SURFACE WATER ASSESSMENT & OUTLINE SUDS STRATEGY

155-157 REGENT'S PARK ROAD CAMDEN

LBHGEO

LBH4540aSUDS

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		Darcy Kitson-Boyce MEng (Hons) GMICE FGS FRGS	Seamus Lefroy-Brooks BSc(hons) MSc CEng MICE CGeol FGS CEnv MIEnvSc FRGS SiLC NQMS SQP DoWCoP QP RoGEP UK Registered Ground Engineering Adviser
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LBHGEO Ltd.

12 Little Balmer

Buckingham

MK18 1TF

Tel: 01280 308160

email: enquiry@LBHGEO.co.uk

website: www.LBHGEO.co.uk

Company registered in England No. 4922494

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FOREWORD-GUIDANCE NOTES

GENERAL

This report has been prepared for a specific client and to meet a specific brief. The preparation of this report may have been affected by limitations of scope, resources or time scale required by the client. Should any part of this report be relied on by a third party, that party does so wholly at its own risk and LBHGEO disclaims any liability to such parties.

The observations and conclusions described in this report are based solely upon the agreed scope of work. LBHGEO has not performed any observations, investigations, studies or testing not specifically set out in the agreed scope of work and cannot accept any liability for the existence of any condition, the discovery of which would require performance of services beyond the agreed scope of work.

VALIDITY

Any use of or reliance upon the report in circumstances other than those for which it was commissioned shall be at the client's sole risk. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should therefore not be relied upon in such altered circumstances.

THIRD PARTY INFORMATION

The report may present an opinion based upon information received from third parties. However, no liability can be accepted for any inaccuracies or omissions in that information.

1. INTRODUCTION

1.1 BACKGROUND

It is proposed to demolish the existing buildings on site and to construct a new multi-storey hotel.

The scheme involves a part-seven, part-four storey building, together with a double storey basement. A roof terrace is to be provided above the four-storey section.

1.2 BRIEF

LBHGEO have been appointed to prepare a Surface Water Drainage Assessment & Outline SuDS Strategy to support a forthcoming planning application to be submitted to the London Borough of Camden.

1.3 SUDS GUIDANCE

The government advice is that developers should seek opportunities to reduce the overall level of flood risk through the appropriate application of sustainable drainage systems.

Sustainable drainage systems are designed to control surface water run off close to where it falls and mimic natural drainage as closely as possible. They provide opportunities to:

- reduce the causes and impacts of flooding;
- remove pollutants from urban run-off at source;
- combine water management with green space with benefits for amenity, recreation and wildlife.

The aim is to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable:

1. into the ground (infiltration);
2. to a surface water body;
3. to a surface water sewer, highway drain, or another drainage system;
4. to a combined sewer.

The London Borough of Camden requires drainage solutions to incorporate SuDS principles as laid out in the Non-Statutory Technical Standards[1] for Sustainable Drainage Systems and the London Plan[2].

For redevelopment sites where there is a net increase in impermeable area, development must include at least one 'source control' SuDS measure. Examples of potential Source Control measures include:

- blue/green roof
- rainwater harvesting
- bio-retention
- rain garden
- permeable paving

[1] DEFRA March 2015 Non-Statutory Technical Standards (NSTS) for sustainable drainage systems
[2] London Plan Chapter Five - London's Responses to Climate Change Policy 5.1.3 Sustainable Drainage

Underground storage/attenuation tanks are not encouraged and are to be used only as a last resort.

The Camden Local plan provides guidance for water and flooding under Policy CC3, where the council will seek to ensure a development reduces the risk of flooding where possible and will require a development to utilise Sustainable Drainage Systems (SuDS) in line with the drainage hierarchy to achieve a greenfield run-off rate where feasible.

Additionally, the Camden Planning Guidance for Water and Flooding (CPG) (March 2019) states the following:

> *"A drainage report is required for all major applications, basement development, and vulnerable development in areas identified as at risk of flooding (details of what this should include can be found in paragraph 8.67 of the Local Plan). The Council will expect plans and application documents to describe how water will be managed within the development, including an explanation of the proposed SuDS, the reasons why certain SuDS have been ruled out and detailed information on materials and landscaping.*
>
> *The Council will expect developments to achieve a greenfield surface water run-off rate where feasible once SuDS have been installed."*

1.4 REPORT STRUCTURE

This report describes the site characteristics and the proposed development, following which consideration is then given to the feasibility of different SuDS techniques for this site, in line with the SuDS hierarchy.

An analysis is then presented of surface water run-off and of the attenuation volume that will be required to achieve the required reduction in the predicted run-off rates, taking into account increased rainfall rates due to anticipated climatic change.

A SuDS strategy is then developed including information about the proposed SuDS types, with an aim to reduce the drainage discharge rates as far as can be reasonably achieved in the proposed post-development scenario.

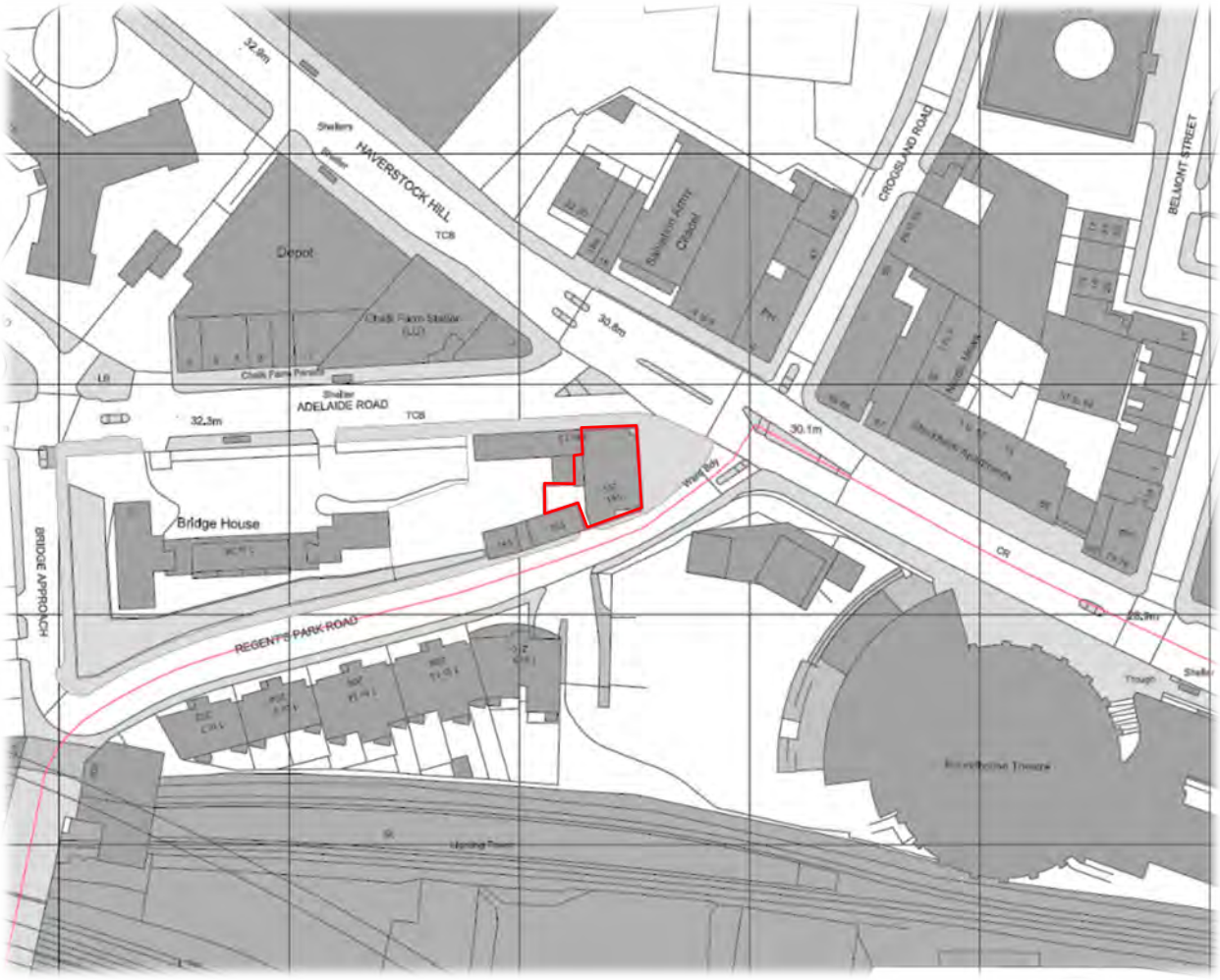
The report is accompanied by detailed calculations and a summary sustainable drainage pro-forma.

2. THE SITE

2.1 SITE LOCATION

The site is situated at the junction of Regent's Park Road, Haverstock Hill and Adelaide Road, approximately 15m to the southeast of Chalk Farm underground station.

The site may be located approximately by postcode NW1 8BB or by National Grid Reference 528155, 184380.



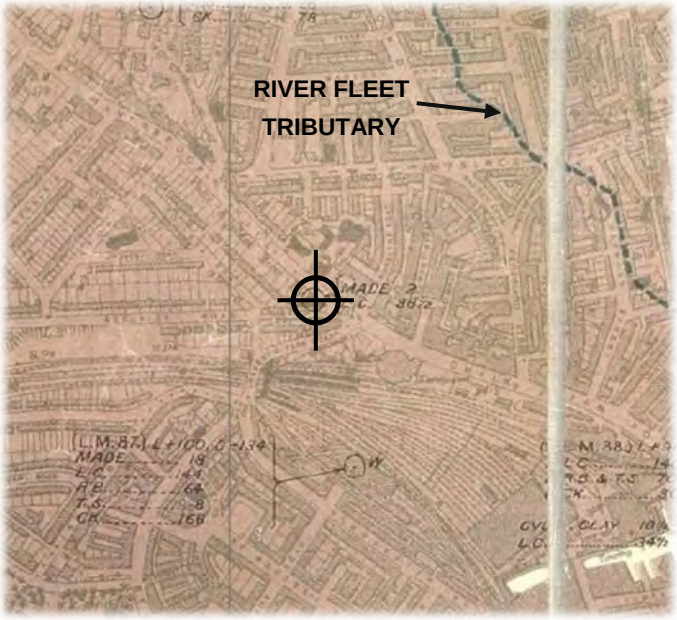
2.2 TOPOGRAPHICAL SETTING

The site lies on a lower slope of Hampstead Hill that is gently falling to the southeast, towards a culverted tributary of the River Fleet.

2.3 GROUND CONDITIONS

The site is directly underlain by the London Clay Formation, which is essentially impermeable.

A ground investigation was undertaken in July 2018, confirming that London Clay is present beneath a limited depth of made ground.



2.4 SITE DESCRIPTION

The site is occupied by a three storey terraced building with mansard roof at Nos. 155 – 157 Regent's Park Road. The building comprises a single storey basement that occupies most of the building footprint. It is understood the basement extends to approximately 3.5m depth below ground level.

The site is entirely hard surfaced and, aside from the building, comprises a portion of the car park at the rear of the buildings, which is enclosed by two adjoining terraces.

FRONT VIEW OF THE SITE

The buildings at Nos. 1 – 13 Adelaide Road and Nos. 151 – 153 Regent's Park Road adjoin the existing buildings on the site to form a U-shape. The neighbouring structures are similarly constructed, with Nos. 151-153 Regent's Park Road comprising a similar three-storey terrace with mansard roof, while Nos. 1 – 13 Adelaide Road forms a two--storey terrace with a mansard roof, as well as a single storey extension to the rear.

2.5 EXISTING SURFACE WATER DRAINAGE

REAR VIEW OF THE SITE

The site (approximately 0.07ha in area) is entirely hard surfaced with the existing building and rear yard occupying the entirety of the site area. There are considered to be no SUDS features present on site.

Rainfall incident on the roof is collected via pipework that runs down the front and rear faces of the building and is fed to the combined sewer system. A series of gullies are present in the car park to the rear and direct surface water to the small diameter (225mm to 305mm dia.) combined sewer running eastwards beneath Regent's Park Road.

A similar system is present at the front of the site and it is expected that runoff is directed towards a sewer manhole, immediately adjacent to the east of the site, on the same sewer running beneath Regent's Park Road. This then joins a larger combined sewer (1600mm x 1219mm) running south-eastwards below Haverstock Hill.

