

**Glenageary Gate LRD, Glenagery, Dun
Laoghaire, Co. Dublin**

Stage 1 Storm Water Audit

212178-PUNCH-XX-XX-RP-C-0002-SWA

September 2023

Document Control

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Report by: **Rachel Lee** Date: 26th September 2023
Design Engineer (BSc (Hons) ME MIEI)
PUNCH Consulting Engineers

Checked by: **Drazen Trkulja** Date: 26th September 2023
Project Engineer (BEng (Hons) MIEI)
PUNCH Consulting Engineers

Checked by: **Marie-Claire Daly** Date: 26th September 2023
Technical Director (BEng (Hons) HDSDA PGDipCL MEng CEng MIEI)
PUNCH Consulting Engineers

Table of Contents

Document Control.....	i
Table of Contents	ii
1 Introduction.....	1
1.1 Purpose of Report	1
1.2 Site Details	1
1.3 Report Details	1
1.4 Documents Reviewed	2
2 Stage 1 Audit Findings.....	3
2.1 General Requirements as per DLRCC County Development Plan 2022-2028	3
2.2 DLRCC 2022 Development Plan - Stormwater Audit Procedure Table	6
2.3 Urban Creep.....	7
2.4 Flow Exceedance	7
2.5 Interception & Treatment	7
2.6 Minimum Velocity	7
2.7 Drainage Layout	7
2.8 Green Roof Provision	7
2.9 Raingarden	8
2.10 Wayleave	8
2.11 Discharge Rate.....	8
2.12 Reduced Run-off Rates	8
2.13 Attenuation Tank.....	8
2.14 Attenuation	9
2.15 Floor Levels	9
Appendix A Documents Examined by the Auditor	A-I
Appendix B Surface Water Audit Feedback Form	B-II

1 Introduction

1.1 Purpose of Report

This report presents a Stage 1 Surface Water Audit carried out for a proposed Large-Scale Residential Development (LRD) and associated infrastructure at the corner of Glenageary Avenue and Sallynoggin Road in Glenageary, Dun Laoghaire, Co. Dublin. The pre-planning application number for this development is PAC-LRD2-001-23.

AECOM were appointed to provide Engineering Services, which includes design of the surface water network and associated sustainable drainage systems (SuDS) proposed.

PUNCH Consulting Engineers have been appointed by Red Rock Glenageary Ltd to carry out an independent Stage 1 Stormwater Audit on the proposal in line with Dún Laoghaire-Rathdown County Council (DLRCC) requirements.

1.2 Site Details

The site is located at the junction of Sallynoggin Road and Glenageary Avenue, Co Dublin, an area of 0.74 ha (application boundary, 0.61 ha is the site ownership area, 0.55 ha of which is impermeable). The proposed development consists of 138 no. residential units in 2 no. interlinked blocks. The site is bordered by Lidl to the southwest, the Sallynoggin Road to the northwest and the Glenageary Road to the north and northeast.

1.3 Report Details

The audit was carried out by Rachel Lee, Drazen Trkulja and Marie-Claire Daly between the dates of March 27th and April 17th, 2023.

This Stage 1 Audit has been carried out in accordance with the Dún Laoghaire-Rathdown County Council (DLRCC) Development Plan 2022-2028, Appendix 7 “Stormwater Management Policy - Including Stormwater Audit Procedure”. The auditor has examined only those issues within the design relating to storm water drainage implications of the scheme and has therefore not examined or verified the compliance of the design to any other criteria. Design responsibility for the stormwater drainage remains solely with the designer of the works.

Appendix A contains copies of drawings and documents examined by the auditor. Appendix B contains the Surface Water Audit Feedback form.

All of the findings outlined in Section 2 of this report are considered by the auditor to require action in order to improve the stormwater credentials of the scheme.

1.4 Documents Reviewed

Initial documents received 5th April 2023:

- 1) 60690914-ACM-00-00-DR-CE-10-0001- Proposed General arrangement - Rev 0
- 2) ~~60690914-ACM-00-00-DR-CE-10-0501- Proposed Drainage Layout - Rev 1~~
- 3) ~~60690914-ACM-00-00-DR-CE-10-0502- Proposed Basement Drainage Layout - Rev 0~~
- 4) ~~60690914-ACM-00-00-DR-CE-10-0520 - Proposed SuDS Layout - Rev 2~~
- 5) ~~60690914-ACM-00-00-DR-CE-10-0530 - Proposed SuDS Details Sheet 1 of 2 - Rev 1~~
- 6) 60690914-ACM-00-00-DR-CE-10-0531 - Proposed SuDS Details Sheet 2 of 2 - Rev 1
- 7) ~~60690914-ACM-00-00-DR-CE-10-0550 - Proposed Flood Exceedance Route - Rev 0~~
- 8) ~~60690914-ACM-00-00-DR-CE-10-2701- Proposed Watermain Layout - Rev 0~~
- 9) ~~Flood Risk Assessment - Glenageary Gate LRD - Rev 0~~
- 10) ~~Infrastructure Report - Glenageary Gate LRD - Rev 1~~

Updated documents received 14th April 2023

- 1) 60690914-ACM-00-00-DR-CE-10-0501- Proposed Drainage Layout - Rev 2
- 2) 60690914-ACM-00-00-DR-CE-10-0502- Proposed Basement Drainage Layout - Rev 1
- 3) 60690914-ACM-00-00-DR-CE-10-0520 - Proposed SuDS Layout - Rev 3
- 4) 60690914-ACM-00-00-DR-CE-10-0530 - Proposed SuDS Details - Rev 2
- 5) 60690914-ACM-00-00-DR-CE-10-0540 - Proposed Clash Check - Rev 0
- 6) 60690914-ACM-00-00-DR-CE-10-0550 - Proposed Flood Exceedance Route - Rev 1
- 7) 60690914-ACM-00-00-DR-CE-10-2701- Proposed Watermain Layout - Rev 1
- 8) 60690914-ACM-00-00-RE-CE-10-0001 - Flood Risk Assessment - Glenageary Gate LRD - Rev A
- 9) 60690914-ACM-00-00-RE-CE-10-0002 - Infrastructure Report - Glenageary Gate LRD - Rev 2

* - Strikethrough text indicated document has been superseded.

2 Stage 1 Audit Findings

2.1 General Requirements as per DLRCC County Development Plan 2022-2028

Table 2-1 below outlines the result of a review of the scheme designer's proposals against the general requirements outlined in the DLRCC County Development Plan 2022-2028, Appendix 7, section 7.1.1.

Table 2-1: General requirements for all developments greater than a single house.

	Requirements as per DLRCC 2022-2028 Development Plan	Addressed by Scheme Designer?
2.1.1	Climate Change All developments must apply a minimum factor of 1.2 to their drainage design and attenuation volumes to accommodate climate change.	Y
2.1.2	Urban Creep All developments must apply a factor of 1.1 to their drainage design and attenuation volumes to accommodate urban creep.	Highlighted as part of this audit
2.1.3	Blockage Analysis Scheme Designers must submit details of the proposed surface water drainage system in the event of blockage or partial blockage of the system, commenting on any surcharging or flood risk that may be identified, particularly in relation to freeboard used in the simulation analysis. The proposal must include a drawing confirming that safe overland flow routes do not negatively impact properties both within and without the site. The overland flow route plan should identify drop kerbs or ramps required for channelling the flow and address low point areas in the site and detail how properties, both within the development and on adjacent lands, will be protected in the event of excessive overland flows.	Highlighted as part of this audit
2.1.4	Utility Clash Check The Scheme Designer must undertake a utilities clash check to ensure all utilities' vertical and horizontal separation distances can be provided throughout the scheme. The Scheme Designer should demonstrate this with cross-sections at critical locations such as junctions, site thresholds and connection points to public utilities. Minimum separation distances must be in accordance with applicable Codes of Practice.	Scheme designer to confirm.
2.1.5	Private Drains Where an applicant's land is crossed by a private drain, the applicant is responsible for acquiring any rights or permissions necessary to connect to, or to increase the discharge into, or to build over, or divert, or to ensure the adequate capacity is not exceeded, or otherwise alter any private drains not in their exclusive ownership or control, and for ensuring their adequacy.	Scheme design to ensure the capacity of third party connection is not exceeded
2.1.6	Pumping of Surface Water	N/A - pumping of surface water is not proposed
2.1.7	Sustainable Drainage Systems (SuDS): The proposal must demonstrate that they meet the requirements of the Greater Dublin Strategic Drainage Study	Highlighted as part of this audit

