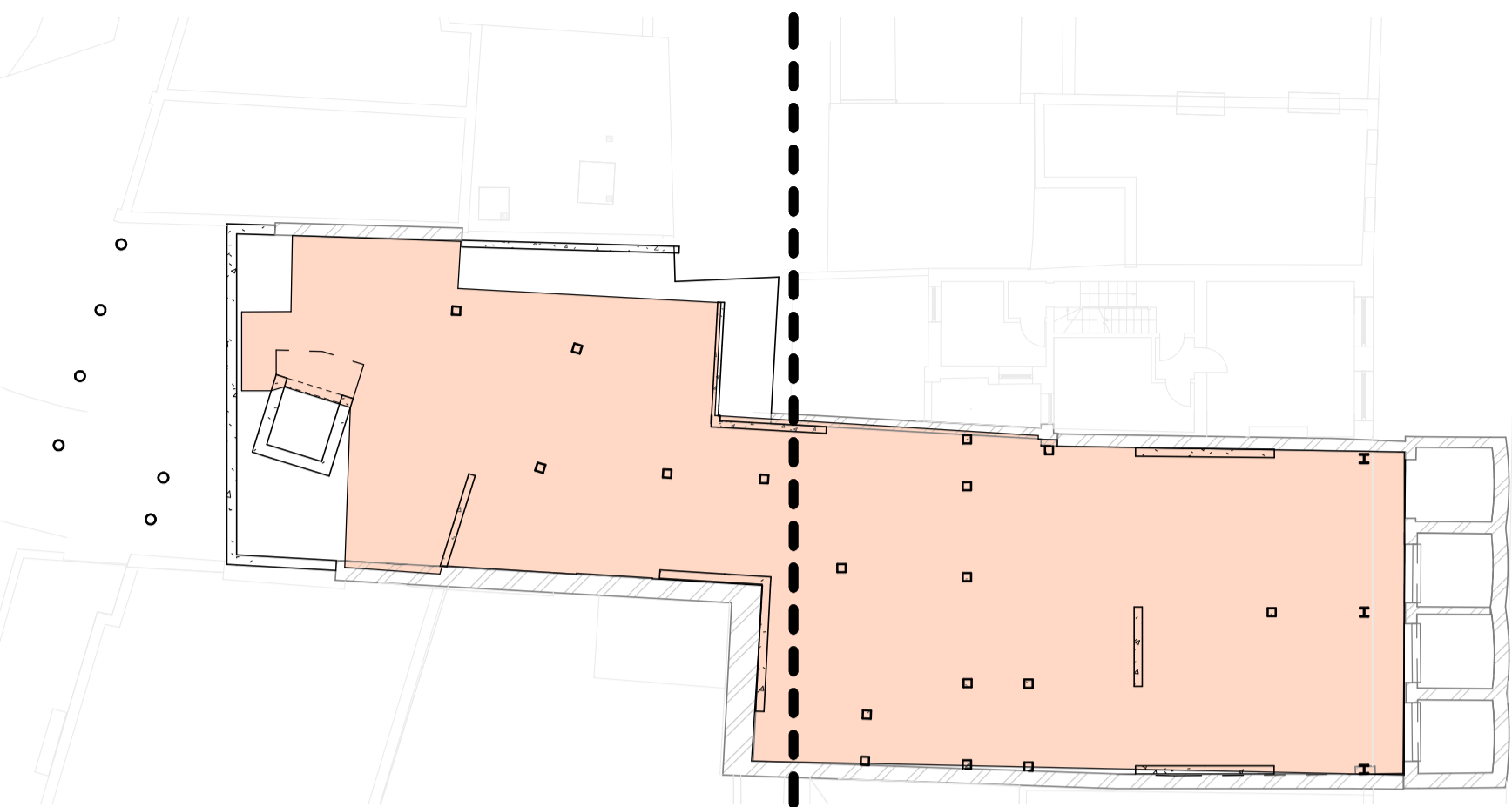
Given the site's location above subterranean TfL rail tunnels, maintaining strict control over foundation loadings and ground settlements is paramount to prevent potential damage. The currently approved foundation and asset protection strategy is predicated on specific loading assumptions, and any deviation, such as an uplift in foundation loadings or a change to the load path resulting from the blue roof system, would necessitate re-evaluation to ensure compliance with TfL requirements. The proposed relocation of attenuation tanks to the basement level ground bearing slab offers a potential mitigation strategy, distributing the tank mass over a wider area and reducing the imposed load per square meter, thereby minimising localised high-stress concentrations. This approach aligns with the primary objective of limiting ground settlement, a critical consideration due to the potential for loading-induced settlements at the surface to translate into movement and damage of the underlying tunnels.