KEY:

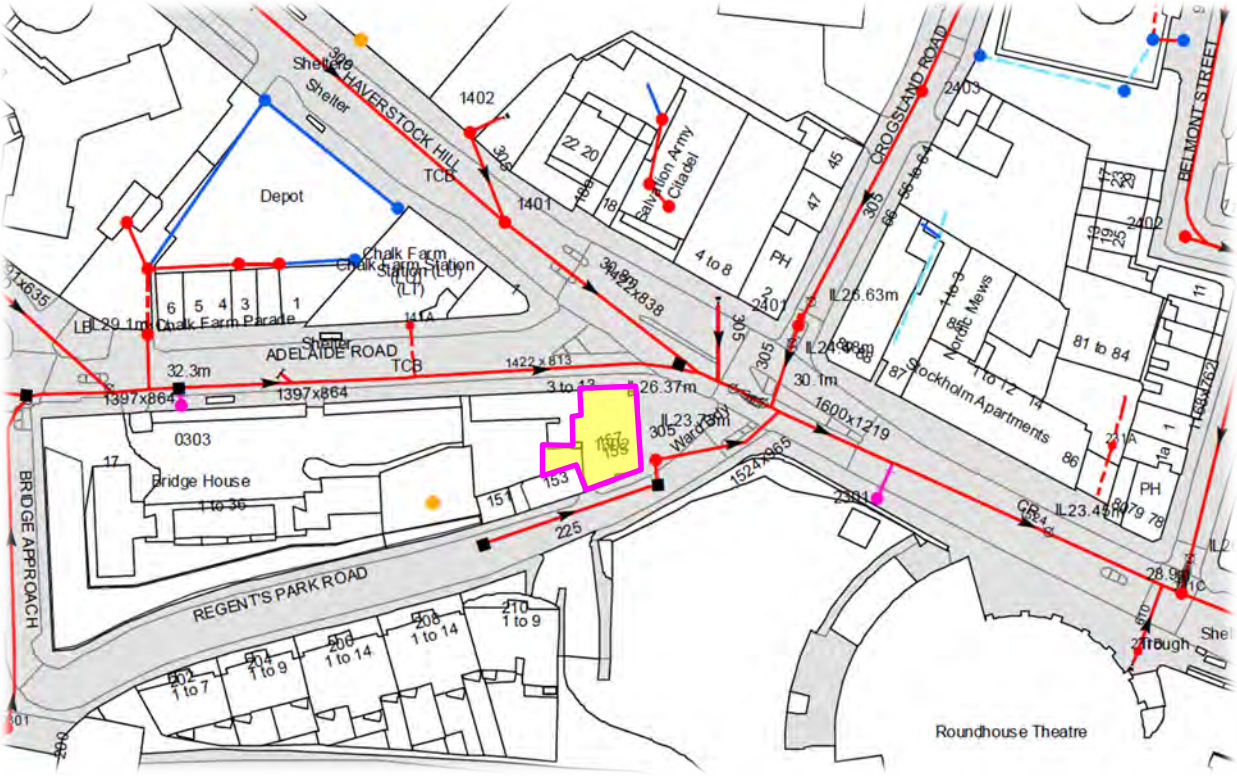
BUILDING

PAVED

RUN-OFF (IMPERMEABLE)

DEVELOPMENT AREA

COMBINED DRAIN



PUBLIC SEWER NETWORK IN THE VICINITY OF THE SITE

3. SURFACE WATER FLOOD RISK

The Environment Agency (EA) Surface Water Flood Map indicates that the site itself is at very low to low risk of surface water flooding, which equates to an assessed annual probability of flooding of <1%.

Although neighbouring the site there are areas of medium risk of surface water flooding (0.1% to 3.3% annual probability of flooding) along Adelaide Road and Haverstock Hill, a site inspection reveals that there is in practice no potential overland flood route into the courtyard car park to the rear of the site other

EXTRACT OF EA SURFACE WATER FLOOD RISK MAP

than from Regents Park Road.

Thus, while on the face of things the EA Surface Water Flood Map suggests only a low risk of flooding to this rear car park, it is recommended that a study be made of the existing drainage provision to the rear courtyard in order to ensure that surface water is effective led away and is not permitted to collect in the new bicycle store area from where it could potentially enter the rear of the new building.

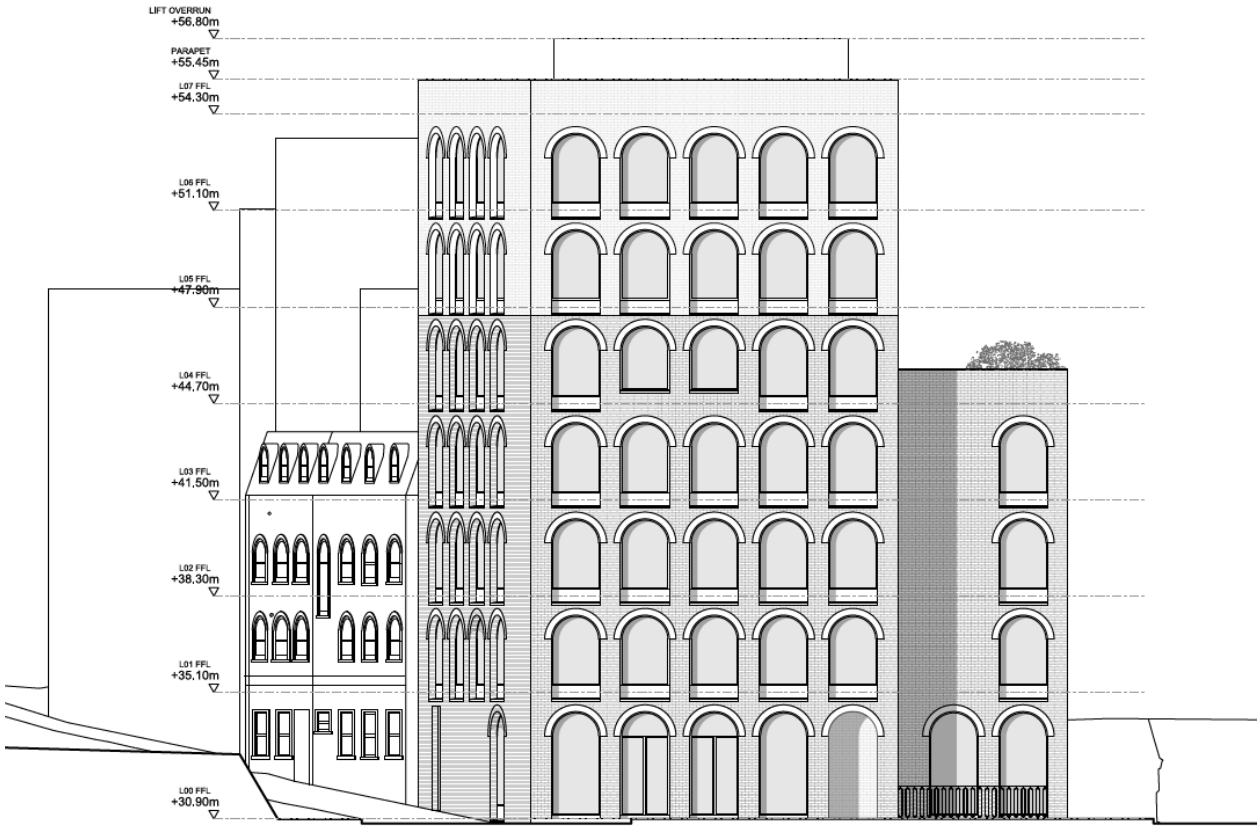
4. PROPOSED DEVELOPMENT

It is proposed to construct a part-seven, part-four storey hotel including a two storey basement.

The proposed development includes demolition of the existing four storey building at Nos. 155 – 157 Regent's Park Road, followed by excavation of a two storey basement to an approximate depth of 7m (+24m OD) below existing ground level.

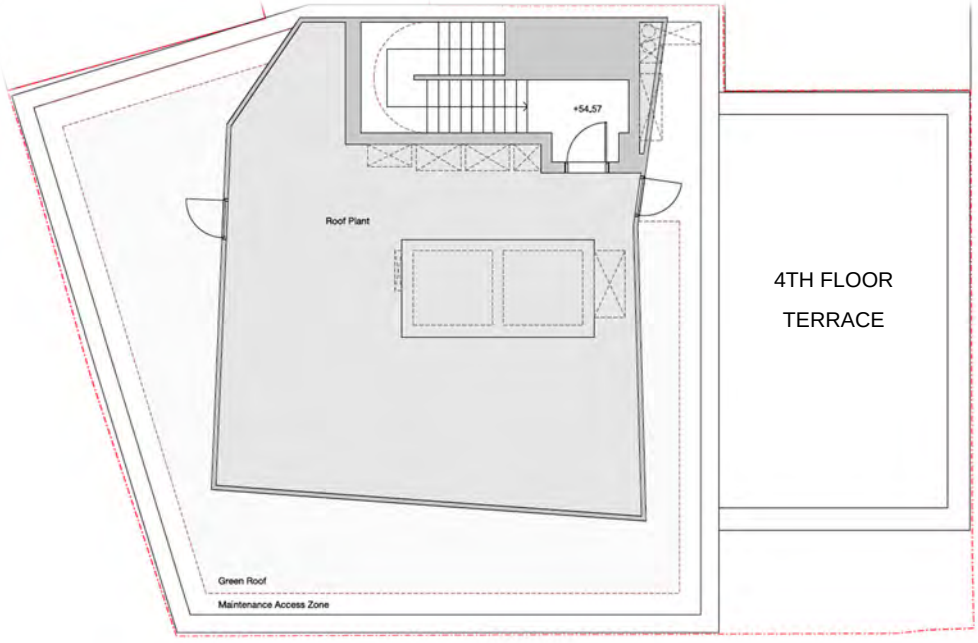
Following amendment to the proposed scheme, the basement is now to cover the entire building footprint. In addition, the basement extent at the rear of the building was extended to be directly adjacent to the rear wall of Nos. 1 – 13 Adelaide Road.

A cycle store is proposed at the rear of the building.



PROPOSED FRONT ELEVATION

PROPOSED GROUND FLOOR PLAN



PROPOSED ROOF PLAN

SCHEDULE OF ESTIMATED AREAS										
	EXISTING					PROPOSED				
		Cv	%		%		Cv	%		%
BUILDING	195sqm	0.9	71%	**% IMP**	**100%**	215sqm	0.9	78%	**% IMP**	**100%**
HARD SURFACING	80sqm	0.9	29%			60sqm	0.9	22%		
LANDSCAPING	0sqm	0.4	0%	**% PER**	**0%**	0sqm	0.4	0%	**% PER**	**0%**
TOTAL DEVELOPMENT AREA	275sqm		100%		100%	273sqm		100%		100%

5. SURFACE WATER MANAGEMENT

5.1 SURFACE WATER MANAGEMENT (SWM) OBJECTIVES

The drainage strategy follows the guidance set out in the 2015 CIRIA C753 SuDS Manual; the principle of SuDS design is that surface water runoff is managed for maximum benefit.

5.2 SUDS DISCHARGE HIERACHY

The surface water runoff should be managed using the following techniques, as outlined in order of priority by the following drainage hierarchy:

SuDS Drainage Hierarchy	Suitable for the site? (Y/N)	Comment
Store rainwater for later use	Y	There is limited space for rainwater harvesting. Small water butts could be introduced at the site.
Use infiltration techniques	N	The London Clay is unsuitable for soakaway infiltration.
Attenuate rainwater in ponds or open water features for gradual release	N	There is insufficient space to introduce open water garden features at this site.
Attenuate rainwater by storing in tanks or sealed water features for gradual release	Y	There is scope to provide attenuation via a green / blue roof
Discharge rainwater direct to a watercourse	N	There is no available watercourse.
Discharge rainwater to a surface water sewer/drain	N	There is no surface water sewer serving the site.
Discharge rainwater to the combined sewer	Y	The site discharges to the combined sewer beneath Regent's Park Road.

The objective is to control the quantity of runoff to support the management of flood risk and maintain and protect the natural water cycle. The hierarchy seeks to ensure that surface water runoff is controlled as near to its source as possible to mimic natural drainage systems and retain water on or near to the site.

Before disposal of surface water to the public sewer is considered, all other options set out in the above hierarchy need to be exhausted.

5.3 FEASIBLE SUDS COMPONENTS

SUDS Component	Description	Suitable for the site? (Y/N)	Comment
Rainwater harvesting	Collection of rainwater runoff from roofs or impermeable areas for reuse.	Y	Water butts could potentially be included.
Green roofs	Vegetated areas installed on the top of buildings provide visual and ecological benefits in addition to surface water runoff reduction and enhanced building performance.	Y	A green / blue roof can be incorporated into the roof and the 4th floor terrace.
Blue roofs	Roof design intended to store water providing attenuation storage.	Y	
Infiltration systems	Infiltration can contribute to reducing runoff rates and volumes while supporting base flow and groundwater recharge processes.	N	The London Clay is not suitable for infiltration.
Proprietary treatment systems	Proprietary treatment systems are manufactured products which remove specified pollutants from surface water runoff.	N	Not required.
Filter strips/drains	Filter strips are gently sloping strips of grass that provide treatment of runoff from adjacent impermeable areas. Filter drains are gravel or stone filled trenches which provide temporary subsurface storage for attenuation conveyance and filtration of surface water runoff.	N	There is insufficient space.
Swales	Swales are shallow, flat bottomed, vegetated open channels designed to convey, treat, and attenuate surface water runoff.	N	There is insufficient space.
Bioretention systems	Rain gardens or shallow landscaped depressions that may reduce surface water runoff rates and volumes and/or treat pollution using engineered soils and vegetation.	N	There is insufficient space.

Trees	Trees aid surface water management through transpiration, inception, infiltration and phytoremediation.	N	There is insufficient space.
Pervious Pavements	Pervious pavements facilitate the infiltration of surface water into a subsurface structure where filtration, adsorption, biodegradation or sedimentation may also provide treatment of the runoff.	N	There is insufficient space for any meaningful areas to be covered. Infiltration is additionally not possible with London Clay present at a shallow depth.
Attenuation storage tanks	Attenuation storage tanks provide below-ground void space for the temporary storage of surface water before infiltration, controlled release or use.	N	There is insufficient space.
Detention basins	Attenuation storage in the form of dry landscaped depressions.	N	There is insufficient space.
Ponds and wetlands	Permanent water filled ponds or wetlands that provide attenuation storage or treatment of surface water runoff.	N	There is insufficient space.

5.4 BENEFITS

The types of benefits that may be achieved by utilising SuDS are categorised by the design objectives outlined in the following section.

5.4.1 WATER QUANTITY

There is scope to reduce the runoff rates and volumes through the inclusion of attenuation storage in the form of blue roof storage at both roof level and beneath the 4th floor terrace.

The aim is to provide attenuation storage sufficient to limit the discharge rates and volumes to the estimated equivalent greenfield runoff rates, in consideration of the predicted effect of climate change.

5.4.2 WATER QUALITY

The water quality design objective is to manage the quality of runoff to prevent pollution, supporting the management of water quality in the receiving surface waters and groundwater and design system resilience to cope with future change.

The areas of green roof provided as part of the roof as well as the 4th floor terrace will offer scope for filtering of the surface water.

5.4.3 AMENITY

The amenity design objective is to create and sustain better places for people by implementing the following criteria for the site:

- Maximise multi-functionality
- Enhance visual character
- Deliver safe surface water management systems
- Support development resilience/adaptability to future change
- Maximise legibility
- Support community environmental learning

The areas of green roof as part of the 4th floor terrace provide some amenity value in the form of new planting, with a potential to introduce both shrubs and small trees in planters.