	(GDSDS) policies in relation to Sustainable Drainage Systems (SuDS). The design must incorporate SuDS measures appropriate to the scale of the proposed development such as green roofs, bioretention areas, permeable paving, rainwater harvesting, swales, etc. that minimise flows to the public drainage system and maximises local infiltration potential. The Scheme Designer should provide cross-sections and long-sections, and commentary that demonstrates all proposed SuDS measures have been designed in accordance with the relevant industry standards and the recommendations of The SuDS Manual (CIRIA C753)	
2.1.8	Infiltration: The Scheme Designer should submit Site Investigation Report and results, including infiltration tests, and a plan showing the trial pits/soakaway test locations across the site. The report should address instances where groundwater, if any, was encountered during testing and its impact.	Y
2.1.9	Hardstanding/Parking Areas: All proposed parking and hardstanding areas should maximise local infiltration before discharge to the surface water drainage system, via a specifically designed permeable paving/porous asphalt system, in accordance with the requirements of Section 12.4.8 of the County Development Plan 2022-2028.	Y
2.1.10	Basement: If basement carparking is provided, then all incidental run-off from the basement should be shown to drain to the foul system and not the surface water system	Y
2.1.11	Run-off Factors: Where Scheme Designers propose to use reduced run-off factors (or reduced impermeable contributing areas) for areas of their site that drain to SuDS measures these factors must be agreed with Municipal Services, preferable during the pre-planning process. It should be noted that standard surface water simulation software uses default Cv values of 0.84 for Winter and 0.75 for Summer. If the Scheme Designer proposes to use their own reduced run-off rates, then the default Cv values should be amended to a value of 1.0. Maintaining the default Cv values in conjunction with the Scheme Designers proposed rates reduces the run-off in simulations of rainfall events, giving inaccurate simulation results which may lead to under sizing of the drainage system and attenuation storage required.	Highlighted as part of this audit
2.1.12	Hydrological Parameters Scheme Designers must use site specific or local data in their Qbar, attenuation volume and surface water system design such as: • SAAR • Soil Type • Rainfall Return Period Table (available from MET Eireann) • Rainfall intensity • Other hydrological parameters	Y
2.1.13	Discharge Rate: Surface Water discharge from a development must be restricted to 2 l/s/ha or the calculated Qbar, whichever is greater. The Qbar should be calculated using the net area drained and not the gross area of the site (i.e. red line boundary). This discharge rate should be marked on the drainage drawing on the manhole in which the flow restricting device is located. The manhole in which the flow restricting device is located should not have a bypass pipe and, a penstock and silt trap should be provided. Flow restricting devices with an orifice of less than 50mm in diameter should be avoided. Where this is not possible then the Scheme Designer must submit a robust maintenance regime to ensure blockages are avoided, to the satisfaction of dlr. Scheme Designers are recommended to use the HR Wallingford UK SuDS Greenfield runoff rate estimation tool to estimate Qbar	Highlighted as part of this audit

	for their site: https://www.uksuds.com/drainage-calculation-tools/greenfield-runoff-rate-estimation	
2.1.14	Attenuation: If an attenuation system is proposed it should, where possible, not be located under the internal roads but in/under open space or parking areas. Attenuation systems must be inline. The preference is for attenuation systems that allow for infiltration and/or treatment within the site. The Scheme Designer should note that certain landscaping items, such as trees, may not be compatible with attenuation systems. The Scheme Designer must provide fully dimensioned plans and sections of the attenuation storage system. All relevant inlet and outlet levels, dimensioned clearances between other utilities, and actual depths of cover to the system should be provided. Details of the proposed inlet and outlet manholes and arrangements to facilitate draw down and maintenance should also be provided. Scheme Designers are recommended to use the HR Wallingford UK SuDS Surface water storage volume estimation tool to estimate the attenuation storage required for their site: https://www.uksuds.com/drainage-calculation-tools/surface-water-storage .	Highlighted as part of this audit
2.1.15	Green Roof: The proposal must meet the requirements of Appendix 7.2: Green Roof Policy of the County Development Plan 2022-2028.	Highlighted as part of this audit
2.1.16	Interception and Treatment: The Scheme Designer must demonstrate that required interception and/or treatment of surface water run-off is achieved in accordance with GDSDS policy. To be in compliance with GDSDS Volume 2 Section 6.3.3 Table 6.3 Criterion 1, interception of the first 5-10mm is required. If interception of first 5-10mm can't be achieved, then treatment of first 15mm is required.	Y
2.1.17	Maintenance: Scheme Designers must submit a post-construction maintenance specification and schedule for the drainage system, including SuDS measures and attenuation system to dlrc for approval. This maintenance specification and schedule must be included in the Safety File.	To be addressed by the Scheme Designer at Construction Stage
2.1.18	New Connections: Prior to submission of the planning application, the Scheme Designer must obtain the sewer network records from DLRCC and assess if a new connection to the public sewer is technically feasible.	Y

2.2 DLRCC 2022 Development Plan - Stormwater Audit Procedure Table

Table 2-2: Stormwater Audit Procedure Table - Completed by Scheme Designer.

Surface Cover Type	Area (m ²)
Wetland or open water (semi-natural; not chlorinated) maintained or established on site.	
Semi-natural vegetation (e.g. hedgerows, trees, woodland, species-rich grassland) maintained or established on site.	25
Reuse of existing soils and seed source to develop vegetation cover	975
Standard trees planted in connected tree pits with a minimum soil volume equivalent to at least two thirds of the projected canopy area of the mature tree.	
Standard trees planted in pits with soil volumes less than two thirds of the projected canopy area of the mature tree.	
Intensive green roof or vegetation over structure. Substrate minimum settled depth of 150mm.	
Non intensive Brown Roof (Biodiversity Roof). Substrate minimum settled depth of 150mm. Design will be site specific and developed by a suitably qualified ecologist.	
Extensive green roof with substrate of minimum settled depth of 80mm (or 60mm beneath vegetation blanket)	
Extensive green roof of sedum mat or other lightweight systems	1782
Green wall -modular system or climbers rooted in soil.	
Rain gardens and other vegetated sustainable drainage elements.	
Flower-rich perennial planting.	200
Hedges (line of mature shrubs one or two shrubs wide).	
Hedgerows or double hedgerow of native species (may have an associated ditch and bank)	
Groundcover planting.	975
Amenity grassland entire area or sections managed for lesser mowing frequencies for pollinators (e.g. six week meadow)	200
Amenity grassland (species-poor, regularly mown lawn).	475
Water features (chlorinated) or unplanted detention basins.	
Permeable paving.	1288
Sealed surfaces (e.g. concrete, asphalt, waterproofing, stone)	100
Blue roof	1957

2.3 Urban Creep

Problem: As per DLRCC's County Development Plan 2022-2028, all developments must apply a factor of 1.1 to their drainage design and attenuation volumes to accommodate urban creep. It is unclear if this factor has been considered.

Recommendation: Please confirm if urban creep has been considered for the proposed design.

2.4 Flow Exceedance

Problem: In accordance with guidance, "the overland flow route plan should identify drop kerbs or ramps required for channelling the flow and address low point areas in the site and detail how properties, both within the development and on adjacent lands, will be protected in the event of excessive overland flows". These details have not been shown on drawing 60690914-ACM-00-00-DR-CE-10-0550.

Recommendation: Please include the required details on drawing 60690914-ACM-00-00-DR-CE-10-0550.

2.5 Interception & Treatment

Problem: It is unclear where hard standing areas in the site are being intercepted and treated.

Recommendation: Please show connection pipes from hard standing areas to interception areas.

2.6 Minimum Velocity

Problem: Table 6.4 of the GDSDS requires a minimum velocity (pipe full) of 1.0m/s. S1.004 has a velocity of 0.99m/s.