In conclusion, the current structural arrangement is demonstrably inadequate to withstand the loading demands imposed by a blue roof system, necessitating substantial structural redesign and modifications to the existing as-built structure. The inclusion of such a system would fundamentally alter the structure's load path, resulting in a concentrated uplift of foundation loads. This concentration of loads would, in turn, lead to increased ground settlements beneath the foundations when compared to a loading arrangement that distributes the attenuation load over a broader area, such as the proposed relocation of attenuation tanks directly onto the basement slab. This disparity in settlement potential underscores the critical need to reconsider the blue roof system in favour of a loading strategy that minimises concentrated loads and mitigates the risk of excessive ground settlement.

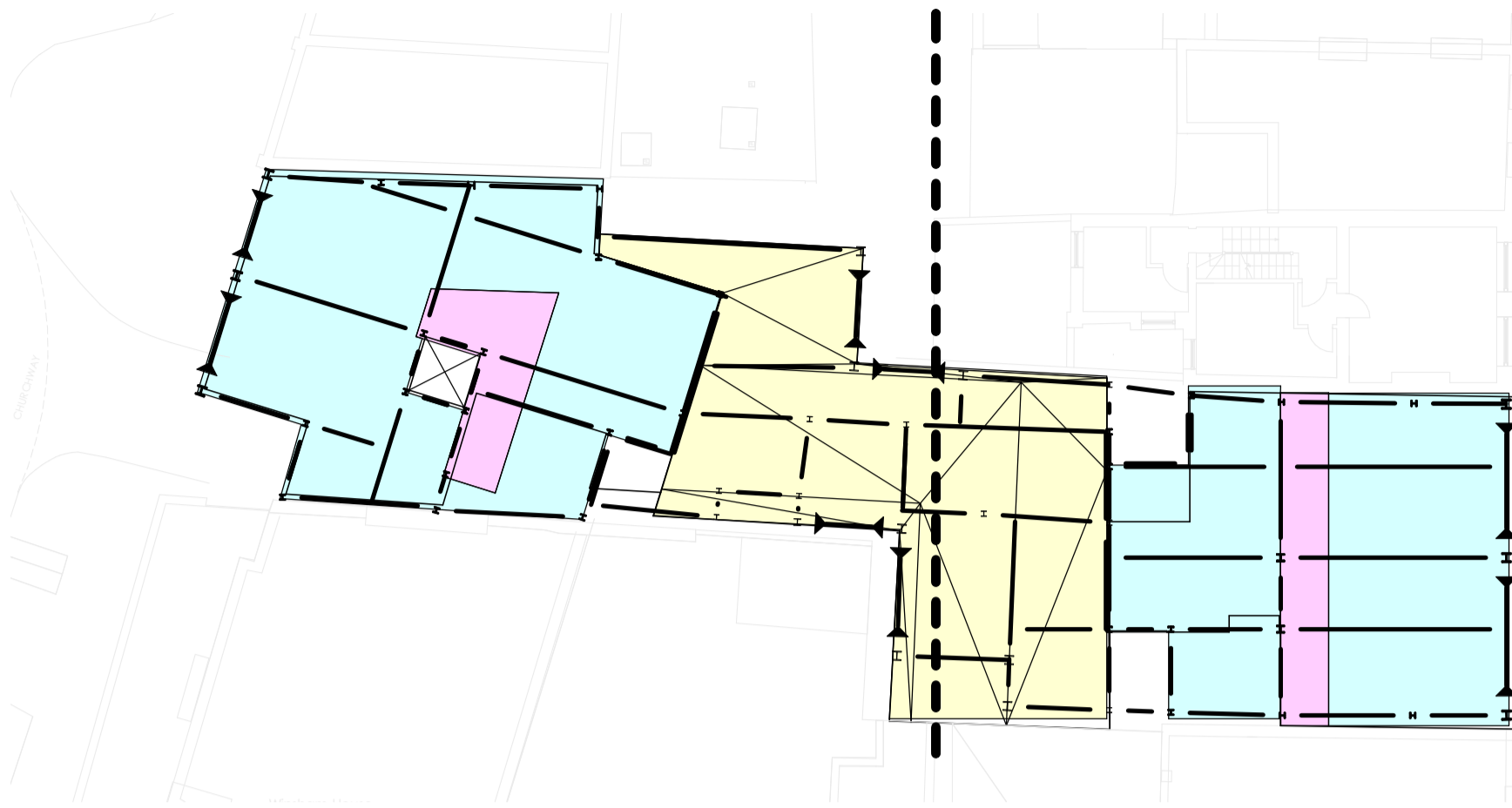
Yours sincerely



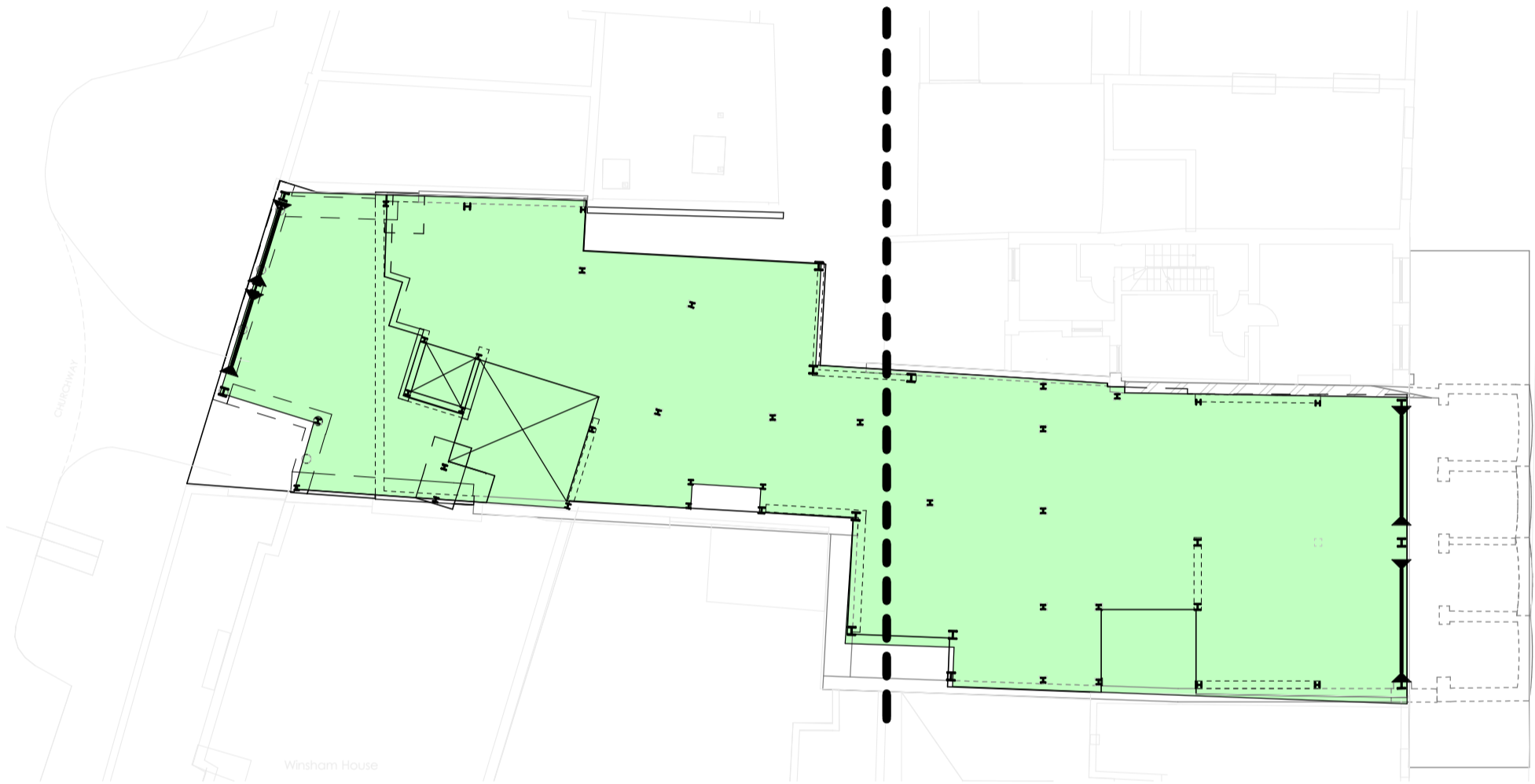
S Latimer – Director
On behalf of *SWAL Engineering Ltd*
samuel.latimer@swal-engineering.com