5.4.4 BIODIVERSITY

The biodiversity design objective is to create and sustain better places for nature by implementing the following criteria for the site:

- Support and protect natural local habitats and species
- Contribute to the delivery of local biodiversity objectives
- Contribute to habitat connectivity
- Create diverse, self-sustaining and resilient ecosystems.

Similarly, the biodiversity objective for this site can be met through the inclusion of a green roof as part of the roof and the 4th floor terrace as described above.

5.5 SUDS CONSTRUCTION

The blue roof attenuation storage tanks provide the most efficient storage solution, while the green roof vegetation to be introduced both at roof level and as part of the the 4th floor terrace will create some amenity and biodiversity value.

The two roof attenuation areas can be connected in series through a downpipe with a flow control from the roof down to the 4th floor terrace.

It is likely that the drainage will be directed towards an underground tank collector tank before finally discharging to the public sewer, to be controlled by an orifice flow control.

5.6 MAINTENANCE

There is a need to introduce clear arrangements in place for on-going maintenance over the lifetime of the development.

The SuDS features will require some regular inspection and maintenance to clear any accumulated sediment or debris which may reduce the storage capacity as well as to ensure the inlets and outlets are clear and do not impede the water flow.

Maintenance activities can be broadly categorised as:

- Regular maintenance consists of inspections and basic tasks carried out to a frequent schedule (more frequently than once per year) including inspections, silt, litter or debris removal and vegetation management.

- Occasional maintenance comprises tasks that are required on a much less frequent and predictable basis (e.g. annual checks)

- Remedial maintenance describes the intermittent tasks that may be required to rectify faults associated with the system such as inlet and outlet repairs, infiltration surface rehabilitation, replacement of blocked filter materials/fabrics, system rehabilitation immediately following a pollution event.

6. INITIAL DESIGN CONSIDERATIONS

An analysis has been undertaken of the pre- and post- development surface water run-off rates and volumes over a range of storm intensities and durations.

6.1 GREENFIELD RUNOFF RATE

The Greenfield runoff rates from the site have been calculated using the UK SuDS online tool and the Institute of Hydrology (IoH) 124 methodology.

Greenfield Rates:	
Qbar:	0.12 l/sec
1 in 1	0.10 l/sec
1 in 30	0.27 l/sec
1 in 100	0.38 l/sec
1 in 200	0.44 l/sec

6.2 EXISTING RUNOFF RATE

The site comprises a total area of approximately 275m^2 of which 100% is impermeably surfaced. No existing SuDS features are present at the site.

The existing peak storm runoff for the 1% (1 in 100 year) annual probability 15 min rainfall event on the site is estimated to be 8.4 I/sec. The calculation was based on the Wallingford Procedure and the resulting runoff was calculated using the Modified Rational Method with an M5-60 of 20mm, an 'r' value of 0.42 and a critical rainfall intensity of 99.3 mm/hr.

The rainfall runoff volume for the 1% (1 in 100 year) annual probability, 6 hour duration storm from the existing site is estimated to be 20.3 m^3.

7. PROPOSED SURFACE WATER DRAINAGE SCHEME

Surface water falling on the roof areas will be attenuated directly by the green/blue roof arrangement of the building.

Calculations indicated that some 20m^3 of attenuation storage will be required for the 1 in 100 year rainfall event, in consideration of up to 40% climate change allowance, in order to reduce the proposed discharge rate to the estimated Greenfield discharge rates.

It is envisaged that this could potentially be provided as follows:

- Blue / Green roof above 7-storey section 15m^3
- Blue / Green roof above 4-storey section 5m^3

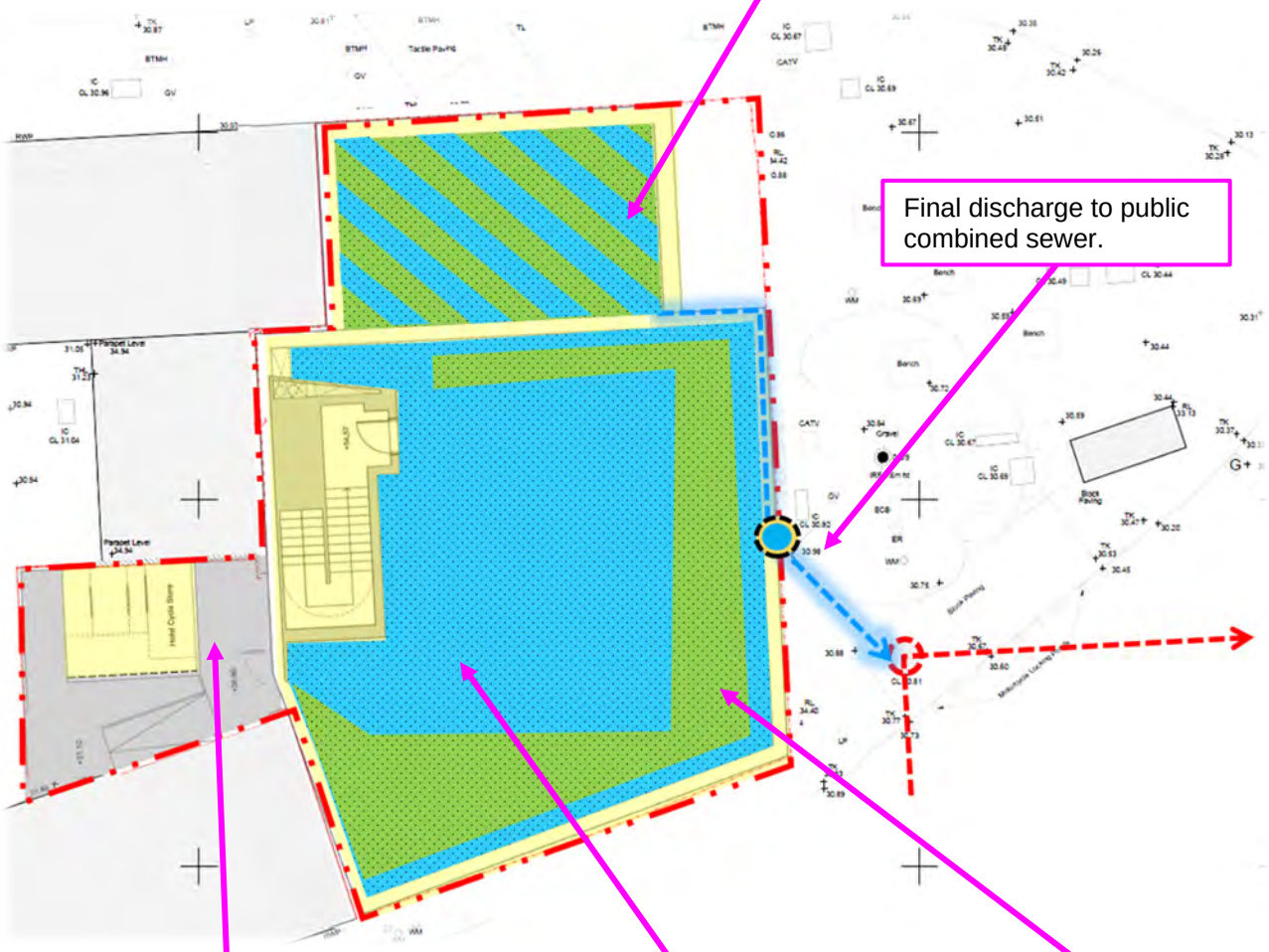
It is understood both the outer roof areas as well as those overlain by the proposed plant will be available for a potential blue roof storage area.

A schematic plan of the proposed SuDS features on site, which would provide the necessary attenuation storage, is presented overleaf.

Not shown on plan:

- Underground collector tank for drainage prior to discharge to the public sewer.
- Potential rainwater harvesting storage butts

48m^2 of blue and green roof storage matrix providing approx. **5m^3 of attenuation storage** over a 100mm deep storage layer. Green roof areas are to be added to the landscaping of the roof terrace.



Final discharge to public combined sewer.

Existing drainage to the rear of the building to be left unchanged from the existing, discharging into the public sewer off-site

133m^2 of blue roof storage underneath the entirety of the roof (except the stair core) providing approx. **15m^3 of attenuation storage**.
The storage is provided by a 100mm thick layer underneath the roof plant and a 150mm thick layer underneath the external green roof.

56m^2 of potential green roof areas located outside of the roof plant areas.

8. CONCLUSION

This assessment has demonstrated that the developer has sought opportunities to reduce the overall level of flood risk through the appropriate application of sustainable drainage systems.

This assessment demonstrates that there is scope for various SuDS features that can restrain run-off, in accordance with Policy CC3 of the Camden Local Plan, to mitigate the risk of future surface water flooding, taking into account potential climate change.

Once the detailed drainage design has been drawn up by the engineer a detailed drainage submission will need to be provided to Camden including:

- Confirmation of all the SuDS measures included in the final design
- Detailed drawings of all the proposed drainage components
- Detailed drawings showing the drainage layout
- Detailed flow calculations to demonstrate that the drainage system will not flood
- A detailed maintenance strategy
- Evidence of appropriate consultation with Thames Water

APPENDIX

SUSTAINABLE DRAINAGE PRO-FORMA

PRELIMINARY DRAINAGE CALCULATIONS

1. Project & Site Details	Project / Site Name (including sub-catchment / stage / phase where appropriate)	155-157 REGENT'S PK RD
	Address & post code	NW1 8BB
	OS Grid ref. (Easting, Northing)	E 528155
		N 184380
	LPA reference (if applicable)	
	Brief description of proposed work	Demolition of the existing structure and construction of a part-seven, part-four storey hotel building, together with a double storey basement.
	Total site Area for Attenuation	275 m^2
	Total existing impervious area	275 m^2
	Total proposed impervious area	275 m^2
	Is the site in a surface water flood risk catchment (ref. local Surface Water Management Plan)?	No
	Existing drainage connection type and location	Combined Sewer beneath Regent's Park Road
	Designer Name	S R L B
	Designer Position	Principal
	Designer Company	LBHGEO

2. Proposed Discharge Arrangements

2a. Infiltration Feasibility

Superficial geology classification	N/A
Bedrock geology classification	London Clay
Site infiltration rate	1.E-09 m/s
Depth to groundwater level	No groundwater table present
Is infiltration feasible?	No

2b. Drainage Hierarchy

	Feasible (Y/N)	*Proposed (Y/N)*
1 store rainwater for later use	Y	Y
2 use infiltration techniques, such as porous surfaces in non-clay areas	N	N
3 attenuate rainwater in ponds or open water features for gradual release	N	N
4 attenuate rainwater by storing in tanks or sealed water features for gradual release	Y	Y
5 discharge rainwater direct to a watercourse	N	N
6 discharge rainwater to a surface water sewer/drain	N	N
7 discharge rainwater to the combined sewer.	Y	Y

2c. Proposed Discharge Details

Proposed discharge location	Combined Sewer beneath Regent's Park Road
Has the owner/regulator of the discharge location been consulted?	No - as there will be a reduction in the volume and rate of water entering the TW sewer

3. Drainage Strategy

3a. Discharge Rates & Required Storage

	Greenfield (GF) runoff rate (l/s)	*Existing discharge rate (l/s)*	*Required storage for GF rate (m^3)*	*Proposed discharge rate (l/s)*
Qbar	0.12			
1 in 1	0.10	2.84	4.84	0.10
1 in 30	0.27	6.93	9.89	0.27
1 in 100	0.38	8.88	12.98	0.38
1 in 100 + CC			20.29	0.38
Climate change allowance used		40%		
3b. Principal Method of Flow Control		Orifice		

3c. Proposed SuDS Measures

	Catchment area (m^2)	*Plan area (m^2)*	*Storage vol. (m^3)*
Rainwater harvesting	0		0
Infiltration systems	0		0
Green roofs	0	0	0
Blue roofs	200	180	20
Filter strips	0	0	0
Filter drains	0	0	0
Bioretention / tree pits	0	0	0
Pervious pavements	0	0	0
Swales	0	0	0
Basins/ponds	0	0	0
Attenuation tanks	0		0
Total	200	180	20

4. Supporting Information	4a. Discharge & Drainage Strategy	*Page/section of drainage report*
	Infiltration feasibility (2a) – geotechnical factual and interpretive reports, including infiltration results	Appendix to the SuDS Assessment
	Drainage hierarchy (2b)	Section 5.2
	Proposed discharge details (2c) – utility plans, correspondence / approval from owner/regulator of discharge location	Discharge is to be via existing manhole and existing sewer connection - there will be no new connection and a reduction in the volume and rate of surface water entering the TW sewer
	Discharge rates & storage (3a) – detailed hydrologic and hydraulic calculations	Appendix to the SuDS Assessment
	Proposed SuDS measures & specifications (3b)	Section 6 & Section 7
	4b. Other Supporting Details	*Page/section of drainage report*
	Detailed Development Layout	P13 & P14
	Detailed drainage design drawings, including exceedance flow routes	P23
	Detailed landscaping plans	P13
	Maintenance strategy	Section 5.6
	Demonstration of how the proposed SuDS measures improve:	SuDS Assessment report
	a) water quality of the runoff?	Section 5.4
	b) biodiversity?	
	c) amenity?	

GREENFIELD RUNOFF

Catchment Area: 275sqm 0.028ha

PO Code : NW1 8BB

Hydrological Region: 6 *From Wallingford on-line tool*

SAAR: 640mm *From Wallingford on-line tool*

SOIL type: 4 *From Wallingford on-line tool*

SPR: 0.47 *Derived as follows:*

SOIL	*Sand*	*Clayey Sand*	*Sandy Clay*	*Clay*	*Rock*
	1	*2*	*3*	*4*	*5*
SPR	*0.1*	*0.3*	*0.37*	*0.47*	*0.53*

From Wallingford on-line tool using IH 124 Method

Qbar: 214.59 *Calculated from SPR and SAAR*

Greenfield Peak Run-off Rate:

		Growth curve Factor
1 in 1	*182.4 l/sec*	*0.85*
1 in 30	*493.6 l/sec*	*2.30*
1 in 100	*684.5 l/sec*	*3.19*
1 in 200	*802.6 l/sec*	*3.74*

Qbar: 0.12 l/sec

Greenfield Peak Run-off Rate:

1 in 1	**0.10 l/sec**
1 in 30	**0.27 l/sec**
1 in 100	**0.38 l/sec**
1 in 200	**0.44 l/sec**

National Non-Statutory Guidance:

For greenfield developments, the peak runoff rate from the development to any highway drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event should never exceed the peak greenfield runoff rate for the same event.