Recommendation: Please review.

2.7 Drainage Layout

Problem: The intention of the connection pipe outfalling into Manhole S1 is unclear.

Recommendation: Please label pipe and ensure it is included in calculations.

2.8 Green Roof Provision

Problem: The % Extensive Green Roof Coverage on the Green Roof Provision table on drawing 60690914-ACM-00-00-DR-CE-10-0520 does not match Table 3.3 of the infrastructure report.

Recommendation: Please review the green roof provision calculations.

2.9 Raingarden

Problem: No raingarden detail has been included on drawing 60690914-ACM-00-00-DR-CE-10-0530 or 60690914-ACM-00-00-DR-CE-10-0531.

Recommendation: Please include raingarden detail.

2.10 Wayleave

Problem: Drawing 60690914-ACM-00-00-DR-CE-10-501 indicates a wayleave to be retained and refers to section 4.1 of the Infrastructure Report. The Infrastructure Report does not include a section 4.1.

Recommendation: Please review and ensure consistency between documents.

2.11 Discharge Rate

Problem: Section 3.3.2 of the Infrastructure Report states an allowable discharge rate of 3.3l/s has been used for design purposes. Drawing 60690914-ACM-00-00-DR-CE-10-0501 states a discharge rate of 3l/s.

Recommendation: Please confirm which discharge rate has been used and ensure consistency between documents.

2.12 Reduced Run-off Rates

Problem: Where Scheme Designers propose to use reduced run-off factors (or reduced impermeable contributing areas) for areas of their site that drain to SuDS measures these factors must be agreed with Municipal Services, preferable during the pre-planning process.

Recommendation: Please confirm agreement with Municipal Services.

2.13 Attenuation Tank

Problem: In accordance with the guidance, the Scheme Designer must provide fully dimensioned plans and sections of the attenuation storage system. All relevant inlet and outlet levels, dimensioned clearances between other utilities, and actual depths of cover to the system should be provided. Details of the proposed inlet and outlet manholes and arrangements to facilitate draw down and maintenance should also be provided.

Recommendation: Please provide all required details for attenuation tank.

2.14 Attenuation

Problem: The attenuation tank appears to only serve pipes S1.000 and S1.001 at the southern end of the site as an inline tank.

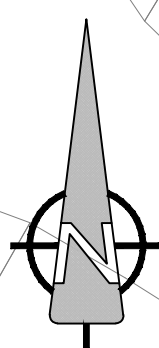
Recommendation: Attenuation tanks must be fully inline as per DLRCC Stormwater Management incl. Stormwater Audit Procedure requirements.

2.15 Floor Levels

Problem: The proposed floor level of 43.80 mOD of buildings adjacent to the attenuation tank, have a freeboard of less than 500mm. The top of water level in the attenuation tank is noted as being 43.5mOD.

Recommendation: Please consider revising the surface water network to achieve the required minimum freeboard of 500mm, in accordance with Table 3.4 of GDSDS.

Appendix A Documents Examined by the Auditor

**AECOM**

PROJECT

GLENAGEARY GATE LRD, AT
JUNCTION OF SALLYNOGGIN
ROAD LOWER AND
GLENAGEARY AVENUE,
GLENAGEARY, CO.DUBLIN

CLIENT

RED ROCK GLENAGEARY LTD

CONSULTANT

AECOM
4th Floor Adelphi Plaza,
George's Street Upper,
Dun Laoghaire,
Co Dublin
Tel: +353 (0)1 2383100
Fax: +353(0)1 2383199
www.aecom.com

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECTURAL AND ENGINEERING DRAWINGS, ANY DISCREPANCIES, ERRORS OR OMISSIONS TO BE BROUGHT TO THE ATTENTION OF THE DESIGNER.
2. ALL DIMENSIONS TO BE CHECKED BY THE CONTRACTOR ON SITE PRIOR TO COMMENCEMENT OF WORKS.
3. AECOM LIMITED TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO THE COMMENCEMENT OF WORKS ON SITE.
4. DIMENSIONS OF ALL BOUNDARIES AND ADJOINING ROADS TO BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF WORKS.

LEGEND:

PROPOSED LANDSCAPE.....

PROPOSED RED LINE BOUNDARY..

PROPOSED TACTILE AND
CORDUROY PAVING

FOR INFORMATION ONLY

ISSUE/REVISION

0	10.01.2023	ISSUED FOR LRD MEETING
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60690914