BASEMENT LEVEL LOADING DIAGRAM
SCALE= 1 : 200



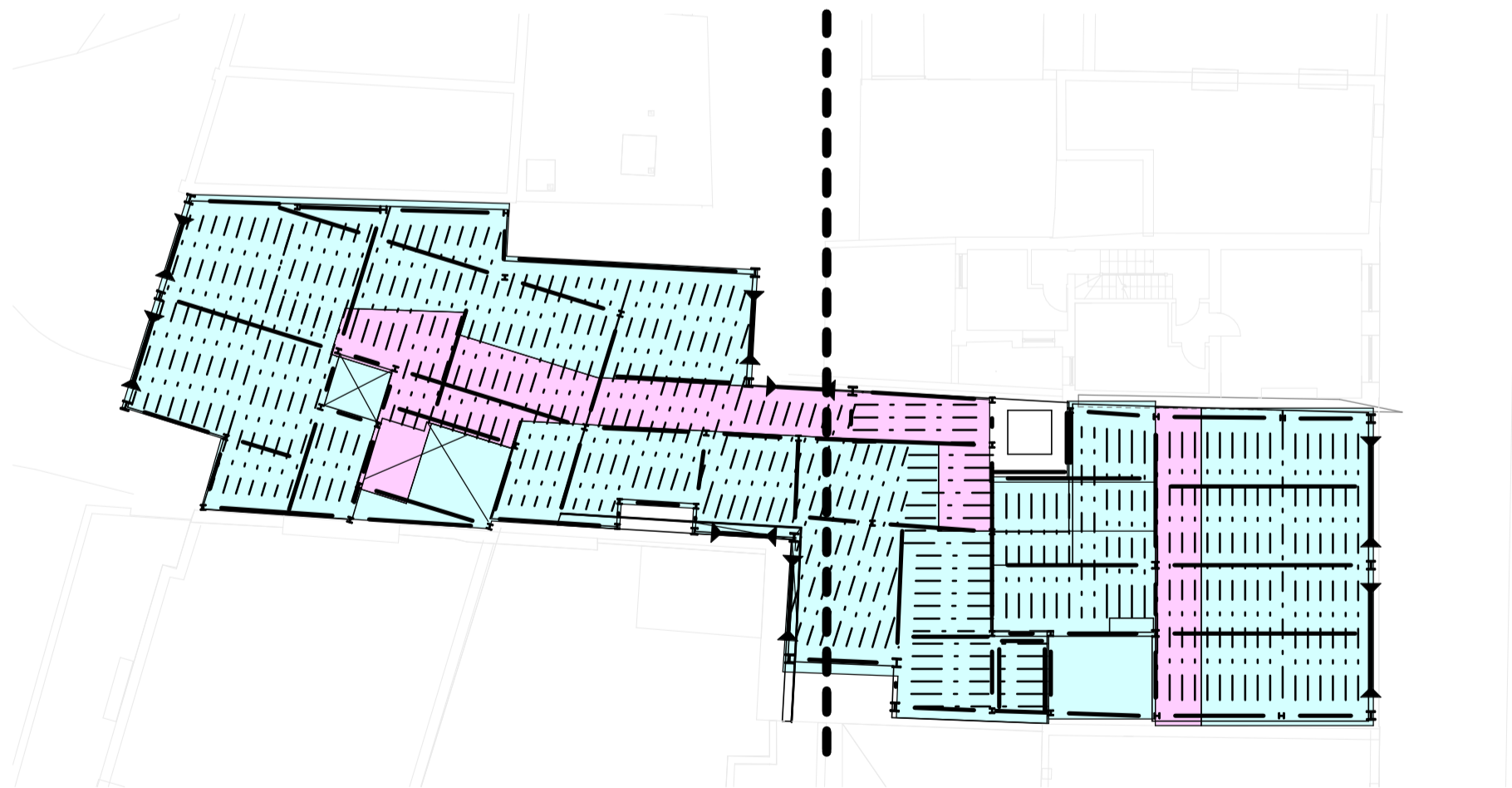
SECOND FLOOR LEVEL LOADING DIAGRAM
SCALE= 1 : 200