For developments which were previously developed, the peak runoff rate from the development to any drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event should be as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event, but should never exceed the rate of discharge from the development prior to redevelopment for that event.

Where reasonably practicable, for greenfield development, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event should never exceed the greenfield runoff volume for the same event.

Where reasonably practicable, for developments which have been previously developed, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event must be constrained to a value as close as is reasonably practicable to the greenfield runoff volume for the same event, but should never exceed the runoff volume from the development site prior to redevelopment for that event.

SuDs CALCULATIONS	
Project: 155-157 REGENT'S PK RD	
GREENFIELD RUNOFF	
Sheet 1 of 8	
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RAINFALL PEAK INTENSITY (i)

M5-60 :	20	*From Wallingford Fig A1*
r:	0.42	*From Wallingford Fig A2*

D Duration		**Z1**	**M5-D**
5min	5min	0.38	7.6mm
10min	10min	0.55	11.0mm
15min	15min	0.65	13.0mm
30min	30min	0.75	15.0mm
1hr	60min	1.00	20.0mm
2hr	120min	1.20	24.0mm
4hr	240min	1.40	28.0mm
6hr	360min	1.60	32.0mm
10hr	600min	1.70	34.0mm
24hr	1440min	2.20	44.0mm
48hr	2880min	2.50	50.0mm

							Z2				
D Duration		**M5-D**	**M1-D**	**M2-D**	**M3-D**	**M4-D**	**M5-D**	**M10-D**	**M20-D**	**M30-D**	**M100-D**
5min	5min	7.6mm	0.62	0.79	0.89	0.97	1.02	1.19	1.36	1.43	1.79
10min	10min	11.0mm	0.61	0.79	0.90	0.97	1.03	1.22	1.41	1.49	1.91
15min	15min	13.0mm	0.61	0.79	0.90	0.97	1.03	1.22	1.41	1.49	1.91
30min	30min	15.0mm	0.62	0.81	0.90	0.97	1.03	1.24	1.44	1.53	1.99
1hr	60min	20.0mm	0.64	0.81	0.90	0.97	1.03	1.24	1.45	1.54	2.03
2hr	120min	24.0mm	0.64	0.81	0.90	0.97	1.03	1.24	1.45	1.54	2.03
4hr	240min	28.0mm	0.66	0.82	0.91	0.97	1.03	1.24	1.44	1.53	2.01
6hr	360min	32.0mm	0.68	0.83	0.91	0.97	1.03	1.22	1.42	1.51	1.97
10hr	600min	34.0mm	0.68	0.83	0.91	0.97	1.03	1.22	1.42	1.51	1.97
24hr	1440min	44.0mm	0.70	0.84	0.92	0.97	1.02	1.19	1.38	1.47	1.89
48hr	2880min	50.0mm	0.72	0.85	0.93	0.98	1.02	1.17	1.34	1.42	1.81

							MT-D				
D Duration		**M5-D**	**M1-D**	**M2-D**	**M3-D**	**M4-D**	**M5-D**	**M10-D**	**M20-D**	**M30-D**	**M100-D**
5min	5min	7.6mm	4.7mm	6.0mm	6.8mm	7.4mm	7.8mm	9.0mm	10.3mm	10.8mm	13.6mm
10min	10min	11.0mm	6.7mm	8.7mm	9.9mm	10.7mm	11.3mm	13.4mm	15.5mm	16.4mm	21.0mm
15min	15min	13.0mm	7.9mm	10.3mm	11.7mm	12.6mm	13.4mm	15.9mm	18.3mm	19.4mm	24.8mm
30min	30min	15.0mm	9.3mm	12.2mm	13.5mm	14.6mm	15.5mm	18.6mm	21.6mm	22.9mm	29.9mm
1hr	60min	20.0mm	12.8mm	16.2mm	18.0mm	19.4mm	20.6mm	24.8mm	29.0mm	30.9mm	40.6mm
2hr	120min	24.0mm	15.4mm	19.4mm	21.6mm	23.3mm	24.7mm	29.8mm	34.8mm	37.0mm	48.7mm
4hr	240min	28.0mm	18.5mm	23.0mm	25.5mm	27.2mm	28.8mm	34.7mm	40.3mm	42.9mm	56.3mm
6hr	360min	32.0mm	21.8mm	26.6mm	29.1mm	31.0mm	33.0mm	39.0mm	45.4mm	48.4mm	63.0mm
10hr	600min	34.0mm	23.1mm	28.2mm	30.9mm	33.0mm	35.0mm	41.5mm	48.3mm	51.5mm	67.0mm
24hr	1440min	44.0mm	30.8mm	37.0mm	40.5mm	42.7mm	44.9mm	52.4mm	60.7mm	64.5mm	83.2mm
48hr	2880min	50.0mm	36.0mm	42.5mm	46.5mm	49.0mm	51.0mm	58.5mm	67.0mm	71.0mm	90.5mm

							Intensity i				
	D Duration		**M1-D**	**M2-D**	**M3-D**	**M4-D**	**M5-D**	**M10-D**	**M20-D**	**M30-D**	**M100-D**
5min	5min	0.08hr	56.5mm/hr	72.0mm/hr	81.2mm/hr	88.5mm/hr	93.0mm/hr	108.5mm/hr	124.0mm/hr	130.1mm/hr	163.2mm/hr
10min	10min	0.17hr	40.3mm/hr	52.1mm/hr	59.4mm/hr	64.0mm/hr	68.0mm/hr	80.5mm/hr	93.1mm/hr	98.3mm/hr	126.1mm/hr
15min	15min	0.25hr	31.7mm/hr	41.1mm/hr	46.8mm/hr	50.4mm/hr	53.6mm/hr	63.4mm/hr	73.3mm/hr	77.5mm/hr	99.3mm/hr
30min	30min	0.50hr	18.6mm/hr	24.3mm/hr	27.0mm/hr	29.1mm/hr	30.9mm/hr	37.2mm/hr	43.2mm/hr	45.8mm/hr	59.7mm/hr
1hr	60min	1.00hr	12.8mm/hr	16.2mm/hr	18.0mm/hr	19.4mm/hr	20.6mm/hr	24.8mm/hr	29.0mm/hr	30.9mm/hr	40.6mm/hr
2hr	120min	2.00hr	7.7mm/hr	9.7mm/hr	10.8mm/hr	11.6mm/hr	12.4mm/hr	14.9mm/hr	17.4mm/hr	18.5mm/hr	24.4mm/hr
4hr	240min	4.00hr	4.6mm/hr	5.7mm/hr	6.4mm/hr	6.8mm/hr	7.2mm/hr	8.7mm/hr	10.1mm/hr	10.7mm/hr	14.1mm/hr
6hr	360min	6.00hr	3.6mm/hr	4.4mm/hr	4.9mm/hr	5.2mm/hr	5.5mm/hr	6.5mm/hr	7.6mm/hr	8.1mm/hr	10.5mm/hr
10hr	600min	10.00hr	2.3mm/hr	2.8mm/hr	3.1mm/hr	3.3mm/hr	3.5mm/hr	4.1mm/hr	4.8mm/hr	5.1mm/hr	6.7mm/hr
24hr	1440min	24.00hr	1.3mm/hr	1.5mm/hr	1.7mm/hr	1.8mm/hr	1.9mm/hr	2.2mm/hr	2.5mm/hr	2.7mm/hr	3.5mm/hr
48hr	2880min	48.00hr	0.6mm/hr	0.8mm/hr	0.8mm/hr	0.9mm/hr	0.9mm/hr	1.1mm/hr	1.3mm/hr	1.3mm/hr	1.7mm/hr
48hr	2880min	48.00hr	0.8mm/hr	0.9mm/hr	1.0mm/hr	1.0mm/hr	1.1mm/hr	1.2mm/hr	1.4mm/hr	1.5mm/hr	1.9mm/hr

SuDs CALCULATIONS	
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RAINFALL PEAK INTENSITY	
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GREENFIELD PEAK RUNOFF

Hydrological Region: 6 *From Wallingford on-line tool* **Qbar:** **0.12 l/sec**

Run-Off Q

D Duration			M1-D	M2-D	M3-D	M4-D	M5-D	M10-D	M20-D	M30-D	M100-D
5min	5min	0.08hr	0.10 l/sec	0.10 l/sec	0.12 l/sec	0.14 l/sec	0.15 l/sec	0.19 l/sec	0.23 l/sec	0.28 l/sec	0.38 l/sec
10min	10min	0.17hr	0.10 l/sec	0.10 l/sec	0.12 l/sec	0.14 l/sec	0.15 l/sec	0.19 l/sec	0.23 l/sec	0.28 l/sec	0.38 l/sec
15min	15min	0.25hr	0.10 l/sec	0.10 l/sec	0.12 l/sec	0.14 l/sec	0.15 l/sec	0.19 l/sec	0.23 l/sec	0.28 l/sec	0.38 l/sec
30min	30min	0.50hr	0.10 l/sec	0.10 l/sec	0.12 l/sec	0.14 l/sec	0.15 l/sec	0.19 l/sec	0.23 l/sec	0.28 l/sec	0.38 l/sec
1hr	60min	1.00hr	0.10 l/sec	0.10 l/sec	0.12 l/sec	0.14 l/sec	0.15 l/sec	0.19 l/sec	0.23 l/sec	0.28 l/sec	0.38 l/sec
2hr	120min	2.00hr	0.10 l/sec	0.10 l/sec	0.12 l/sec	0.14 l/sec	0.15 l/sec	0.19 l/sec	0.23 l/sec	0.28 l/sec	0.38 l/sec
4hr	240min	4.00hr	0.10 l/sec	0.10 l/sec	0.12 l/sec	0.14 l/sec	0.15 l/sec	0.19 l/sec	0.23 l/sec	0.28 l/sec	0.38 l/sec
6hr	360min	6.00hr	0.10 l/sec	0.10 l/sec	0.12 l/sec	0.14 l/sec	0.15 l/sec	0.19 l/sec	0.23 l/sec	0.28 l/sec	0.38 l/sec
10hr	600min	10.00hr	0.10 l/sec	0.10 l/sec	0.12 l/sec	0.14 l/sec	0.15 l/sec	0.19 l/sec	0.23 l/sec	0.28 l/sec	0.38 l/sec
24hr	1440min	24.00hr	0.10 l/sec	0.10 l/sec	0.12 l/sec	0.14 l/sec	0.15 l/sec	0.19 l/sec	0.23 l/sec	0.28 l/sec	0.38 l/sec
48hr	2880min	48.00hr	0.10 l/sec	0.10 l/sec	0.12 l/sec	0.14 l/sec	0.15 l/sec	0.19 l/sec	0.23 l/sec	0.28 l/sec	0.38 l/sec

Run-Off Volume

D Duration			M1-D	M2-D	M3-D	M4-D	M5-D	M10-D	M20-D	M30-D	M100-D
5min	5min	0.08hr	0.0 m3	0.0 m3	0.0 m3	0.0 m3	0.0 m3	0.1 m3	0.1 m3	0.1 m3	0.1 m3
10min	10min	0.17hr	0.1 m3	0.1 m3	0.1 m3	0.1 m3	0.1 m3	0.1 m3	0.1 m3	0.2 m3	0.2 m3
15min	15min	0.25hr	0.1 m3	0.1 m3	0.1 m3	0.1 m3	0.1 m3	0.2 m3	0.2 m3	0.3 m3	0.3 m3
30min	30min	0.50hr	0.2 m3	0.2 m3	0.2 m3	0.2 m3	0.3 m3	0.3 m3	0.4 m3	0.5 m3	0.7 m3
1hr	60min	1.00hr	0.4 m3	0.4 m3	0.4 m3	0.5 m3	0.5 m3	0.7 m3	0.8 m3	1.0 m3	1.4 m3
2hr	120min	2.00hr	0.7 m3	0.7 m3	0.9 m3	1.0 m3	1.1 m3	1.4 m3	1.7 m3	2.0 m3	2.7 m3
4hr	240min	4.00hr	1.4 m3	1.5 m3	1.7 m3	1.9 m3	2.2 m3	2.8 m3	3.3 m3	4.1 m3	5.4 m3
6hr	360min	6.00hr	2.2 m3	2.2 m3	2.6 m3	2.9 m3	3.3 m3	4.1 m3	5.0 m3	6.1 m3	8.1 m3
10hr	600min	10.00hr	3.6 m3	3.7 m3	4.3 m3	4.9 m3	5.4 m3	6.9 m3	8.4 m3	10.2 m3	13.6 m3
24hr	1440min	24.00hr	8.7 m3	9.0 m3	10.3 m3	11.7 m3	13.1 m3	16.5 m3	20.1 m3	24.5 m3	32.5 m3
48hr	2880min	48.00hr	17.3 m3	17.9 m3	20.7 m3	23.4 m3	26.1 m3	33.0 m3	40.1 m3	48.9 m3	65.1 m3

SuDs CALCULATIONS	
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GREENFIELD PEAK RUNOFF	
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Client: Uchaux Ltd	

