C1675/EAJ/DPS/bz/20250229

23rd October 2025

F.A.O Mr Joe Woolley
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Manchester
M15 4LD

Consulting Engineers

[redacted]
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Dear Joe,

NEW ISLINGTON 3B, MANCHESTER REMEDIATION STRATEGY LETTER

1. BACKGROUND

SGI Consulting Engineers Ltd (trading as SGI) have been instructed by (Urban Splash Developments Ltd) to develop a remediation and enabling works strategy at a parcel of land located off Lockyard Lane, Manchester (M4 6JN); herein referred to as the site.

The site comprises an undeveloped parcel of land surfaced by hardcore and local areas of concrete.

This report has been prepared to address Planning Condition 8 pertaining to the planning application for the site (Planning App Ref 122598/FO/2019). It is intended for submission to the regulatory bodies to outline the necessary remediation and enabling works required to render the site suitable for the future development.

The development of the risk management strategy for the subject sites includes the following tasks:

- Identification of the relevant pollutant linkages;
- Review of site characteristics;
- Development of remedial objectives;
- Selection of appropriate remedial technology; and
- Development of remedial strategy.

1.1. PREVIOUS REPORTS

SGI have been provided with the following geoenvironmental investigations and assessments that have previously been carried out at the site:

- **Geotechnical Report** (Ref: CL-602- LKC 16 1334-02) dated February 2017. The report was prepared by LK Group for the Phase 2 development of the scheme on behalf of Urban Splash.

- **Phase 2 Geoenvironmental Investigation, Risk Assessment & Remediation Strategy** (Ref: CL-602-LKC 20 1282-02) August 2020. The report was prepared by LK Group for the Phase 3 development of the scheme on behalf of Urban Splash.

ace consultancy engineering business environment member

In addition to the above, SGI carried out a supplementary phase of intrusive ground investigation to fill in data gaps and uncertainties with respect to the contaminated land risk assessment that were highlighted in the previous investigations:

- **Ground Investigation Letter Report** (Ref: C1675/EAJ/DPS/jt/20240218) dated February 2025. The letter was prepared by SGI for the Phase 3B development of the scheme on behalf of Urban Splash.

To inform the assessment of the potential risk to contaminated land within the context of the proposed residential development and to inform the preparation of the remediation strategy, the pertinent points from the above geo-environmental investigation reports are summarised within Section 1.3 overleaf.

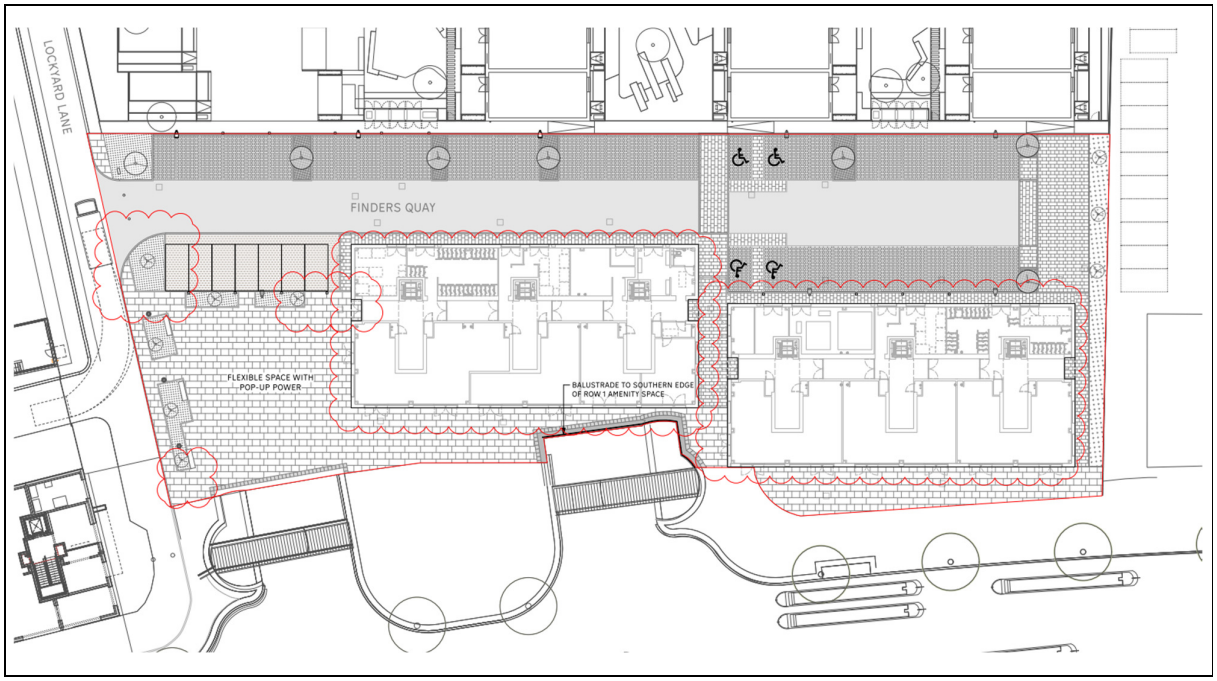
For the avoidance of any doubt, the reports should be read both as a precursor to and in conjunction with this document.