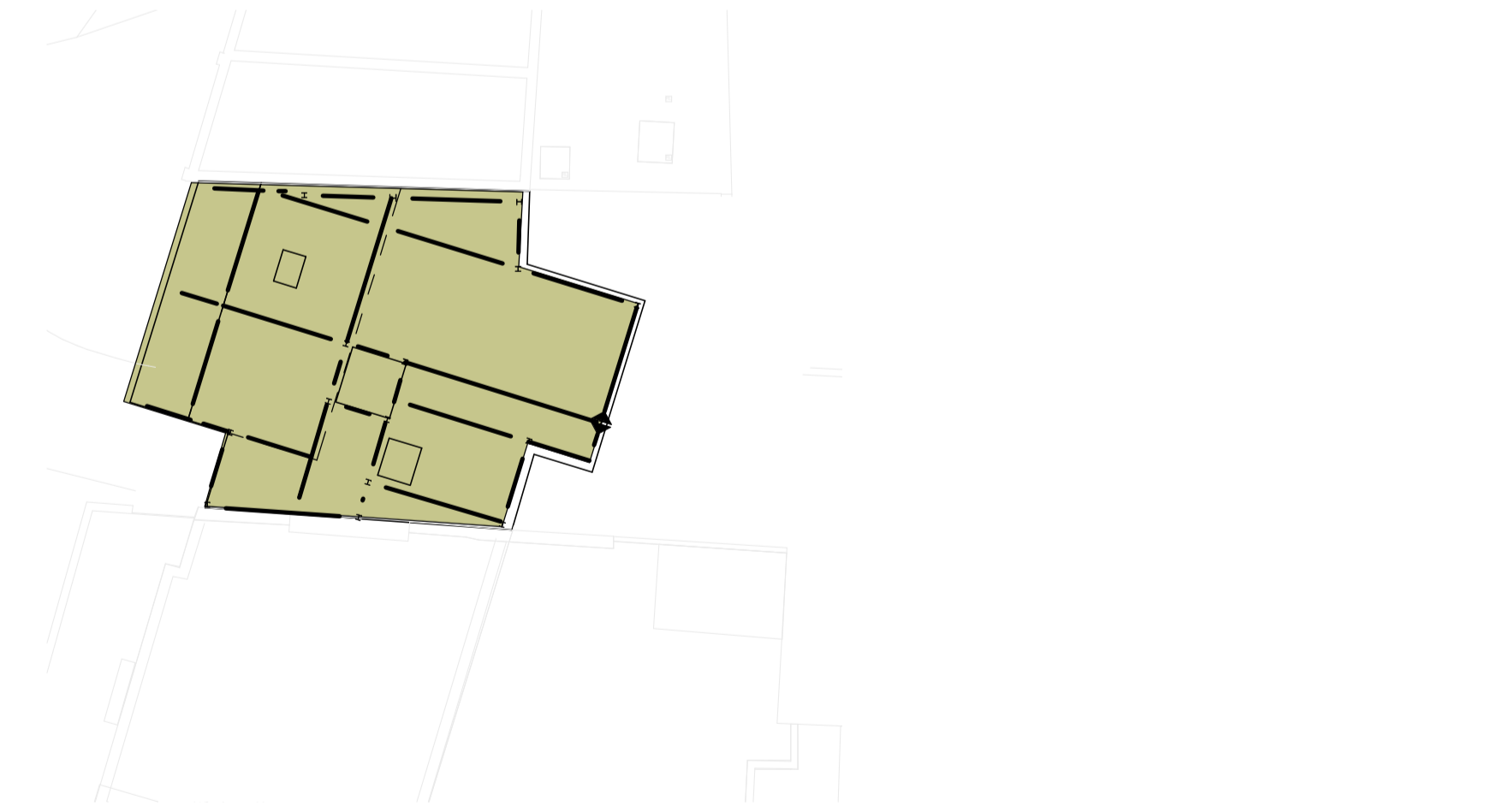
GROUND LEVEL LEVEL LOADING DIAGRAM
SCALE= 1 : 200