SHEET TITLE

PROPOSED GENERAL ARRANGEMENT

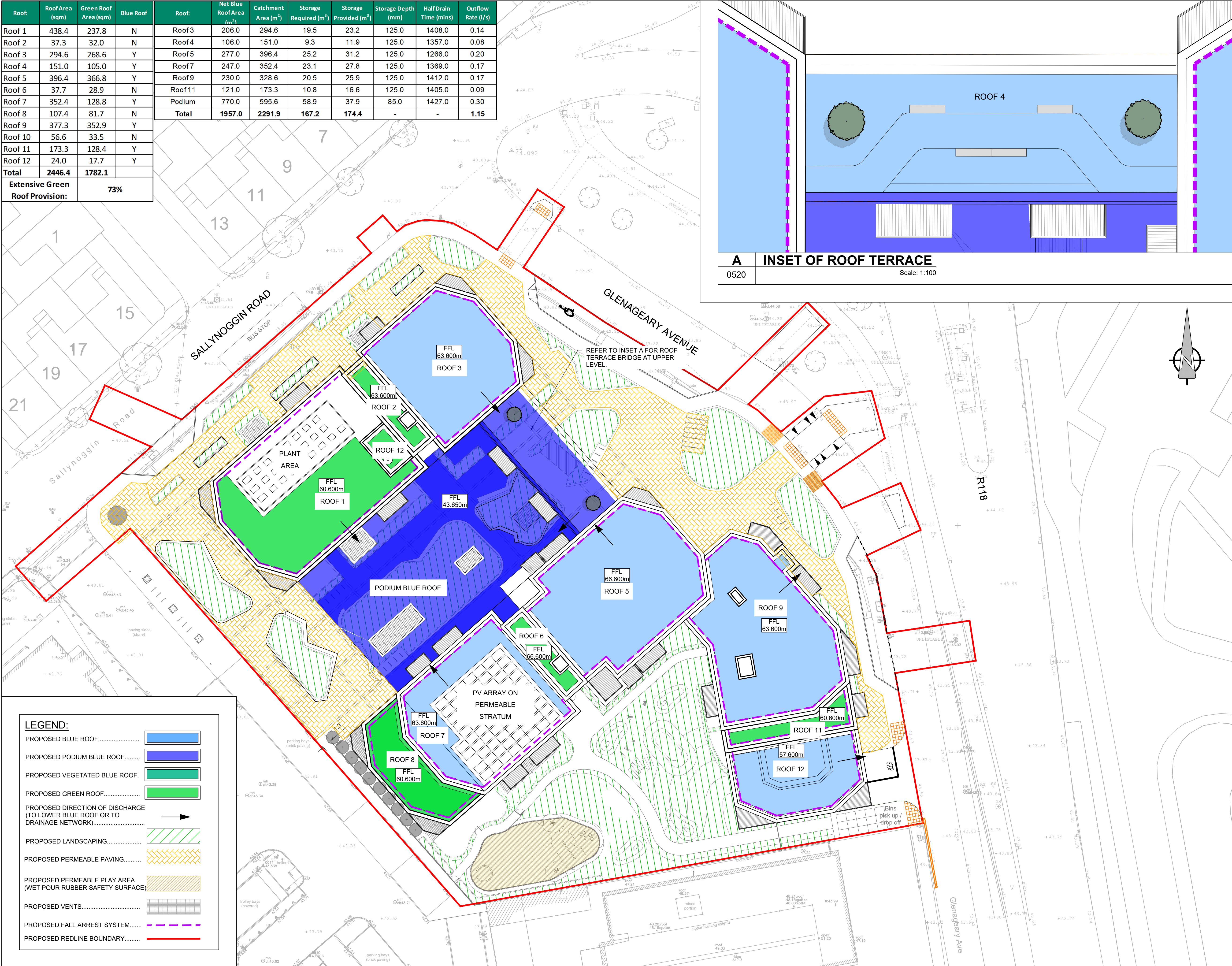
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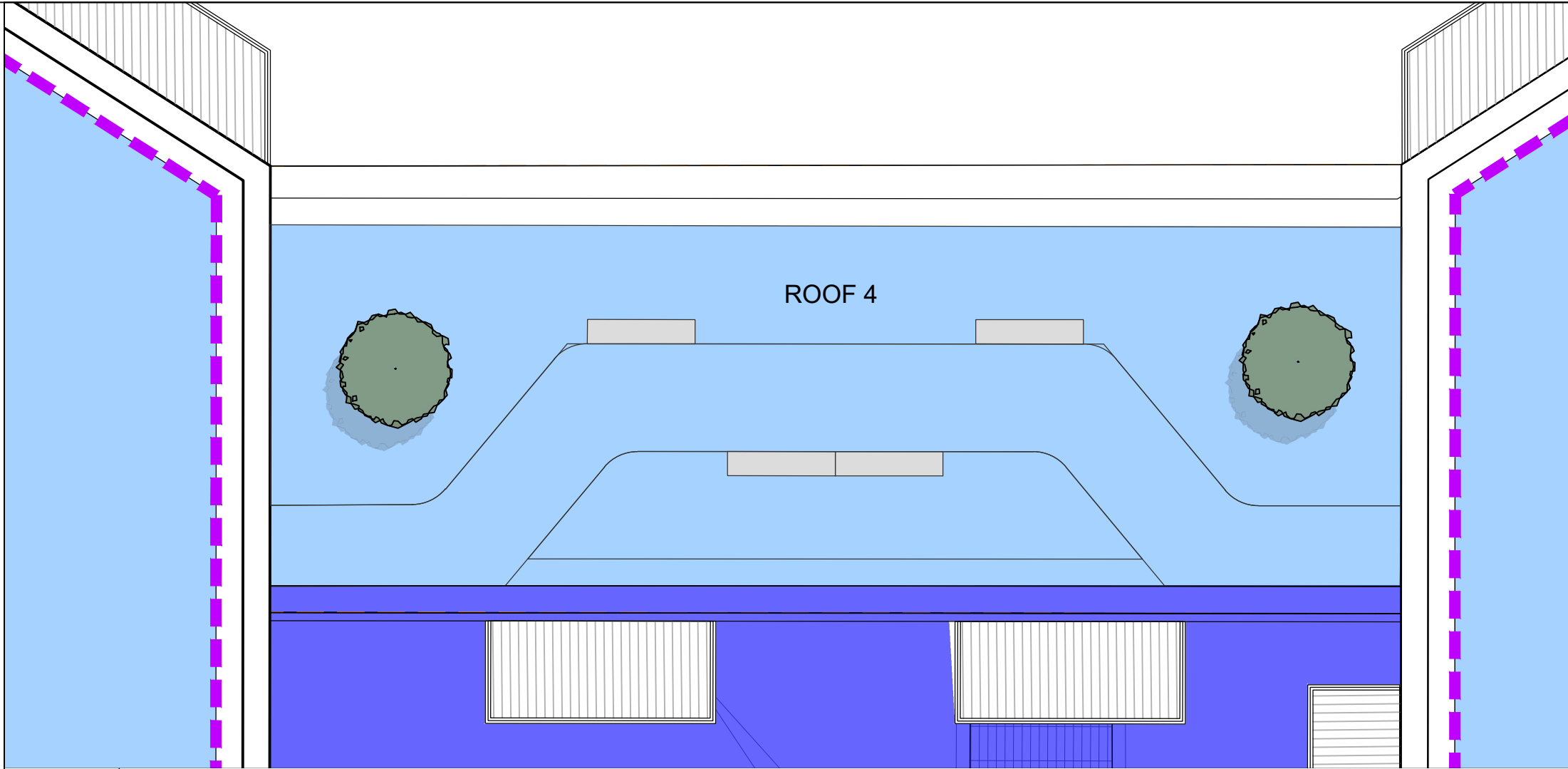
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Checked: DM
Drawn by: KM
Project Management Initials:
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Last Printed: 2023.04.14
Printed on: % Post-Consumer Recycled Content Paper

Roof:	Roof Area (sqm)	Green Roof Area (sqm)	Blue Roof
Roof 1	438.4	237.8	N
Roof 2	37.3	32.0	N
Roof 3	294.6	268.6	Y
Roof 4	151.0	105.0	Y
Roof 5	396.4	366.8	Y
Roof 6	37.7	28.9	N
Roof 7	352.4	128.8	Y
Roof 8	107.4	81.7	N
Roof 9	377.3	352.9	Y
Roof 10	56.6	33.5	N
Roof 11	173.3	128.4	Y
Roof 12	24.0	17.7	Y
Total	2446.4	1782.1	
Extensive Green Roof Provision:		73%	

Roof:	Net Blue Roof Area (m²)	Catchment Area (m²)	Storage Required (m³)	Storage Provided (m³)	Storage Depth (mm)	Half Drain Time (mins)	Outflow Rate (l/s)
Roof 3	206.0	294.6	19.5	23.2	125.0	1408.0	0.14
Roof 4	106.0	151.0	9.3	11.9	125.0	1357.0	0.08
Roof 5	277.0	396.4	25.2	31.2	125.0	1266.0	0.20
Roof 7	247.0	352.4	23.1	27.8	125.0	1369.0	0.17
Roof 9	230.0	328.6	20.5	25.9	125.0	1412.0	0.17
Roof 11	121.0	173.3	10.8	16.6	125.0	1405.0	0.09
Podium	770.0	595.6	58.9	37.9	85.0	1427.0	0.30
Total	1957.0	2291.9	167.2	174.4	-	-	1.15



A INSET OF ROOF TERRACE
0520
Scale: 1:100



LEGEND:	
PROPOSED BLUE ROOF.....	
PROPOSED PODIUM BLUE ROOF.....	
PROPOSED VEGETATED BLUE ROOF.....	
PROPOSED GREEN ROOF.....	
PROPOSED DIRECTION OF DISCHARGE (TO LOWER BLUE ROOF OR TO DRAINAGE NETWORK).....	
PROPOSED LANDSCAPING.....	
PROPOSED PERMEABLE PAVING.....	
PROPOSED PERMEABLE PLAY AREA (WET POUR RUBBER SAFETY SURFACE).....	
PROPOSED VENTS.....	
PROPOSED FALL ARREST SYSTEM.....	
PROPOSED REDLINE BOUNDARY.....	

A PROPOSED SUDS LAYOUT
0520
Scale: 1:250

AECOM

PROJECT

GLENAGEARY GATE LRD, AT JUNCTION OF SALLYNOGGIN ROAD LOWER AND GLENAGEARY AVENUE, GLENAGEARY, CO.DUBLIN

CLIENT

RED ROCK GLENAGEARY LTD

CONSULTANT

AECOM
4th Floor Adelphi Plaza,
George's Street Upper,
Dun Laoghaire,
Co Dublin
Tel:+353 (0)1 2383100
Fax:+353(0)1 2383199
www.aecom.com

NOTES

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- DIMENSIONS OF ALL BOUNDARIES AND ADJOINING ROADS TO BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF WORKS.
- PROPOSED SUDS LAYOUT TO BE READ IN CONJUNCTION WITH 60639703-ACM-00-00-DR-CE-10-0501.
- EXTENSIVE GREEN ROOFS TO BE ACCESSED VIA INTERNAL LADDERS FOR MAINTENANCE.