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EXISTING PEAK RUNOFF

C_V:	0.90	*Volumetric Run-Off Coefficient*
C_R:	1.3	*Routing Coefficient*

Run-Off Q

D Duration			M1-D	M2-D	M3-D	M4-D	M5-D	M10-D	M20-D	M30-D	M100-D
5min	5min	0.08hr	5.1 l/sec	6.4 l/sec	7.3 l/sec	7.9 l/sec	8.3 l/sec	9.7 l/sec	11.1 l/sec	11.6 l/sec	14.6 l/sec
10min	10min	0.17hr	3.6 l/sec	4.7 l/sec	5.3 l/sec	5.7 l/sec	6.1 l/sec	7.2 l/sec	8.3 l/sec	8.8 l/sec	11.3 l/sec
15min	15min	0.25hr	2.8 l/sec	3.7 l/sec	4.2 l/sec	4.5 l/sec	4.8 l/sec	5.7 l/sec	6.6 l/sec	6.9 l/sec	8.9 l/sec
30min	30min	0.50hr	1.7 l/sec	2.2 l/sec	2.4 l/sec	2.6 l/sec	2.8 l/sec	3.3 l/sec	3.9 l/sec	4.1 l/sec	5.3 l/sec
1hr	60min	1.00hr	1.1 l/sec	1.4 l/sec	1.6 l/sec	1.7 l/sec	1.8 l/sec	2.2 l/sec	2.6 l/sec	2.8 l/sec	3.6 l/sec
2hr	120min	2.00hr	0.7 l/sec	0.9 l/sec	1.0 l/sec	1.0 l/sec	1.1 l/sec	1.3 l/sec	1.6 l/sec	1.7 l/sec	2.2 l/sec
4hr	240min	4.00hr	0.4 l/sec	0.5 l/sec	0.6 l/sec	0.6 l/sec	0.6 l/sec	0.8 l/sec	0.9 l/sec	1.0 l/sec	1.3 l/sec
6hr	360min	6.00hr	0.3 l/sec	0.4 l/sec	0.4 l/sec	0.5 l/sec	0.5 l/sec	0.6 l/sec	0.7 l/sec	0.7 l/sec	0.9 l/sec
10hr	600min	10.00hr	0.2 l/sec	0.3 l/sec	0.3 l/sec	0.3 l/sec	0.3 l/sec	0.4 l/sec	0.4 l/sec	0.5 l/sec	0.6 l/sec
24hr	1440min	24.00hr	0.1 l/sec	0.1 l/sec	0.2 l/sec	0.2 l/sec	0.2 l/sec	0.2 l/sec	0.2 l/sec	0.2 l/sec	0.3 l/sec
48hr	2880min	48.00hr	0.1 l/sec	0.1 l/sec	0.1 l/sec	0.1 l/sec	0.1 l/sec	0.1 l/sec	0.1 l/sec	0.1 l/sec	0.2 l/sec

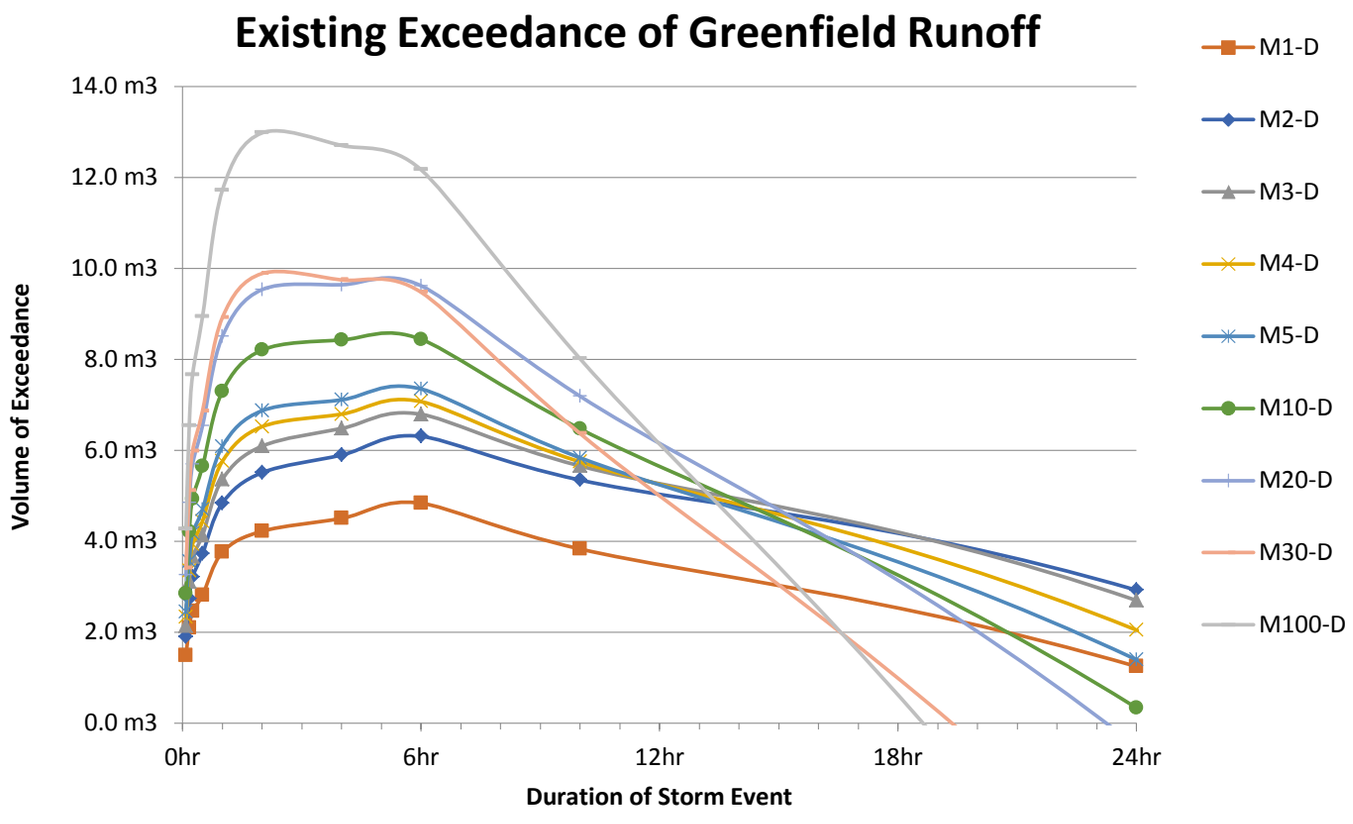
Run-Off Volume

D Duration			M1-D	M2-D	M3-D	M4-D	M5-D	M10-D	M20-D	M30-D	M100-D
5min	5min	0.08hr	1.5 m3	1.9 m3	2.2 m3	2.4 m3	2.5 m3	2.9 m3	3.3 m3	3.5 m3	4.4 m3
10min	10min	0.17hr	2.2 m3	2.8 m3	3.2 m3	3.4 m3	3.6 m3	4.3 m3	5.0 m3	5.3 m3	6.8 m3
15min	15min	0.25hr	2.6 m3	3.3 m3	3.8 m3	4.1 m3	4.3 m3	5.1 m3	5.9 m3	6.2 m3	8.0 m3
30min	30min	0.50hr	3.0 m3	3.9 m3	4.3 m3	4.7 m3	5.0 m3	6.0 m3	7.0 m3	7.4 m3	9.6 m3
1hr	60min	1.00hr	4.1 m3	5.2 m3	5.8 m3	6.2 m3	6.6 m3	8.0 m3	9.3 m3	9.9 m3	13.1 m3
2hr	120min	2.00hr	4.9 m3	6.3 m3	7.0 m3	7.5 m3	8.0 m3	9.6 m3	11.2 m3	11.9 m3	15.7 m3
4hr	240min	4.00hr	6.0 m3	7.4 m3	8.2 m3	8.7 m3	9.3 m3	11.2 m3	13.0 m3	13.8 m3	18.1 m3
6hr	360min	6.00hr	7.0 m3	8.6 m3	9.4 m3	10.0 m3	10.6 m3	12.6 m3	14.6 m3	15.6 m3	20.3 m3
10hr	600min	10.00hr	7.4 m3	9.1 m3	10.0 m3	10.6 m3	11.3 m3	13.4 m3	15.5 m3	16.6 m3	21.6 m3
24hr	1440min	24.00hr	9.9 m3	11.9 m3	13.0 m3	13.7 m3	14.5 m3	16.9 m3	19.6 m3	20.8 m3	26.8 m3
48hr	2880min	48.00hr	11.6 m3	13.7 m3	15.0 m3	15.8 m3	16.4 m3	18.8 m3	21.6 m3	22.9 m3	29.1 m3

Exceedance of Greenfield Run-Off Volume

D Duration			M1-D	M2-D	M3-D	M4-D	M5-D	M10-D	M20-D	M30-D	M100-D
5min	5min	0.08hr	1.5 m3	1.9 m3	2.1 m3	2.3 m3	2.5 m3	2.9 m3	3.3 m3	3.4 m3	4.3 m3
10min	10min	0.17hr	2.1 m3	2.7 m3	3.1 m3	3.4 m3	3.6 m3	4.2 m3	4.9 m3	5.1 m3	6.5 m3
15min	15min	0.25hr	2.5 m3	3.2 m3	3.7 m3	3.9 m3	4.2 m3	4.9 m3	5.7 m3	6.0 m3	7.7 m3
30min	30min	0.50hr	2.8 m3	3.7 m3	4.1 m3	4.4 m3	4.7 m3	5.6 m3	6.5 m3	6.9 m3	8.9 m3
1hr	60min	1.00hr	3.8 m3	4.8 m3	5.4 m3	5.8 m3	6.1 m3	7.3 m3	8.5 m3	8.9 m3	11.7 m3
2hr	120min	2.00hr	4.2 m3	5.5 m3	6.1 m3	6.5 m3	6.9 m3	8.2 m3	9.5 m3	9.9 m3	13.0 m3
4hr	240min	4.00hr	4.5 m3	5.9 m3	6.5 m3	6.8 m3	7.1 m3	8.4 m3	9.6 m3	9.7 m3	12.7 m3
6hr	360min	6.00hr	4.8 m3	6.3 m3	6.8 m3	7.1 m3	7.4 m3	8.4 m3	9.6 m3	9.5 m3	12.2 m3
10hr	600min	10.00hr	3.8 m3	5.3 m3	5.7 m3	5.7 m3	5.8 m3	6.5 m3	7.2 m3	6.4 m3	8.0 m3
24hr	1440min	24.00hr	1.3 m3	2.9 m3	2.7 m3	2.1 m3	1.4 m3	0.3 m3	-0.5 m3	-3.7 m3	-5.8 m3
48hr	2880min	48.00hr	-5.7 m3	-4.3 m3	-5.7 m3	-7.6 m3	-9.7 m3	-14.2 m3	-18.5 m3	-26.1 m3	-35.9 m3

			C_V:
Catchment Area:	275sqm	100%	
Permeable:	0sqm	0%	0.40
Impermeable:	275sqm	100%	0.90
			0.90



SuDs CALCULATIONS

Project: 155-157 REGENT'S PK RD

EXISTING PEAK RUNOFF

Sheet 4 of 8

Project Reference: LBH 4540

Date: 18/02/2021 | Rev: 2

Client: Uchaux Ltd

LBHGEO

POST- DEVELOPMENT PEAK RUNOFF

C_V: 0.90 *Volumetric Run-Off Coefficient* Climate Change Allowance: 0%

C_R: 1.3 *Routing Coefficient*

Run-Off Q

D Duration			M1-D	M2-D	M3-D	M4-D	M5-D	M10-D	M20-D	M30-D	M100-D
5min	5min	0.08hr	5.1 l/sec	6.4 l/sec	7.3 l/sec	7.9 l/sec	8.3 l/sec	9.7 l/sec	11.1 l/sec	11.6 l/sec	14.6 l/sec
10min	10min	0.17hr	3.6 l/sec	4.7 l/sec	5.3 l/sec	5.7 l/sec	6.1 l/sec	7.2 l/sec	8.3 l/sec	8.8 l/sec	11.3 l/sec
15min	15min	0.25hr	2.8 l/sec	3.7 l/sec	4.2 l/sec	4.5 l/sec	4.8 l/sec	5.7 l/sec	6.6 l/sec	6.9 l/sec	8.9 l/sec
30min	30min	0.50hr	1.7 l/sec	2.2 l/sec	2.4 l/sec	2.6 l/sec	2.8 l/sec	3.3 l/sec	3.9 l/sec	4.1 l/sec	5.3 l/sec
1hr	60min	1.00hr	1.1 l/sec	1.4 l/sec	1.6 l/sec	1.7 l/sec	1.8 l/sec	2.2 l/sec	2.6 l/sec	2.8 l/sec	3.6 l/sec
2hr	120min	2.00hr	0.7 l/sec	0.9 l/sec	1.0 l/sec	1.0 l/sec	1.1 l/sec	1.3 l/sec	1.6 l/sec	1.7 l/sec	2.2 l/sec
4hr	240min	4.00hr	0.4 l/sec	0.5 l/sec	0.6 l/sec	0.6 l/sec	0.6 l/sec	0.8 l/sec	0.9 l/sec	1.0 l/sec	1.3 l/sec
6hr	360min	6.00hr	0.3 l/sec	0.4 l/sec	0.4 l/sec	0.5 l/sec	0.5 l/sec	0.6 l/sec	0.7 l/sec	0.7 l/sec	0.9 l/sec
10hr	600min	10.00hr	0.2 l/sec	0.3 l/sec	0.3 l/sec	0.3 l/sec	0.3 l/sec	0.4 l/sec	0.4 l/sec	0.5 l/sec	0.6 l/sec
24hr	1440min	24.00hr	0.1 l/sec	0.1 l/sec	0.2 l/sec	0.2 l/sec	0.2 l/sec	0.2 l/sec	0.2 l/sec	0.2 l/sec	0.3 l/sec
48hr	2880min	48.00hr	0.1 l/sec	0.1 l/sec	0.1 l/sec	0.1 l/sec	0.1 l/sec	0.1 l/sec	0.1 l/sec	0.1 l/sec	0.2 l/sec