1.2. PROPOSED DEVELOPMENT

The proposed development will comprise the construction of two new apartment buildings with associated car park (hardstand) and amenity landscaping.

Proposed Development Plan is presented in Figure 1 below.

FIGURE 1 PROPOSED DEVELOPMENT LAYOUT



1.3. SITE SUMMARY

TABLE 1.1 SITE SUMMARY

Site History	The site formerly played host to a cotton mill, engineering works and a 1970s residential development. As part of the gentrification of the area and the installation of a canal basin, the area was used as a site compound and materials store for a wider development.
Ground Conditions	**Made Ground:** Made Ground deposits were encountered within all exploratory hole locations from ground level to a maximum proven depth of 4.20m bgl (WS104). The Made Ground deposits typically comprised interbedded gravelly sand or gravelly clay soils (of varying thickness), with granular constituents of brick, concrete, ash, sandstone, clinker and mixed lithologies.
	Drift Natural drift deposits were recorded in WS104, underlying the Made Ground, and comprises a gravelly CLAY. This reaffirms the conditions recorded within the deeper boreholes (CP103 and CP104) during the previous investigation.
	Solid Geology No solid geology was encountered during the investigation works. The British Geological Society (BGS) suggest bedrock in the locality is at depths of >20m bgl.
	Groundwater No groundwater strikes were recorded during the SGI site investigation. Groundwater was recorded at 16.10m bgl in CP103 and 4.70m bgl in CP104 during the previous investigation.
Human Health Risk Assessment	The Tier 2 screening values for Residential end use without plant uptake has been utilised for this assessment due to the proposed apartment-style style residential development, where there are no private gardens and it there place communal outdoor spaces. Referring to the assessment, elevated concentrations of potential contaminants of concern have been identified when compared with Tier I GACs for a residential end use (without plant uptake): ▪ Naphthalene ▪ Benzo(a)Anthracene ▪ Benzo(b)Fluoranthene ▪ Benzo(a)Pyrene ▪ Dibenzo(a,h)Anthracene ▪ TPHC21-C35 Asbestos was not identified in any of the ten samples submitted for analysis. However, due to the age and nature of the Made Ground, it cannot be discounted that asbestos is present within the Made Ground deposits.