AECOM
PLANNING

ISSUE/REVISION

NO	DATE	DESCRIPTION
3	NY1	PLANNING ISSUE
2	27.03.2023	ISSUED FOR STORMWATER AUDIT
1	16.02.2023	LRD MEETING UPDATES
0	10.01.2023	ISSUED FOR LRD MEETING

PROJECT NUMBER

60690914

SHEET TITLE

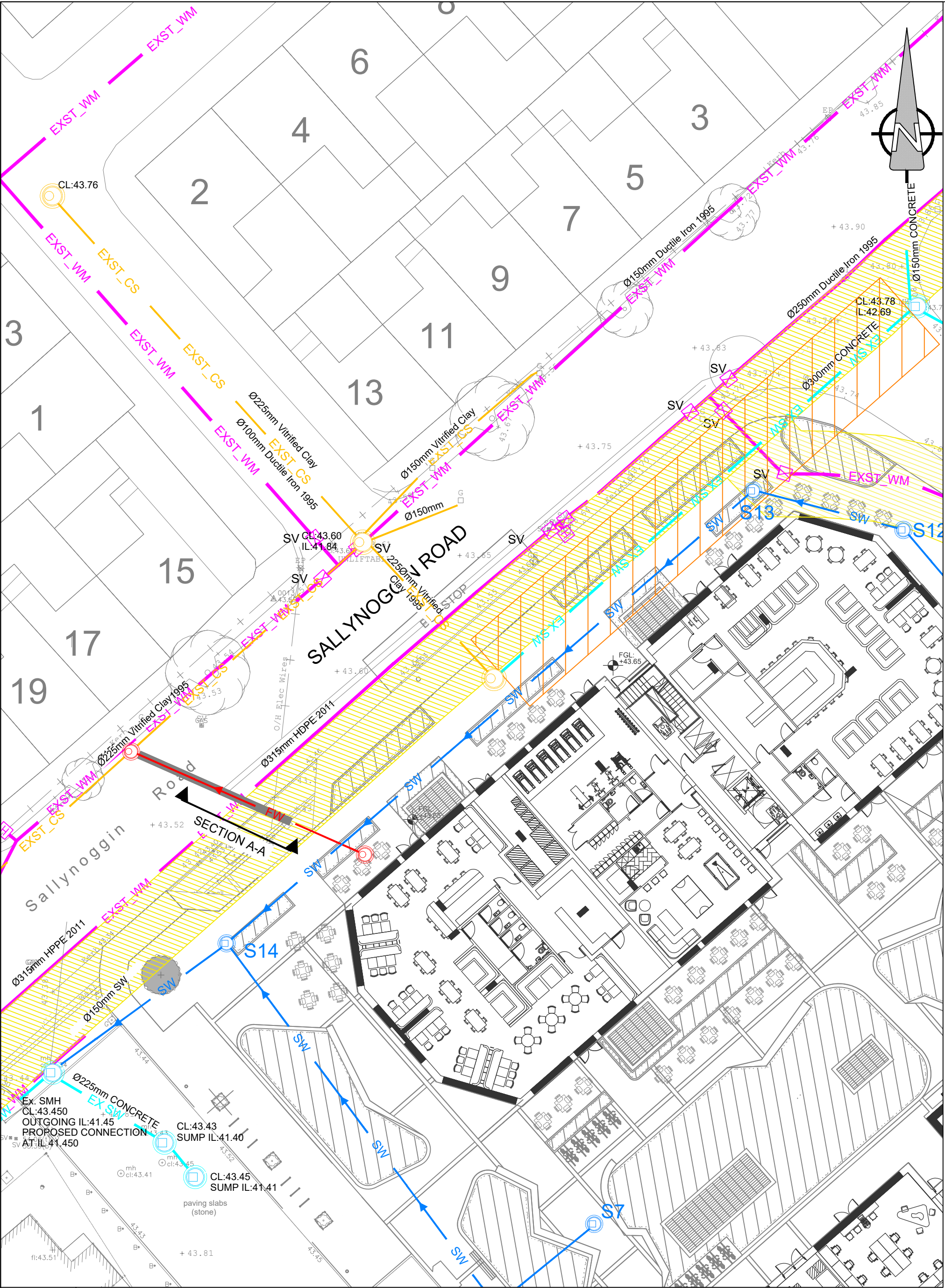
PROPOSED SUDS LAYOUT

SHEET NUMBER

60690914-ACM-00-00-DR-CE-10-0520

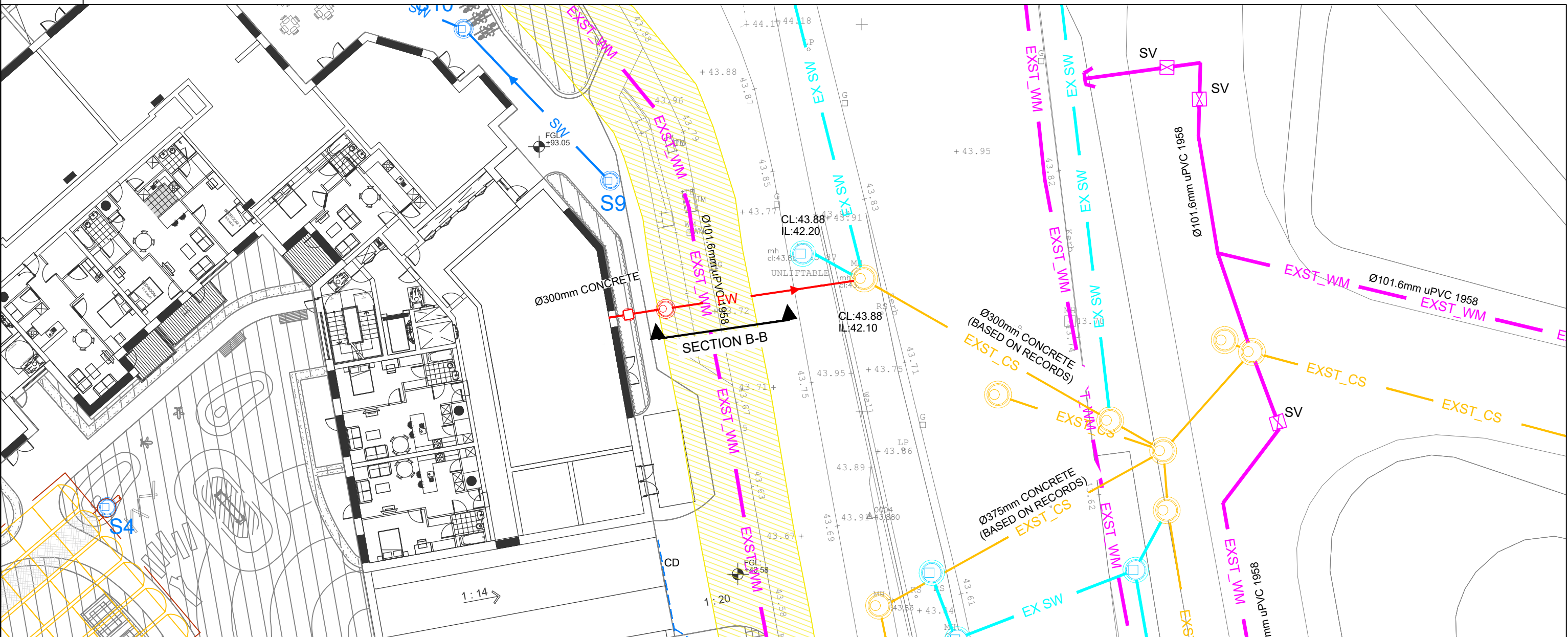
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A LOCATION OF CLASH CHECKS