THIRD FLOOR LEVEL LOADING DIAGRAM
SCALE= 1 : 200



FIRST FLOOR LEVEL LOADING DIAGRAM
SCALE= 1 : 200



ROOF LEVEL LOADING DIAGRAM
SCALE= 1 : 200

LOADING KEY		
DEAD LOAD		LIVE LOAD
<div></div>	BASEMENT: 65mm SCREED + LIGHTWEIGHT FINISHES =2.75kPa	HOTEL=2.5kPa
<div></div>	GROUND FLOOR: 40mm SCREED + LIGHTWEIGHT FINISHES =1.50kPa	CIRCULATION=4.0kPa
<div></div>	TIMBER FLOOR BUILDUP: + LIGHTWEIGHT FINISHES =1.00kPa	HOTEL=2.0kPa
<div></div>	TIMBER FLOOR BUILDUP: + LIGHTWEIGHT FINISHES =1.00kPa	CIRCULATION=4.0kPa
<div></div>	PODIUM ROOF: TIMBER + SEDUM ROOF =1.50kPa	SNOW+MAINTENANCE=0.75kPa
<div></div>	TIMBER ROOF BUILDUP + PV PANELS =1.30kPa	SNOW+MAINTENANCE=0.75kPa

NOTES:

- NO DIMENSIONS TO BE SCALED FROM THIS DRAWING.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, SERVICES AND ENGINEERS DRAWINGS TOGETHER WITH THE RELEVANT SPECIFICATION AND GENERAL NOTES
- ANY NON STRUCTURAL ITEMS SUCH AS WATERPROOFING, CLADDING, FINISHES, FIRE STOPPING ARE TO BE THE ARCHITECTS SPECIFICATIONS.
- ALL PROPRIETARY PRODUCTS ARE TO BE USED AND INSTALLED STRICTLY IN ACCORDANCE WITH THE MANUFACTURERS DETAILS AND REQUIREMENTS.
- THE STRUCTURE IS DESIGNED AND DETAILED FOR THE PERMANANT CONDITION ONLY THE CONTRACTOR IS RESPONSIBLE FOR THE STRUCTURE IN ITS TEMPORARY CONDITION. ANY TEMPORARY WORKS REQUIRED DURING CONSTRUCTION AND ANY TEMPORARY LOADS ONTO THE EXISTING AND NEW STRUCTURE WHICH SHALL BE LESS THAN THOSE FOR WHICH IT HAS BEEN CONFIRMED OR DESIGNED RESPECTIVELY
- ALL WORKS UNDERTAKEN BY CONTRACTOR TO BE COMPLIANT WITH RELEVANT AND CURRENT BUILDING CODES, REGULATIONS AND GOOD PRACTICES.

Blue Roof Biodiverse System

BauderBLUE STORMcell biodiverse green roof

The BauderBLUE STORMcell biodiverse blue roof system offers a native green roof above a blue roof. The biodiverse (or brown roof) is designed to incorporate many habitats. The roof is typically sown and/or plug planted with a broad range of plant species with additional habitat features such as dead wood, stone/sand piles and dew ponds. The Biodiverse roof sits above the Bauder STORMcell blue roof system.

	Function	Product name	Thickness (mm)	Weight (kg/m ²)
1	Vegetation Layer	Typically Bauder's range of native, seed and plug mixes are used in combination with other habitat features.	Thickness and weight vary with season	
2	Substrate	SUB-BM UK biodiverse substrate	Varies typically 80-150	120-180
3	Filtration layer	FV 300 filter fleece	1	0.13
4	Drainage Layer	DSE 40 drainage board	40	15.3 (water filled)
5	Attenuation	RWR 100 attenuation cell	100	8.06
6	Protection Layer	FSM 600 protection mat	6	3.6
7	Underlying Waterproofing	Bauder's underlying waterproofing system	Not included	Not included
8	Flow Restrictor	ST flow restrictor and overflow	N/A	N/A
System build-up (saturated) Fully saturated excluding the water held in the RWR 100 blue roof attenuation cell during a rain event and the underlying waterproofing			227-297	148-208

In-depth and up-to-date product specific technical data is available for each element within a system.

Download from our website bauder.co.uk/technical-centre

Please note: Blue roof require careful design, the underlying deck must be designed to zero falls with no back falls away from outlets as per BS6229

Please note: All green roofs require water during times of drought. Bauder recommend that the watering and maintenance of this roof is considered and addressed during its design.

Indicative biodiverse blue roof system