Human Health Risk Assessment (Continued)	The risk to chronic human health associated with the elevated concentrations of non-volatile PAH compounds and TPH C21-C35 can be mitigated through the installation of a suitable cover system in proposed landscaping and public open space to remove any potential for direct exposure to impacted soils. With respect to elevated naphthalene identified in WS102 at 0.80 m bgl, this presents a potential volatilisation to indoor air risk and therefore this material requires further assessment or remedial action. If any Made Ground material is removed for off-site disposal a WM-3 waste classification will be required.
Controlled Waters Risk Assessment	Non-volatile PAH contamination has been identified as part of the leachate analysis, along with elevated heavy metal concentrations within the groundwater analysis. Where leachate analysis has been undertaken, this can overstate the risk and is not wholly representative of the site characterisation. The presence of CLAY within the drift deposits will serve to reduce the vertical migration of contaminants that might subsequently leach into the underlying bedrock aquifer. Furthermore, the underlying bedrock aquifer is recorded as a secondary B Aquifer within the Manchester Marls Formation and it is not considered a sensitive receptor. In addition, the dockwall structure, which separates the site from the marina to the south, means the two waterbodies are not likely to have hydraulic continuity. Furthermore, the groundwater level within the basin appears to be at a higher topographical level than the groundwater level recorded at the site; as such, if the two waterbodies were in hydraulic continuity, it is likely the basin would recharge the site, rather than the reverse. As such, this receptor is not considered to be critical. In light of the above, the site is considered to pose a low risk to controlled waters
Ground Gas	The ground gas monitoring undertaken as part of this investigation suggests that the site can be classified as Characteristic Situation (CS)1 – Very Low Gas Risk.

2. REMEDIATION AND SITE-ENABLING WORKS

SGI has outlined specific remediation and enabling works points that will be required. These detailed works will be required to be independently validated, and it is considered when completed that the site will be considered suitable for redevelopment.

RE-1 – DELINEATION, EXCAVATION AND TREATMENT OF IDENTIFIED ELEVATED NAPHTHALENE

Elevated levels of naphthalene have been identified in WS102 at 0.80m bgl within shallow Made Ground deposits in the central sector of the site.

Naphthalene is a volatile contaminant and could potentially pose an unacceptable risk associated with volatilisation to indoor air, and cannot be mitigated through the construction of a clean cover system.

SGI suggest the Made Ground soils at WS102 are excavated and removed from site or placed in an area of non-sensitivity (such as below hardstand or landscaping).

Upon completion of the delineation and excavation, the sides and base of the resulting void(s) where impacted material were present will be chemically validated to confirm that no impacted materials remain in situ.

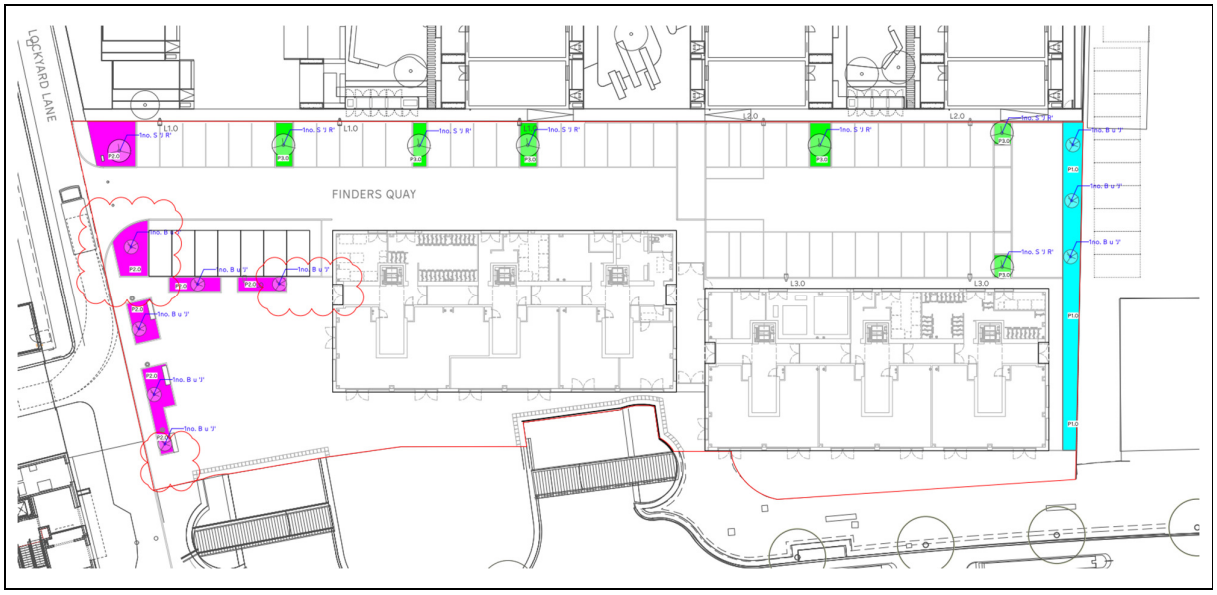
Validation samples will be collected from the side and base of the excavation. The results of this validation testing will be directly compared to the site-specific remediation targets (as defined within Appendix II of this Letter) to demonstrate that no unacceptable level of risk to human health.