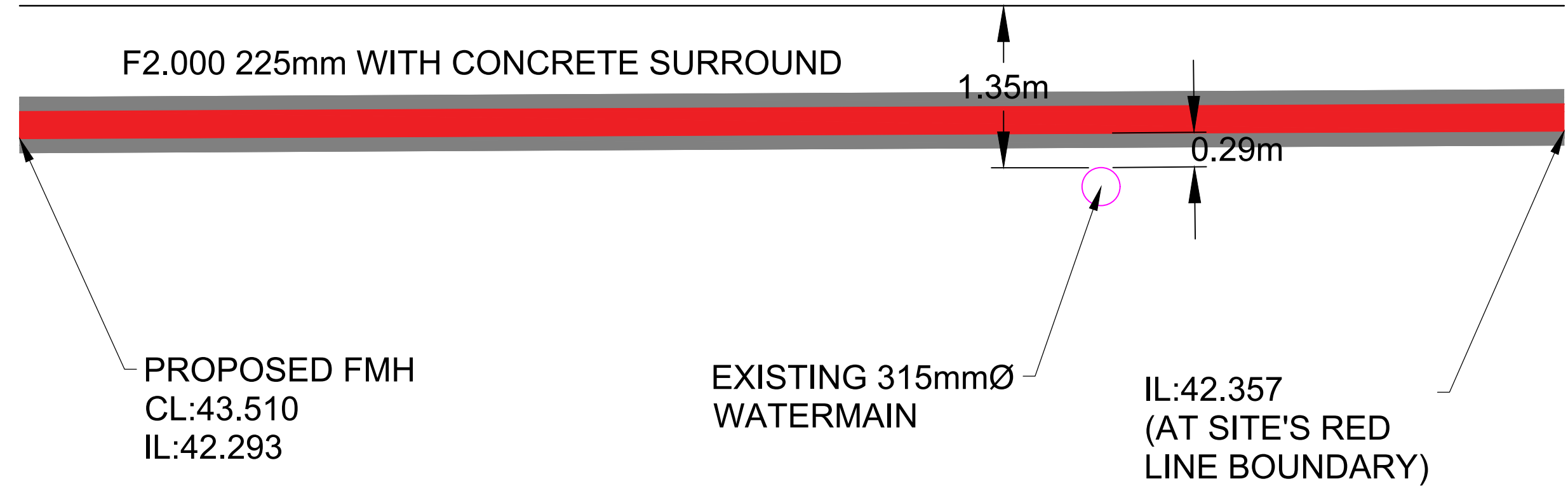
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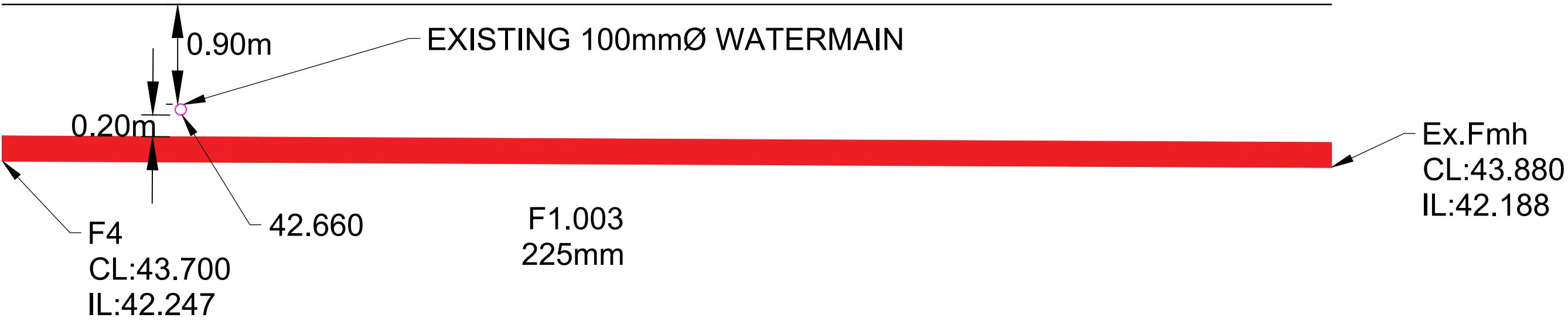
B LOCATION OF CLASH CHECKS

0540 Scale 1:250

SECTION A-A



SECTION B-B



SURFACE WATER NETWORK DETAILS									
Pipe Number	US/MH Name	Pipe Length (m)	Fall (m)	Slope (1:X)	Base Flow (l/s)	US/IL (m)	DS/IL (m)	US/CL (m)	US D.Depth (m)
1.000	S1	17.180	0.101	170.1		42.385	42.284	43.800	225 0.990
1.001	S2	17.180	0.101	170.1	0.1	42.284	42.183	43.800	225 1.091
1.002	S3	13.900	0.082	170.0		42.183	42.101	43.800	225 1.192
2.000	S4	7.800	0.046	169.6	0.2	42.300	42.254	43.800	225 1.075
1.003	S5	20.716	0.122	170.0		42.101	41.979	43.600	225 1.274
1.004	S6	34.239	0.260	131.7		41.979	41.719	43.600	225 1.396
3.000	S7	15.935	0.248	64.3	0.3	42.500	42.252	43.800	225 0.875
1.005	S8	31.294	0.183	170.6		41.719	41.536	43.800	225 1.656
4.000	S9	18.663	0.110	169.8	0.2	42.318	42.208	43.700	225 1.157
4.001	S10	17.921	0.105	170.7	0.2	42.208	42.103	43.700	225 1.267
4.002	S11	32.610	0.192	169.8	0.1	42.103	41.911	43.700	225 1.372
4.003	S12	11.678	0.069	169.2	0.1	41.906	41.837	43.700	225 1.569
4.004	S13	49.610	0.292	170.0		41.837	41.545	43.700	225 1.638
1.006	S14	14.610	0.086	170.0		41.536	41.450	43.500	225 1.739

FOUL WATER NETWORK DETAILS									
Pipe Number	US/MH Name	Pipe Length (m)	Fall (m)	Slope (1:X)	US/IL (m)	DS/IL (m)	US/CL (m)	Pipe DIA (mm)	US D.Depth (m)
F1.000	F1	20.353	0.102	200.0	42.400	42.298	43.800	225	1.175
F2.000	F2	2.398	0.012	200.0	42.257	42.245	43.800	225	1.318
F2.001	F3	13.249	0.066	200.0	42.245	42.179	43.800	225	1.330

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PROJECT

GLENAGEARY GATE LRD, AT
JUNCTION OF SALLYNOGGIN
ROAD LOWER AND
GLENAGEARY AVENUE,
GLENAGEARY, CO.DUBLIN

CLIENT

RED ROCK GLENAGEARY LTD

CONSULTANT

AECOM
4th Floor Adelphi Plaza,
George's Street Upper,
Dun Laoghaire,
Co Dublin
Tel:+353 (0)1 2383100
Fax:+353(0)1 2383199
www.aecom.com

NOTES

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECTURAL AND ENGINEERING DRAWINGS. ANY DISCREPANCIES, ERRORS OR OMISSIONS TO BE BROUGHT TO THE ATTENTION OF THE DESIGNER.
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ISSUE/REVISION