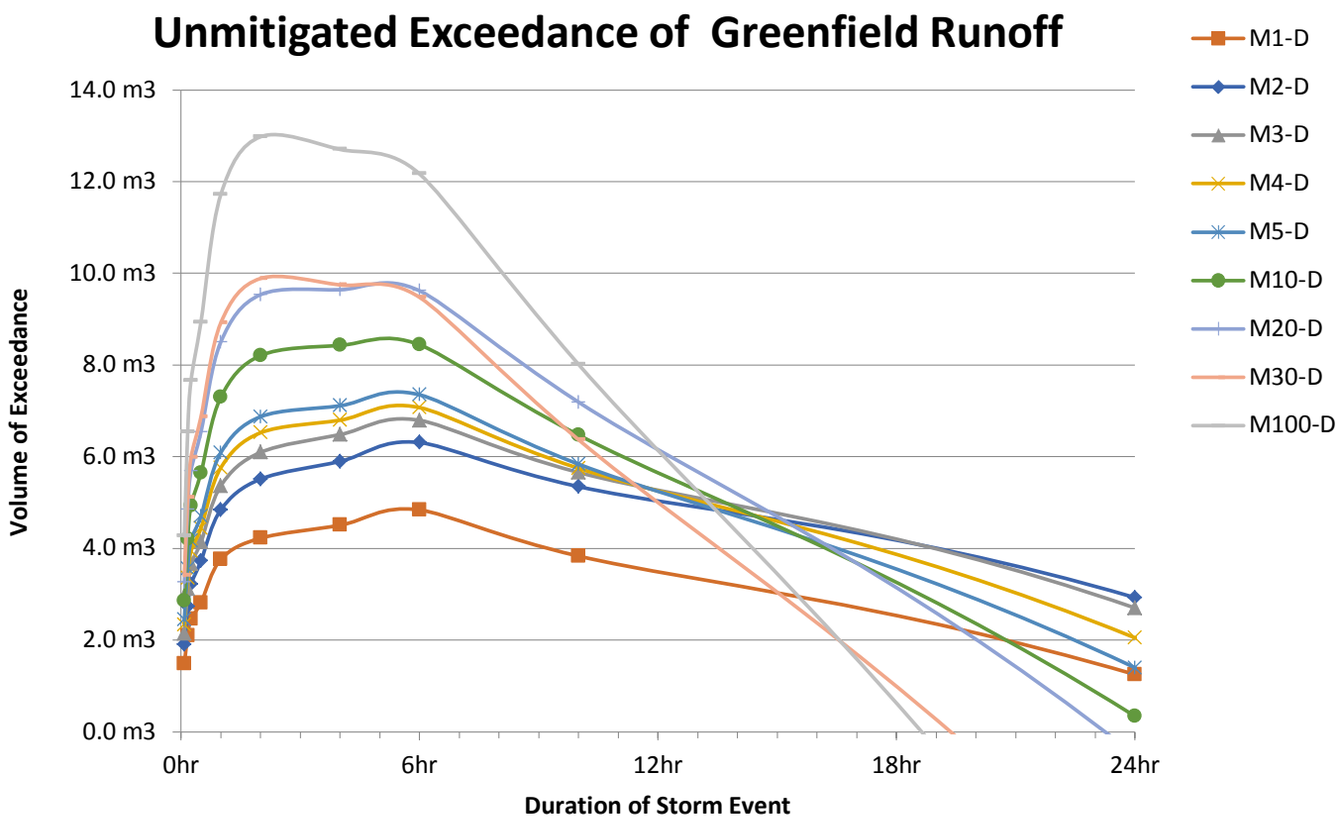
Run-Off Volume

D Duration			M1-D	M2-D	M3-D	M4-D	M5-D	M10-D	M20-D	M30-D	M100-D
5min	5min	0.08hr	1.5 m3	1.9 m3	2.2 m3	2.4 m3	2.5 m3	2.9 m3	3.3 m3	3.5 m3	4.4 m3
10min	10min	0.17hr	2.2 m3	2.8 m3	3.2 m3	3.4 m3	3.6 m3	4.3 m3	5.0 m3	5.3 m3	6.8 m3
15min	15min	0.25hr	2.6 m3	3.3 m3	3.8 m3	4.1 m3	4.3 m3	5.1 m3	5.9 m3	6.2 m3	8.0 m3
30min	30min	0.50hr	3.0 m3	3.9 m3	4.3 m3	4.7 m3	5.0 m3	6.0 m3	7.0 m3	7.4 m3	9.6 m3
1hr	60min	1.00hr	4.1 m3	5.2 m3	5.8 m3	6.2 m3	6.6 m3	8.0 m3	9.3 m3	9.9 m3	13.1 m3
2hr	120min	2.00hr	4.9 m3	6.3 m3	7.0 m3	7.5 m3	8.0 m3	9.6 m3	11.2 m3	11.9 m3	15.7 m3
4hr	240min	4.00hr	6.0 m3	7.4 m3	8.2 m3	8.7 m3	9.3 m3	11.2 m3	13.0 m3	13.8 m3	18.1 m3
6hr	360min	6.00hr	7.0 m3	8.6 m3	9.4 m3	10.0 m3	10.6 m3	12.6 m3	14.6 m3	15.6 m3	20.3 m3
10hr	600min	10.00hr	7.4 m3	9.1 m3	10.0 m3	10.6 m3	11.3 m3	13.4 m3	15.5 m3	16.6 m3	21.6 m3
24hr	1440min	24.00hr	9.9 m3	11.9 m3	13.0 m3	13.7 m3	14.5 m3	16.9 m3	19.6 m3	20.8 m3	26.8 m3
48hr	2880min	48.00hr	11.6 m3	13.7 m3	15.0 m3	15.8 m3	16.4 m3	18.8 m3	21.6 m3	22.9 m3	29.1 m3

Exceedance of Greenfield Run-Off Volume

D Duration			M1-D	M2-D	M3-D	M4-D	M5-D	M10-D	M20-D	M30-D	M100-D
5min	5min	0.08hr	1.5 m3	1.9 m3	2.1 m3	2.3 m3	2.5 m3	2.9 m3	3.3 m3	3.4 m3	4.3 m3
10min	10min	0.17hr	2.1 m3	2.7 m3	3.1 m3	3.4 m3	3.6 m3	4.2 m3	4.9 m3	5.1 m3	6.5 m3
15min	15min	0.25hr	2.5 m3	3.2 m3	3.7 m3	3.9 m3	4.2 m3	4.9 m3	5.7 m3	6.0 m3	7.7 m3
30min	30min	0.50hr	2.8 m3	3.7 m3	4.1 m3	4.4 m3	4.7 m3	5.6 m3	6.5 m3	6.9 m3	8.9 m3
1hr	60min	1.00hr	3.8 m3	4.8 m3	5.4 m3	5.8 m3	6.1 m3	7.3 m3	8.5 m3	8.9 m3	11.7 m3
2hr	120min	2.00hr	4.2 m3	5.5 m3	6.1 m3	6.5 m3	6.9 m3	8.2 m3	9.5 m3	9.9 m3	13.0 m3
4hr	240min	4.00hr	4.5 m3	5.9 m3	6.5 m3	6.8 m3	7.1 m3	8.4 m3	9.6 m3	9.7 m3	12.7 m3
6hr	360min	6.00hr	4.8 m3	6.3 m3	6.8 m3	7.1 m3	7.4 m3	8.4 m3	9.6 m3	9.5 m3	12.2 m3
10hr	600min	10.00hr	3.8 m3	5.3 m3	5.7 m3	5.7 m3	5.8 m3	6.5 m3	7.2 m3	6.4 m3	8.0 m3
24hr	1440min	24.00hr	1.3 m3	2.9 m3	2.7 m3	2.1 m3	1.4 m3	0.3 m3	-0.5 m3	-3.7 m3	-5.8 m3
48hr	2880min	48.00hr	-5.7 m3	-4.3 m3	-5.7 m3	-7.6 m3	-9.7 m3	-14.2 m3	-18.5 m3	-26.1 m3	-35.9 m3
			4.8 m3							**9.9 m3**	**13.0 m3**

			C_V:
Catchment Area:	275sqm	100%	
Permeable Garden	0sqm	0%	0.40
Impermeable:	275sqm	100%	0.90
			0.90



SuDs CALCULATIONS

Project: 155-157 REGENT'S PK RD

POST-DEV. PEAK RUNOFF

Sheet 5 of 8

Project Reference: LBH 4540

Date: 18/02/2021 Rev: 2

Client: Uchaux Ltd

LBHGEO

POST- DEVELOPMENT PEAK RUNOFF + CC

C_V: 0.90 *Volumetric Run-Off Coefficient* Climate Change Allowance: 40%

C_R: 1.3 *Routing Coefficient*

Run-Off Q

D Duration			M1-D	M2-D	M3-D	M4-D	M5-D	M10-D	M20-D	M30-D	M100-D
5min	5min	0.08hr	7.1 l/sec	9.0 l/sec	10.2 l/sec	11.1 l/sec	11.6 l/sec	13.6 l/sec	15.5 l/sec	16.3 l/sec	20.4 l/sec
10min	10min	0.17hr	5.0 l/sec	6.5 l/sec	7.4 l/sec	8.0 l/sec	8.5 l/sec	10.1 l/sec	11.7 l/sec	12.3 l/sec	15.8 l/sec
15min	15min	0.25hr	4.0 l/sec	5.1 l/sec	5.9 l/sec	6.3 l/sec	6.7 l/sec	7.9 l/sec	9.2 l/sec	9.7 l/sec	12.4 l/sec
30min	30min	0.50hr	2.3 l/sec	3.0 l/sec	3.4 l/sec	3.6 l/sec	3.9 l/sec	4.7 l/sec	5.4 l/sec	5.7 l/sec	7.5 l/sec
1hr	60min	1.00hr	1.6 l/sec	2.0 l/sec	2.3 l/sec	2.4 l/sec	2.6 l/sec	3.1 l/sec	3.6 l/sec	3.9 l/sec	5.1 l/sec
2hr	120min	2.00hr	1.0 l/sec	1.2 l/sec	1.4 l/sec	1.5 l/sec	1.5 l/sec	1.9 l/sec	2.2 l/sec	2.3 l/sec	3.1 l/sec
4hr	240min	4.00hr	0.6 l/sec	0.7 l/sec	0.8 l/sec	0.9 l/sec	0.9 l/sec	1.1 l/sec	1.3 l/sec	1.3 l/sec	1.8 l/sec
6hr	360min	6.00hr	0.5 l/sec	0.6 l/sec	0.6 l/sec	0.6 l/sec	0.7 l/sec	0.8 l/sec	0.9 l/sec	1.0 l/sec	1.3 l/sec
10hr	600min	10.00hr	0.3 l/sec	0.4 l/sec	0.4 l/sec	0.4 l/sec	0.4 l/sec	0.5 l/sec	0.6 l/sec	0.6 l/sec	0.8 l/sec
24hr	1440min	24.00hr	0.2 l/sec	0.2 l/sec	0.2 l/sec	0.2 l/sec	0.2 l/sec	0.3 l/sec	0.3 l/sec	0.3 l/sec	0.4 l/sec
48hr	2880min	48.00hr	0.1 l/sec	0.1 l/sec	0.1 l/sec	0.1 l/sec	0.1 l/sec	0.2 l/sec	0.2 l/sec	0.2 l/sec	0.2 l/sec