RE-2 – PREPARATION OF COVER SYSTEM

Where the soft-standing cover systems are required, it will be the contractor's responsibility to prepare the area to facilitate the placement of the clean cover system during the development phase of the works.

The preparation of the areas requiring clean cover is critical in ensuring delivery of the site in a manner that will ensure no risk to the proposed end users. Details of the proposed landscaping plan and the areas that require a suitably designed cover system is outlined in Figure 2. The full landscaping plans are contained in appendix II.

FIGURE 2 PROPOSED LANDSCAPING PLAN



Where Made Ground is deemed unsuitable for retention in a garden, the area will be subject to a reduced-level dig to remove unsuitable material to a level that would allow the placement of the cover system or verified natural stratum (whichever is the shallower).

Excavated soil will be stockpiled pending the results of the appropriate validation testing (to be completed in accordance with this specification) prior to reuse in an area of no sensitivity or, where necessary, this material will be removed from the site following UK waste management legislation.

The placement of certified subsoil and topsoil will be completed as part of the developer works/build-phase mitigation plan.

All garden areas where a cover system is required will be subject to plot-specific independent validation by E3P.

RE-3 – INDEPENDENT VALIDATION AND SITE SUPERVISION

It will be necessary to undertake a watching brief to instigate the remediation and enabling works across the site with advice from a suitably qualified and independent specialist who is familiar with this letter report. The specialist is required to attend the site on a part-time basis in order to record ground conditions and to monitor progress and quality of works completed by the contractor.

Frequencies of site attendance may need to change depending on specific operations that are being completed.

RE-4 – REMEDIAITON VERIFICATION REPORT

Complete remedial validation is to be reported in line with regulatory guidance. This will include a detailed risk assessment. The report will be submitted to the local authority for approval following completion.

The verification report will conclude the site remediation and enabling works, with the build phase validation to be produced separately.

3. VALIDATION SAMPLING PROTOCOL

In accordance with the current requirements of the regulatory authorities, validation samples will be collected from all materials that are to be subject to movement under the protocols outlined within this remediation and enabling works strategy, or for materials to be imported onto the site to facilitate the proposed residential development.

Soil samples destined for chemical analysis will be collected at regular intervals in appropriate sampling containers. All samples will subsequently be stored in cooled boxes prior to submission to a UKAS/MCERTS accredited laboratory.

All samples will be collected using appropriate personal protective equipment (PPE) and sampling equipment, which will be cleaned at each sampling location.

A detailed copy of SGI Ltd sampling methodology, QA procedures and laboratory chain of custody forms will be documented within the site records and presented with the final validation report for the site.

Where the material is found to contain concentrations of potential contaminants at levels in excess of the site-specific screening criteria (as detailed within the enclosed appendices), SGI will undertake further assessment and recommendations on the appropriate use for the material in question, which may involve the disposal of such materials off-site to a suitable waste management facility.

The sampling frequency for materials to be managed under the remediation strategy is presented in Table 3.1.