0	NYI	PLANNING ISSUE
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60690914

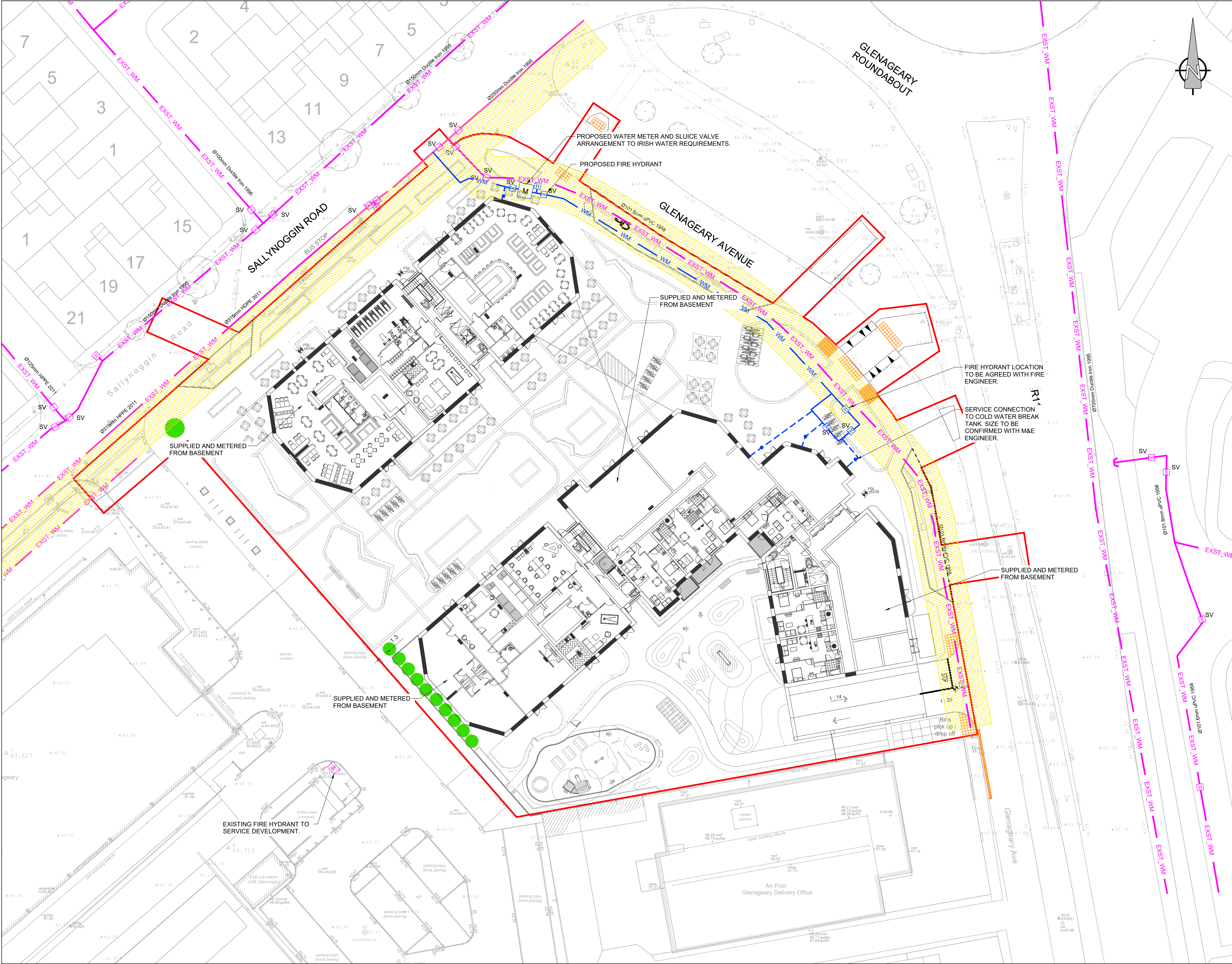
SHEET TITLE

PROPOSED CLASH CHECK

SHEET NUMBER

60690914-ACM-00-00-DR-CE-10-0540

ISO A1 594mm x 841mm
Approved: MOD
Checked: DM
Drawn by: KM
Project Management Initials: DWG
Last saved by: DARA MAGEE(2023.04.14) Last Plotted: 2023.04.14
Filename: \\AECOM\NET\COM\FSE\MEAD\BUL\IED\B2\DCS\PROJECTS\CI60690914_GLENAGEARYGATE900_CAD_GIS910_CAD904_CED01_WIP02_SHEETS\60690914-ACM-00-00-DR-CE-10-2701-PROPOSED WATERMAIN LAYOUT.DWG



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PROJECT
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- DIMENSIONS OF ALL BOUNDARIES AND ADJOINING ROADS TO BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF WORKS.
- DO NOT SCALE. ALL MEASUREMENTS AND COORDINATES TO BE CHECKED ON SITE.
- THE DEVELOPMENT SHALL HAVE A BULK WATER METER EXACT LOCATION TO BE AGREED WITH IRISH WATER IN ACCORDANCE WITH IRISH WATER CODE OF PRACTICE SECTION 3.15.4.
- EACH COMMERCIAL UNIT SHALL HAVE AN APPROVED BOUNDARY BOX (REFER TO APPENDIX A OF THE IRISH WATER CODE OF PRACTICE FOR WATER INFRASTRUCTURE) WITH INTEGRAL STOPCOCK AND SUITABLE FOR THE RECEPTION OF A WATER METER (REFER TO IRISH WATER CODE OF PRACTICE FOR WATER INFRASTRUCTURE SECTION 3.14).
- ALL WATERMANS WILL HAVE A MINIMUM COVER OF 900mm. ALL SERVICE PIPES CONNECTING PROPERTIES WILL HAVE MINIMUM COVER OF 750mm.
- HYDRANTS SHALL BE DOUBLE FLANGED DRILLED TO PN16 AND SHALL COMPLY WITH BS EN 14339, IS EN 1074 PART 6 AND 135 750. REFER TO IRISH WATER CODE OF PRACTICE FOR WATER INFRASTRUCTURE SECTION 3.16.5.
- SUICE VALVES HAVE BEEN PROVIDED SO THAT INDIVIDUAL SECTIONS CAN BE ISOLATED & WILL COMPLY TO BS 5163. THE DEPTH OF THE SUICE VALVE SPINDLE CAP BELOW FINISHED GROUND WILL NOT EXCEED 300mm.
- ALL WATERMAIN DETAILS TO BE IN ACCORDANCE WITH THE IRISH WATER INFRASTRUCTURE STANDARD DETAILS AND CODE OF PRACTICE FOR WATER INFRASTRUCTURE. REFER TO IRISH WATER STANDARD DETAILS STD-W03 - STD-W10 FOR PIPE CONNECTION ARRANGEMENTS.

LEGEND

EXISTING PUBLIC WATERMAIN..... EXST_WM

PROPOSED 1500mm WATERMAIN..... WM

PROPOSED FIRE HYDRANT..... FH

PROPOSED SUICE VALVE..... SV

PROPOSED 2m WATERMETER..... M

PROPOSED BOUNDARY BOX AND SERVICE CONNECTION. REFER TO NOTES FOR FURTHER DETAILS.....

EXISTING SUICE VALVE..... SV

EXISTING FIRE HYDRANT..... FH

3m WAYLEAVE.....

PROPOSED RED LINE BOUNDARY.....

AECOM

PLANNING

ISSUE/REVISION

NO	DATE	DESCRIPTION
1	NYI	ISSUED FOR PLANNING
0	10.01.2023	ISSUED FOR LRD MEETING

PROJECT NUMBER
60690914

SHEET TITLE
PROPOSED WATER SUPPLY LAYOUT

SHEET NUMBER
60690914-ACM-00-00-DR-CE-10-2701

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Appendix B Surface Water Audit Feedback Form

Stormwater Audit Feedback Form

Scheme Title: Glenageary Gate LRD, Glenageary, Dun Laoghaire, Co. Dublin		Project Reference: 212178		Audit Stage : 1	Audit Completed: 17/04/2023
Date:					
06/04/2023		11/04/2023		17/04/2023	
SWA Item No.	Auditor Comment	Auditor Recommended Measure	Designer Response	Response Accepted by Auditor (Yes/No)	
2.1.3	Scheme Designers must submit details of the proposed surface water drainage system in the event of blockage or partial blockage of the system, commenting on any surcharging or flood risk that may be identified, particularly in relation to freeboard used in the simulation analysis. The proposal must include a drawing confirming that safe overland flow routes do not negatively impact properties both within and without the site. The overland flow route plan should identify drop kerbs or ramps required for channelling the flow and address low point areas in the site and detail how properties, both within the development and on adjacent lands, will be protected in the event of excessive overland flows.	Scheme designer to submit blockage analysis, with relating commentary and overland flow plaths shown on plan.	A surcharge (50% blockage analysis has been modelled using MicroDrainage for the proposed scheme. Please refer to Section 3.5 and Appendix L of the Infrastructure Report for details. Exceedance flows will enter Sallynoggin Road and flow west along Sallynoggin Road to the nearest gullies. In this manner, the exceedance flows will be away from any buildings.	Yes	
2.1.4	The Scheme Designer must undertake a utilities clash check to ensure all utilities' vertical and horizontal separation distances can be provided throughout the scheme. The Scheme Designer should demonstrate this with cross-sections at critical locations such as junctions, site thresholds and connection points to public utilities. Minimum separation distances must be in accordance with applicable Codes of Practice.	Scheme designer to submit evidence of utility clash check with cross-sections.	Please refer to the MicroDrainage long sections and crss section's added to drawings.	Yes	