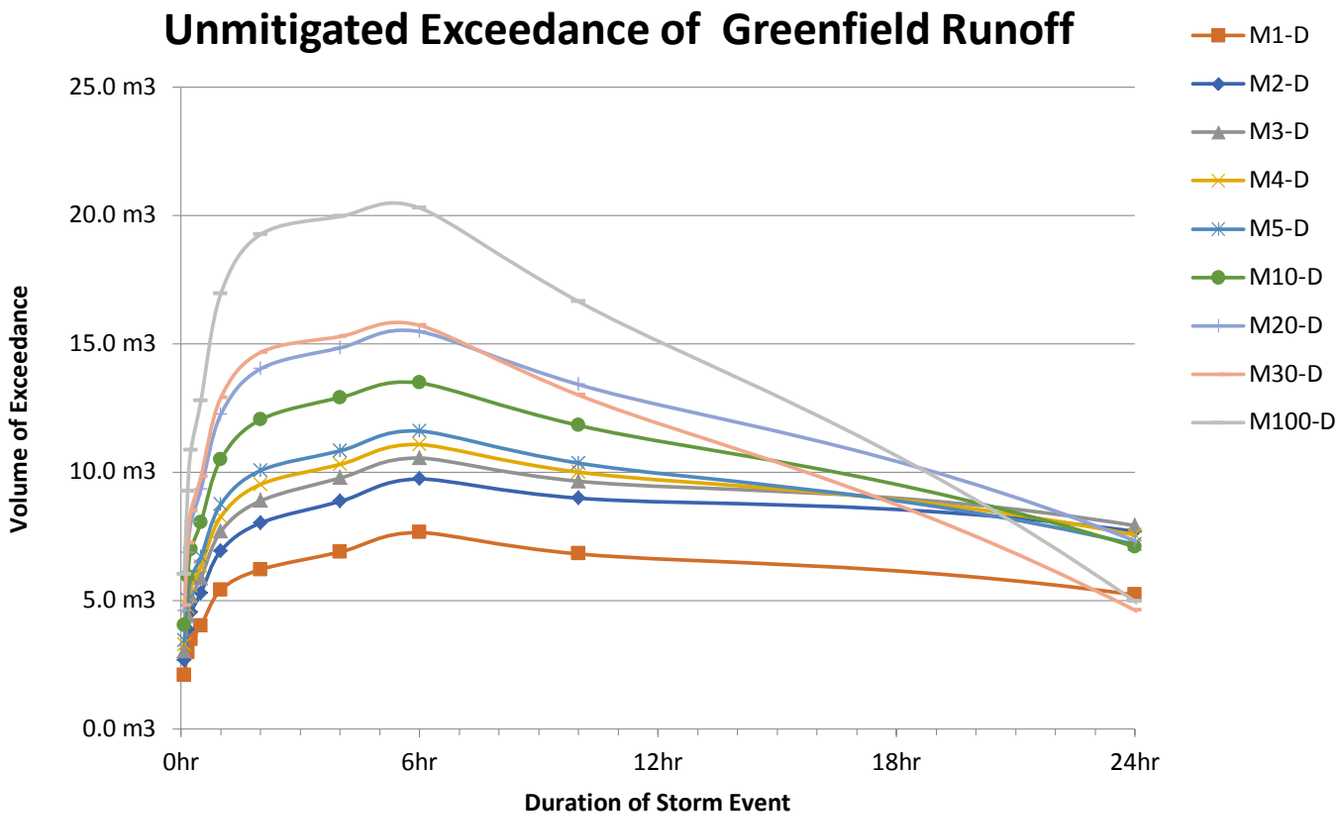
Run-Off Volume

D Duration			M1-D	M2-D	M3-D	M4-D	M5-D	M10-D	M20-D	M30-D	M100-D
5min	5min	0.08hr	2.1 m3	2.7 m3	3.0 m3	3.3 m3	3.5 m3	4.1 m3	4.7 m3	4.9 m3	6.1 m3
10min	10min	0.17hr	3.0 m3	3.9 m3	4.5 m3	4.8 m3	5.1 m3	6.0 m3	7.0 m3	7.4 m3	9.5 m3
15min	15min	0.25hr	3.6 m3	4.6 m3	5.3 m3	5.7 m3	6.0 m3	7.1 m3	8.3 m3	8.7 m3	11.2 m3
30min	30min	0.50hr	4.2 m3	5.5 m3	6.1 m3	6.6 m3	7.0 m3	8.4 m3	9.7 m3	10.3 m3	13.5 m3
1hr	60min	1.00hr	5.8 m3	7.3 m3	8.1 m3	8.7 m3	9.3 m3	11.2 m3	13.1 m3	13.9 m3	18.3 m3
2hr	120min	2.00hr	6.9 m3	8.8 m3	9.7 m3	10.5 m3	11.1 m3	13.4 m3	15.7 m3	16.7 m3	22.0 m3
4hr	240min	4.00hr	8.3 m3	10.4 m3	11.5 m3	12.2 m3	13.0 m3	15.7 m3	18.2 m3	19.4 m3	25.4 m3
6hr	360min	6.00hr	9.8 m3	12.0 m3	13.1 m3	14.0 m3	14.9 m3	17.6 m3	20.5 m3	21.8 m3	28.4 m3
10hr	600min	10.00hr	10.4 m3	12.7 m3	13.9 m3	14.9 m3	15.8 m3	18.7 m3	21.8 m3	23.2 m3	30.2 m3
24hr	1440min	24.00hr	13.9 m3	16.7 m3	18.2 m3	19.2 m3	20.2 m3	23.6 m3	27.4 m3	29.1 m3	37.5 m3
48hr	2880min	48.00hr	16.2 m3	19.2 m3	21.0 m3	22.1 m3	23.0 m3	26.4 m3	30.2 m3	32.0 m3	40.8 m3

Exceedance of Greenfield Run-Off Volume

D Duration			M1-D	M2-D	M3-D	M4-D	M5-D	M10-D	M20-D	M30-D	M100-D
5min	5min	0.08hr	2.1 m3	2.7 m3	3.0 m3	3.3 m3	3.4 m3	4.0 m3	4.6 m3	4.8 m3	6.0 m3
10min	10min	0.17hr	3.0 m3	3.9 m3	4.4 m3	4.7 m3	5.0 m3	5.9 m3	6.9 m3	7.2 m3	9.2 m3
15min	15min	0.25hr	3.5 m3	4.5 m3	5.2 m3	5.6 m3	5.9 m3	7.0 m3	8.1 m3	8.5 m3	10.9 m3
30min	30min	0.50hr	4.0 m3	5.3 m3	5.9 m3	6.3 m3	6.7 m3	8.0 m3	9.3 m3	9.8 m3	12.8 m3
1hr	60min	1.00hr	5.4 m3	6.9 m3	7.7 m3	8.3 m3	8.7 m3	10.5 m3	12.2 m3	12.9 m3	16.9 m3
2hr	120min	2.00hr	6.2 m3	8.0 m3	8.9 m3	9.5 m3	10.1 m3	12.0 m3	14.0 m3	14.7 m3	19.3 m3
4hr	240min	4.00hr	6.9 m3	8.9 m3	9.8 m3	10.3 m3	10.8 m3	12.9 m3	14.8 m3	15.3 m3	20.0 m3
6hr	360min	6.00hr	7.6 m3	9.7 m3	10.5 m3	11.1 m3	11.6 m3	13.5 m3	15.5 m3	15.7 m3	20.3 m3
10hr	600min	10.00hr	6.8 m3	9.0 m3	9.6 m3	10.0 m3	10.3 m3	11.8 m3	13.4 m3	13.0 m3	16.6 m3
24hr	1440min	24.00hr	5.2 m3	7.7 m3	7.9 m3	7.5 m3	7.2 m3	7.1 m3	7.3 m3	4.6 m3	5.0 m3
48hr	2880min	48.00hr	-1.1 m3	1.2 m3	0.3 m3	-1.3 m3	-3.1 m3	-6.7 m3	-9.9 m3	-16.9 m3	-24.3 m3
											20.3 m3

			C_V:
Catchment Area:	275sqm	100%	
Permeable Garden	0sqm	0%	0.40
Impermeable:	275sqm	100%	0.90
			0.90



SuDs CALCULATIONS	
Project: 155-157 REGENT'S PK RD	
POST-DEV. PEAK RUNOFF+CC	
Sheet 6 of 8	
Project Reference: LBH 4540	
Date: 18/02/2021	Rev: 2
Client: Uchaux Ltd	

LBHGEO

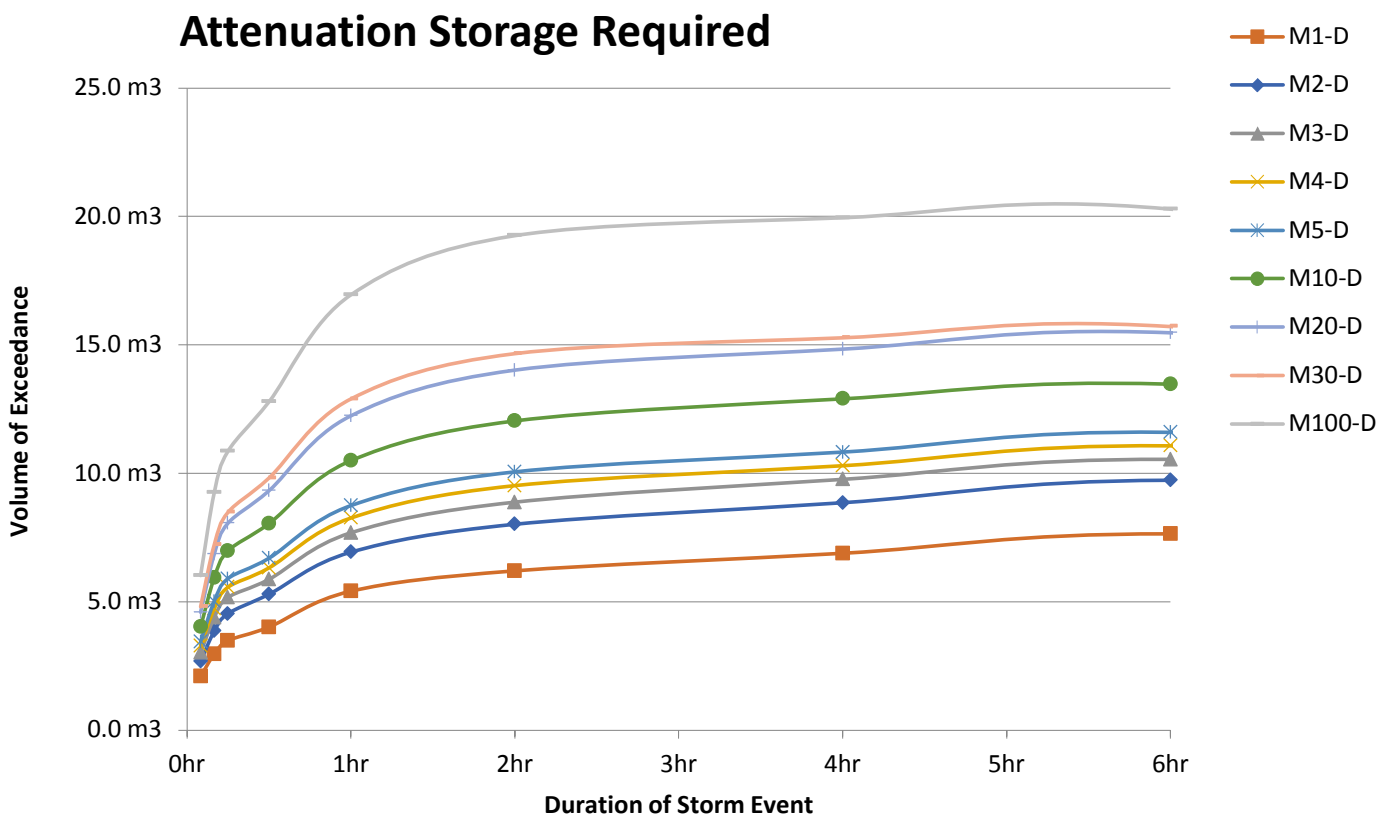
POST- DEVELOPMENT & SOURCE MITIGATION PEAK RUN-OFF + CC STORAGE

Proposed Discharge Rates: Greenfield x 1

			INFLOW								
	D Duration		**M1-D**	**M2-D**	**M3-D**	**M4-D**	**M5-D**	**M10-D**	**M20-D**	**M30-D**	**M100-D**
5min	5min	0.08hr	2.1 m3	2.7 m3	3.0 m3	3.3 m3	3.5 m3	4.1 m3	4.7 m3	4.9 m3	6.1 m3
10min	10min	0.17hr	3.0 m3	3.9 m3	4.5 m3	4.8 m3	5.1 m3	6.0 m3	7.0 m3	7.4 m3	9.5 m3
15min	15min	0.25hr	3.6 m3	4.6 m3	5.3 m3	5.7 m3	6.0 m3	7.1 m3	8.3 m3	8.7 m3	11.2 m3
30min	30min	0.50hr	4.2 m3	5.5 m3	6.1 m3	6.6 m3	7.0 m3	8.4 m3	9.7 m3	10.3 m3	13.5 m3
1hr	60min	1.00hr	5.8 m3	7.3 m3	8.1 m3	8.7 m3	9.3 m3	11.2 m3	13.1 m3	13.9 m3	18.3 m3
2hr	120min	2.00hr	6.9 m3	8.8 m3	9.7 m3	10.5 m3	11.1 m3	13.4 m3	15.7 m3	16.7 m3	22.0 m3
4hr	240min	4.00hr	8.3 m3	10.4 m3	11.5 m3	12.2 m3	13.0 m3	15.7 m3	18.2 m3	19.4 m3	25.4 m3
6hr	360min	6.00hr	9.8 m3	12.0 m3	13.1 m3	14.0 m3	14.9 m3	17.6 m3	20.5 m3	21.8 m3	28.4 m3
10hr	600min	10.00hr	10.4 m3	12.7 m3	13.9 m3	14.9 m3	15.8 m3	18.7 m3	21.8 m3	23.2 m3	30.2 m3
24hr	1440min	24.00hr	13.9 m3	16.7 m3	18.2 m3	19.2 m3	20.2 m3	23.6 m3	27.4 m3	29.1 m3	37.5 m3
48hr	2880min	48.00hr	16.2 m3	19.2 m3	21.0 m3	22.1 m3	23.0 m3	26.4 m3	30.2 m3	32.0 m3	40.8 m3

			OUTFLOW								
	D Duration		**M1-D**	**M2-D**	**M3-D**	**M4-D**	**M5-D**	**M10-D**	**M20-D**	**M30-D**	**M100-D**
5min	5min	0.08hr	0.0 m3	0.0 m3	0.0 m3	0.0 m3	0.0 m3	0.1 m3	0.1 m3	0.1 m3	0.1 m3
10min	10min	0.17hr	0.1 m3	0.1 m3	0.1 m3	0.1 m3	0.1 m3	0.1 m3	0.1 m3	0.2 m3	0.2 m3
15min	15min	0.25hr	0.1 m3	0.1 m3	0.1 m3	0.1 m3	0.1 m3	0.2 m3	0.2 m3	0.3 m3	0.3 m3
30min	30min	0.50hr	0.2 m3	0.2 m3	0.2 m3	0.2 m3	0.3 m3	0.3 m3	0.4 m3	0.5 m3	0.7 m3
1hr	60min	1.00hr	0.4 m3	0.4 m3	0.4 m3	0.5 m3	0.5 m3	0.7 m3	0.8 m3	1.0 m3	1.4 m3
2hr	120min	2.00hr	0.7 m3	0.7 m3	0.9 m3	1.0 m3	1.1 m3	1.4 m3	1.7 m3	2.0 m3	2.7 m3
4hr	240min	4.00hr	1.4 m3	1.5 m3	1.7 m3	1.9 m3	2.2 m3	2.8 m3	3.3 m3	4.1 m3	5.4 m3
6hr	360min	6.00hr	2.2 m3	2.2 m3	2.6 m3	2.9 m3	3.3 m3	4.1 m3	5.0 m3	6.1 m3	8.1 m3
10hr	600min	10.00hr	3.6 m3	3.7 m3	4.3 m3	4.9 m3	5.4 m3	6.9 m3	8.4 m3	10.2 m3	13.6 m3
24hr	1440min	24.00hr	8.7 m3	9.0 m3	10.3 m3	11.7 m3	13.1 m3	16.5 m3	20.1 m3	24.5 m3	32.5 m3
48hr	2880min	48.00hr	17.3 m3	17.9 m3	20.7 m3	23.4 m3	26.1 m3	33.0 m3	40.1 m3	48.9 m3	65.1 m3