Stormwater Audit Feedback Form

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06/04/2023		11/04/2023		17/04/2023
SWA Item No.	Auditor Comment	Auditor Recommended Measure	Designer Response	Response Accepted by Auditor (Yes/No)
2.1.5	Where an applicant's land is crossed by a private drain, the applicant is responsible for acquiring any rights or permissions necessary to connect to, or to increase the discharge into, or to build over, or divert, or to ensure the adequate capacity is not exceeded, or otherwise alter any private drains not in their exclusive ownership or control, and for ensuring their adequacy.	If the proposals include connection to a private drain, scheme design to ensure the capacity of third party connection is not exceeded	A letter of consent will be obtained in advance of the planning application. The existing Lidl outfall pipe is a 225mm dia. at a gradient of 1:163, which equates to a capacity of approx. 40.5l/s. The existing outfall pipe is known to only serve the existing Lidl development which has a restricted outfall rate to 3.2l/s. Therefore, the existing 225mm dia. outfall pipe should have more than enough capacity to serve the proposed development outfall.	Yes
2.3	As per DLRCC's County Development Plan 2022-2028, all developments must apply a factor of 1.1 to their drainage design and attenuation volumes to accommodate urban creep. It is unclear if this factor has been considered.	Please confirm if urban creep has been considered for the proposed design.	It is not considered reasonable to allow for urban creep as extensions would not be possible, given the nature of the development. Furthermore, DLRCC's road resection for upgrade works to Sallynoggin roundabout would mean a significant portion of ground floor hardstanding would be lost from the private development and drained to the road network. However, as mentioned in SWA Item 2.12, a conservative runoff factor of 100% from permeable paving was applied to offer an offset against this factor not being allowed.	Yes

Stormwater Audit Feedback Form

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06/04/2023		11/04/2023		17/04/2023
SWA Item No.	Auditor Comment	Auditor Recommended Measure	Designer Response	Response Accepted by Auditor (Yes/No)
2.4	In accordance with guidance, "the overland flow route plan should identify drop kerbs or ramps required for channelling the flow and address low point areas in the site and detail how properties, both within the development and on adjacent lands, will be protected in the event of excessive overland flows". These details have not been shown on drawing 60690914-ACM-00-00-DR-CE-10-0550.	Please include the required details on drawing 60690914-ACM-00-00-DR-CE-10-0550.	Please see revised overland flow drawing.	Yes
2.5	It is unclear where hard standing areas in the site are being intercepted and treated.	Please show connection pipes from hard standing areas to interception areas.	The majority of hardstanding proposed at Podium/ground floor level will be provided as permeable paving which will provide interception and treatment storage. The remaining hard surfaces will be designed to crossfall to adjacent landscaped areas via surface runoff at source.	Yes
2.6	Table 6.4 of the GDSDS requires a minimum velocity (pipe full) of 1.0m/s. S1.004 has a velocity of 0.99m/s.	Please review.	Please see revised MicroDrainage calculations.	Yes
2.7	The intention of the connection pipe outfalling into Manhole S1 is unclear.	Please label pipe and ensure it is included in calculations.	Please see revised drainage layout drawing. This is an outfall pipe from a linear drainage channel proposed at the top of the basement ramp.	Yes
2.8	The % Extensive Green Roof Coverage on the Green Roof Provision table on drawing 60690914-ACM-00-00-DR-CE-10-0520 does not match Table 3.3 of the infrastructure report.	Please review the green roof provision calculations.	Please see revised drawings and Infrastructure Report	Yes

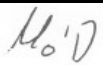
Stormwater Audit Feedback Form

Scheme Title: Glenageary Gate LRD, Glenageary, Dun Laoghaire, Co. Dublin		Project Reference: 212178	Audit Stage : 1	Audit Completed: 17/04/2023
Date:				
06/04/2023		11/04/2023		17/04/2023
SWA Item No.	Auditor Comment	Auditor Recommended Measure	Designer Response	Response Accepted by Auditor (Yes/No)
2.9	No raingarden detail has been included on drawing 60690914-ACM-00-00-DR-CE-10-0530 or 60690914-ACM-00-00-DR-CE-10-0531.	Please include raingarden detail.	There are no raingardens proposed. These references have been changed to read soft Inadscaping. Due to various constraints, including wayleaves around the site boundary and the attenuation tank within the site, soft landscaping has been proposed as interception.	Yes
2.10	Drawing 60690914-ACM-00-00-DR-CE-10-501 indicates a wayleave to be retained and refers to section 4.1 of the Infrastructure Report. The Infrastructure Report does not include a section 4.1.	Please review and ensure consistency between documents.	Please refer to section 3.1 of the Infrastrucutre report. This reference has been updated on revised drawings.	Yes
2.11	Section 3.3.2 of the Infrastructure Report states an allowable discharge rate of 3.3l/s has been used for design purposes. Drawing 60690914-ACM-00-00-DR-CE-10-0501 states a discharge rate of 3l/s.	Please confirm which discharge rate has been used and ensure consistency between documents.	To confirm, an outfall rate of 3.3l/s has been used in the MicroDrainage model. Please see revised Infrastrucutre Report and drawings.	Yes
2.12	Where Scheme Designers propose to use reduced run-off factors (or reduced impermeable contributing areas) for areas of their site that drain to SuDS measures these factors must be agreed with Municipal Services, preferable during the pre-planning process.	Please confirm agreement with Municipal Services.	The proposed reduced runoff rates are as follows: 1. Green Roof = 92% in accordance with the current DLRCC Green Roof Policy for Extensive Green Roofs 2. Soft Landscaping = 47% runoff rate which matches the Soil Type for the site i.e. Soil Type 4, this is as suggested by DLRCC in the LRD Opinion. 3. Permeable paving runoff factor has not been discussed with DLRCC, previously was 95% but increased to 100% in the absence of discussion with DLRCC and also to allow an offset against the urban creep not being considered as mentioned in SWA Item 2.3.	Yes

Stormwater Audit Feedback Form

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06/04/2023		11/04/2023		17/04/2023	
SWA Item No.	Auditor Comment	Auditor Recommended Measure	Designer Response	Response Accepted by Auditor (Yes/No)	
2.13	In accordance with the guidance, the Scheme Designer must provide fully dimensioned plans and sections of the attenuation storage system. All relevant inlet and outlet levels, dimensioned clearances between other utilities, and actual depths of cover to the system should be provided. Details of the proposed inlet and outlet manholes and arrangements to facilitate draw down and maintenance should also be provided.	Please provide all required details for attenuation tank.	Please refer to Stormtech Tank details, which have been included in Appendix J of the Infrastructure Report and contain all levels and sizes associated with the proposed attenuation tank.	Yes	
2.14	The attenuation tank appears to only serve pipes S1.000 and S1.001 at the southern end of the site as an inline tank.	Attenuation tanks must be fully inline as per DL RCC Stormwater Management incl. Stormwater Audit Procedure requirements.	A number of different arrangements and options have been reviewed for the proposed attenuation tank. The proposed location for the tank, is the only feasible location based on the current development proposals. It is expected that a large portion of roof runoff can be routed to the upstream end of the proposed attenuation tank, but it is noted that all of the roof and podium will also be provided with Blue Roof attenuation and released at restricted rates.	Yes	

Stormwater Audit Feedback Form

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06/04/2023		11/04/2023		17/04/2023
SWA Item No.	Auditor Comment	Auditor Recommended Measure	Designer Response	Response Accepted by Auditor (Yes/No)
2.15	The proposed floor level of 43.80 mOD, of buildings adjacent to the attenuation tank, have a freeboard of less than 500m. The top of water level in the attenuation tank is noted as being 43.5mOD.	Please consider revising the surface water network to achieve the required minimum freeboard of 500mm, in accordance with Table 3.4 of GDSDS.	Due to the constraints present within the site, including the limited depth of the existing outfall pipe and the required attenuation storage, it was not considered feasible to achieve a 500mm freeboard. AECOM have provided a 300mm freeboard and mitigated against any flooding risk by undertaking a 50% blockage analysis as well as a flow exceedance analysis which demonstrates the flow paths for surface water during excess events and how this will be towards the existing public roads and not buildings.	Noted - Relaxation from GDSDS requirement to be approved by DLRCC
Signed:	Marc O'Dowd 	Design Team Project Manager	Date: 17.04.2023	
Please complete and return to the auditor				
Signed:		Auditor: Drazen Trkulja	Date: 17/04/2023	