			ATTENUATION STORAGE REQUIRED TO MEET PROPOSED DISCHARGE RATE								
	D Duration		**M1-D**	**M2-D**	**M3-D**	**M4-D**	**M5-D**	**M10-D**	**M20-D**	**M30-D**	**M100-D**
5min	5min	0.08hr	2.1 m3	2.7 m3	3.0 m3	3.3 m3	3.4 m3	4.0 m3	4.6 m3	4.8 m3	6.0 m3
10min	10min	0.17hr	3.0 m3	3.9 m3	4.4 m3	4.7 m3	5.0 m3	5.9 m3	6.9 m3	7.2 m3	9.2 m3
15min	15min	0.25hr	3.5 m3	4.5 m3	5.2 m3	5.6 m3	5.9 m3	7.0 m3	8.1 m3	8.5 m3	10.9 m3
30min	30min	0.50hr	4.0 m3	5.3 m3	5.9 m3	6.3 m3	6.7 m3	8.0 m3	9.3 m3	9.8 m3	12.8 m3
1hr	60min	1.00hr	5.4 m3	6.9 m3	7.7 m3	8.3 m3	8.7 m3	10.5 m3	12.2 m3	12.9 m3	16.9 m3
2hr	120min	2.00hr	6.2 m3	8.0 m3	8.9 m3	9.5 m3	10.1 m3	12.0 m3	14.0 m3	14.7 m3	19.3 m3
4hr	240min	4.00hr	6.9 m3	8.9 m3	9.8 m3	10.3 m3	10.8 m3	12.9 m3	14.8 m3	15.3 m3	20.0 m3
6hr	360min	6.00hr	7.6 m3	9.7 m3	10.5 m3	11.1 m3	11.6 m3	13.5 m3	15.5 m3	15.7 m3	20.3 m3
10hr	600min	10.00hr	6.8 m3	9.0 m3	9.6 m3	10.0 m3	10.3 m3	11.8 m3	13.4 m3	13.0 m3	16.6 m3
24hr	1440min	24.00hr	5.2 m3	7.7 m3	7.9 m3	7.5 m3	7.2 m3	7.1 m3	7.3 m3	4.6 m3	5.0 m3
48hr	2880min	48.00hr	-1.1 m3	1.2 m3	0.3 m3	-1.3 m3	-3.1 m3	-6.7 m3	-9.9 m3	-16.9 m3	-24.3 m3
ATTENUATION STORAGE REQUIRED:			7.6 m3	9.7 m3	10.5 m3	11.1 m3	11.6 m3	13.5 m3	15.5 m3	15.7 m3	**20.3 m3**



SuDs CALCULATIONS	
Project: 155-157 REGENT'S PK RD	
STORAGE REQUIREMENTS	
Sheet 7 of 8	
Project Reference: LBH 4540	
Date: 18/02/2021	Rev: 2
Client: Uchaux Ltd	

LBHGEO

POST- DEVELOPMENT & SOURCE MITIGATION PEAK RUN-OFF + CC STORAGE

Proposed Discharge Rate: **4.44 l/sec** 100 yr 15min) **50% of existing** **(or greenfield where this is greater)**

INFLOW

D Duration			M1-D	M2-D	M3-D	M4-D	M5-D	M10-D	M20-D	M30-D	M100-D
5min	5min	0.08hr	2.1 m3	2.7 m3	3.0 m3	3.3 m3	3.5 m3	4.1 m3	4.7 m3	4.9 m3	6.1 m3
10min	10min	0.17hr	3.0 m3	3.9 m3	4.5 m3	4.8 m3	5.1 m3	6.0 m3	7.0 m3	7.4 m3	9.5 m3
15min	15min	0.25hr	3.6 m3	4.6 m3	5.3 m3	5.7 m3	6.0 m3	7.1 m3	8.3 m3	8.7 m3	11.2 m3
30min	30min	0.50hr	4.2 m3	5.5 m3	6.1 m3	6.6 m3	7.0 m3	8.4 m3	9.7 m3	10.3 m3	13.5 m3
1hr	60min	1.00hr	5.8 m3	7.3 m3	8.1 m3	8.7 m3	9.3 m3	11.2 m3	13.1 m3	13.9 m3	18.3 m3
2hr	120min	2.00hr	6.9 m3	8.8 m3	9.7 m3	10.5 m3	11.1 m3	13.4 m3	15.7 m3	16.7 m3	22.0 m3
4hr	240min	4.00hr	8.3 m3	10.4 m3	11.5 m3	12.2 m3	13.0 m3	15.7 m3	18.2 m3	19.4 m3	25.4 m3
6hr	360min	6.00hr	9.8 m3	12.0 m3	13.1 m3	14.0 m3	14.9 m3	17.6 m3	20.5 m3	21.8 m3	28.4 m3
10hr	600min	10.00hr	10.4 m3	12.7 m3	13.9 m3	14.9 m3	15.8 m3	18.7 m3	21.8 m3	23.2 m3	30.2 m3
24hr	1440min	24.00hr	13.9 m3	16.7 m3	18.2 m3	19.2 m3	20.2 m3	23.6 m3	27.4 m3	29.1 m3	37.5 m3
48hr	2880min	48.00hr	16.2 m3	19.2 m3	21.0 m3	22.1 m3	23.0 m3	26.4 m3	30.2 m3	32.0 m3	40.8 m3

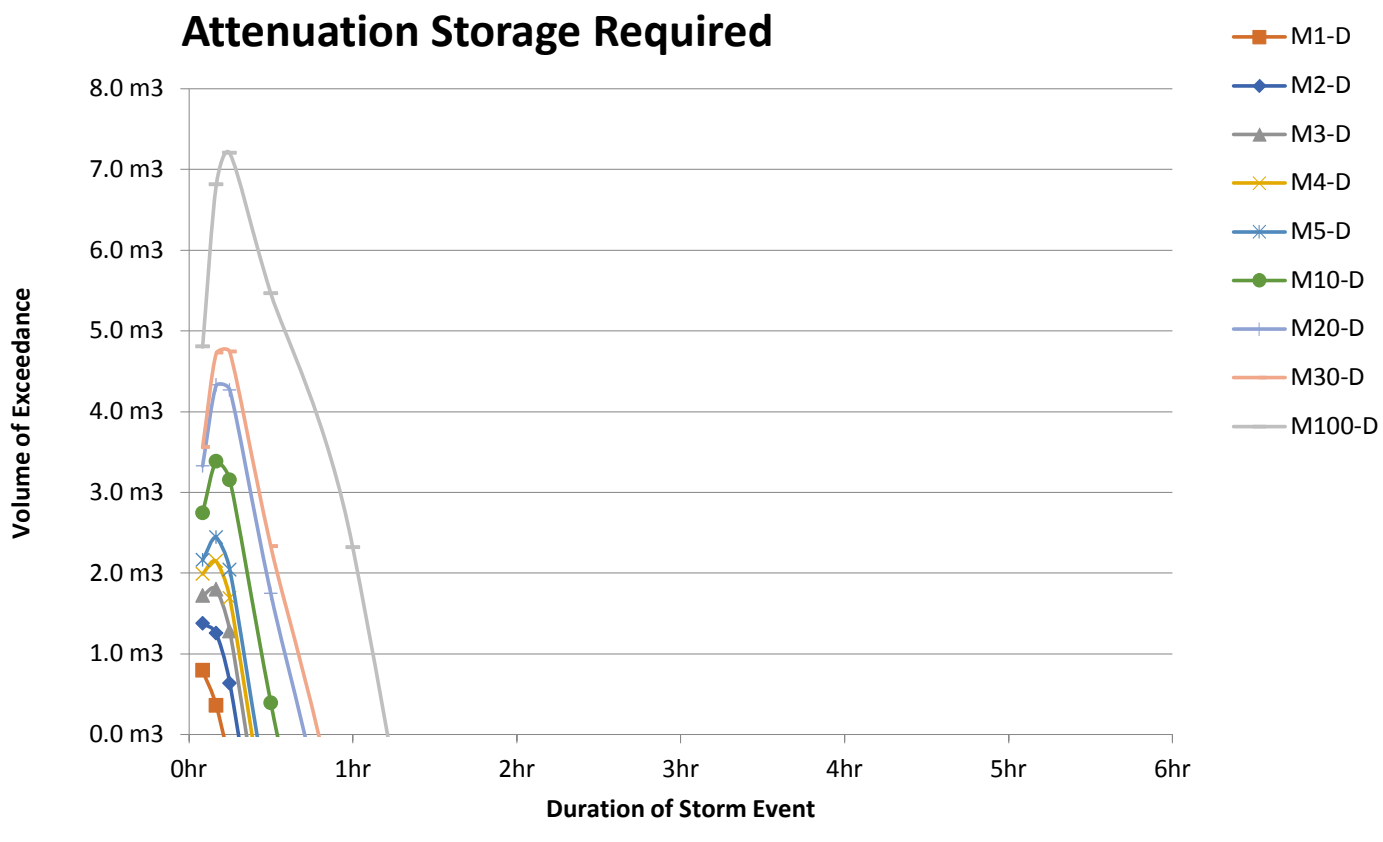
OUTFLOW

D Duration			M1-D	M2-D	M3-D	M4-D	M5-D	M10-D	M20-D	M30-D	M100-D
5min	5min	0.08hr	1.3 m3	1.3 m3	1.3 m3	1.3 m3	1.3 m3	1.3 m3	1.3 m3	1.3 m3	1.3 m3
10min	10min	0.17hr	2.7 m3	2.7 m3	2.7 m3	2.7 m3	2.7 m3	2.7 m3	2.7 m3	2.7 m3	2.7 m3
15min	15min	0.25hr	4.0 m3	4.0 m3	4.0 m3	4.0 m3	4.0 m3	4.0 m3	4.0 m3	4.0 m3	4.0 m3
30min	30min	0.50hr	8.0 m3	8.0 m3	8.0 m3	8.0 m3	8.0 m3	8.0 m3	8.0 m3	8.0 m3	8.0 m3
1hr	60min	1.00hr	16.0 m3	16.0 m3	16.0 m3	16.0 m3	16.0 m3	16.0 m3	16.0 m3	16.0 m3	16.0 m3
2hr	120min	2.00hr	32.0 m3	32.0 m3	32.0 m3	32.0 m3	32.0 m3	32.0 m3	32.0 m3	32.0 m3	32.0 m3
4hr	240min	4.00hr	64.0 m3	64.0 m3	64.0 m3	64.0 m3	64.0 m3	64.0 m3	64.0 m3	64.0 m3	64.0 m3
6hr	360min	6.00hr	95.9 m3	95.9 m3	95.9 m3	95.9 m3	95.9 m3	95.9 m3	95.9 m3	95.9 m3	95.9 m3
10hr	600min	10.00hr	159.9 m3	159.9 m3	159.9 m3	159.9 m3	159.9 m3	159.9 m3	159.9 m3	159.9 m3	159.9 m3
24hr	1440min	24.00hr	383.8 m3	383.8 m3	383.8 m3	383.8 m3	383.8 m3	383.8 m3	383.8 m3	383.8 m3	383.8 m3
48hr	2880min	48.00hr	767.6 m3	767.6 m3	767.6 m3	767.6 m3	767.6 m3	767.6 m3	767.6 m3	767.6 m3	767.6 m3

ATTENUATION STORAGE REQUIRED TO MEET PROPOSED DISCHARGE RATE

D Duration			M1-D	M2-D	M3-D	M4-D	M5-D	M10-D	M20-D	M30-D	M100-D
5min	5min	0.08hr	0.8 m3	1.4 m3	1.7 m3	2.0 m3	2.2 m3	2.7 m3	3.3 m3	3.6 m3	4.8 m3
10min	10min	0.17hr	0.4 m3	1.3 m3	1.8 m3	2.1 m3	2.4 m3	3.4 m3	4.3 m3	4.7 m3	6.8 m3
15min	15min	0.25hr	-0.4 m3	0.6 m3	1.3 m3	1.7 m3	2.0 m3	3.2 m3	4.3 m3	4.7 m3	7.2 m3
30min	30min	0.50hr	-3.8 m3	-2.5 m3	-1.9 m3	-1.4 m3	-1.0 m3	0.4 m3	1.7 m3	2.3 m3	5.5 m3
1hr	60min	1.00hr	-10.2 m3	-8.7 m3	-7.9 m3	-7.2 m3	-6.7 m3	-4.8 m3	-2.9 m3	-2.1 m3	2.3 m3
2hr	120min	2.00hr	-25.1 m3	-23.2 m3	-22.2 m3	-21.5 m3	-20.8 m3	-18.6 m3	-16.3 m3	-15.3 m3	-10.0 m3
4hr	240min	4.00hr	-55.6 m3	-53.6 m3	-52.5 m3	-51.7 m3	-51.0 m3	-48.3 m3	-45.8 m3	-44.6 m3	-38.6 m3
6hr	360min	6.00hr	-86.1 m3	-84.0 m3	-82.8 m3	-82.0 m3	-81.1 m3	-78.3 m3	-75.5 m3	-74.1 m3	-67.5 m3
10hr	600min	10.00hr	-149.5 m3	-147.2 m3	-146.0 m3	-145.0 m3	-144.1 m3	-141.2 m3	-138.1 m3	-136.7 m3	-129.7 m3
24hr	1440min	24.00hr	-369.9 m3	-367.1 m3	-365.5 m3	-364.5 m3	-363.5 m3	-360.2 m3	-356.4 m3	-354.7 m3	-346.3 m3
48hr	2880min	48.00hr	-751.3 m3	-748.4 m3	-746.6 m3	-745.5 m3	-744.6 m3	-741.2 m3	-737.4 m3	-735.6 m3	-726.8 m3

ATTENUATION STORAGE REQUIRED:	0.8 m3	1.4 m3	1.8 m3	2.1 m3	2.4 m3	3.4 m3	4.3 m3	4.7 m3	**7.2 m3**



SuDs CALCULATIONS	
Project: 155-157 REGENT'S PK RD	
STORAGE REQUIREMENTS	
Sheet 8 of 8	
Project Reference: LBH 4540	
Date: 18/02/2021	Rev: 2
Client: Uchaux Ltd	

LBHGEO