TABLE 3.1 SPECIFICATION OF CHEMICAL VALIDATION LABORATORY ANALYSIS

MATERIAL USE	TESTING FREQUENCY	SUITE OF ANALYSIS
Site-Generated		
Site Generated 6F2	1 Sample per 1000 m3	A/B/C/D
Site Won MADE GROUND General Backfill	1 Sample per 250 m3 where visual and/or olfactory impact is identified	E
Site Won MADE GROUND General Backfill	1 Sample per 1000 m3	A/B/C/D
Site Won MADE GROUND General Backfill	1 Sample per 2000 m3	F
Site Won Natural Backfill	1 Sample per 2000 m3	A/B/C/D
Site Generate Subsoil (150 mm Landscaped Cover)	1 Sample per 250 m^3	A/B/C/D
Hotspot Validation Samples	1 Sample per 10 m of linear excavation to base and sidewall	A
Imported		
Imported Crush – 6F5	1 Sample per 1000 m3	A/B/C/D
Subsoil Greenfield Source (150 mm Landscaped Cover)	1 Sample per 200 m3 (minimum of 3 per source)	A/B/C/D
Subsoil Brownfield Source (150 mm Landscaped Cover)	1 Sample per 150 m3 (minimum of 3 per source)	A/B/C/D
Topsoil Greenfield Source (150 mm Landscaped Cover)	1 Sample per 200 m3 (minimum of 3 per source)	A/B/C/D
Topsoil Brownfield Source (150 mm Landscaped Cover)	1 Sample per 150 m3 (minimum of 3 per source)	A/B/C/D
General Engineering Fill (Class 1 and 2)	1 Sample per 1000 m3	A/B/C/D

Notes

Suites of Analysis:

A. Speciated PAH.
B. Speciated TPH (C5-C35).
C. Asbestos (ID).
D. CLEA Inorganic Heavy Metals.
E. On-Site Screening for VOC Using Calibrated PID.
F. Leachate Analysis of Inorganic Heavy Metals, TPH, Sulphate and PAH.

All analysis prescribed above to be completed by UKAS-accredited laboratory.

3.1. REMEDIATION CONTRACTORS, SITE MANAGEMENT AND RESPONSIBILITY

The appointed remediation contractor will take full and overarching responsibility for all methods of work required to complete the site remediation and enabling operations to ensure the delivery of the site and the completion of the objectives in a safe, legislatively compliant manner that ensures no pollution to the subject site or the wider environs.

For individual remediation operations as set out within this performance specification, the contractor will provide site-specific methods of work for individual operations pertaining to the removal and treatment of contaminated liquids and soils. For each and every operation as set out herein, the contractor will provide a written methodology of works to be supplied to the supervising geo-environmental engineer prior to the instigation of operations on-site.

The site manager will be responsible for documentation of each day's activities with a full recorded schedule of works completed and corresponding site-specific method statements that have been utilised to ensure the completion of the task to the required standard.

4. CONTINGENCY PLAN

4.1. PREVIOUSLY UNDENTIFIED CONTAMINANTS

Should significantly impacted material be encountered during the development, then it will be excavated and stockpiled on an impermeable material and sampled and tested for an appropriate range of determinants.

Once the laboratory analysis of the material is available, an assessment will be undertaken to determine whether it can be retained on-site as part of the material management plan or whether it should be disposed of off-site.

Depending on the nature of any such impact, it may be necessary to undertake validation testing of the excavation faces in order to demonstrate that no such materials are left in situ.

5. SECOND PHASE MITIGATION AND MANAGEMENT – BUILD PHASE

This document details the construction works that are required to ensure full compliance with the remediation Strategy, Regulatory Authorities, Building Control & Warranty Providers.

The following should be implemented during the build phase of the development:

- Laboratory testing of both imported topsoil and subsoil deposits;
- Placement and validation of subsoil (clean material) in a 150 mm layer within any landscaped areas where Made Ground deposits are present on site;
- Placement and chemical validation of at least 150 mm imported topsoil within any landscaped areas where Made Ground deposits are present on site.

The validation protocols are presented within the SGI Remediation and Enabling Works Strategy and are presented below.

5.1. PLACEMENT OF COVER SYSTEM – LANDSCAPED AREAS

With respect to human health of the future site users, it includes the provision of a chemically suitable clean material to be installed in any landscaped areas where Made Ground deposits are present on site; the construction of the clean cover/placement of clean material shall consist of:

- Geotextile Membrane;
- 150 mm Subsoil; and,
- 150 mm Topsoil.

In accordance with the current requirements of the regulatory authorities, validation samples will be collected from all materials that are to be imported or re-used on-site to confirm that the proposed development will pose no unacceptable risk to human health or the wider environ.

Subsoil and topsoil shall be free of any deleterious materials, such as building materials, timber, plastics etc and conform to the requirements of BS 3882:2007.

Testing requirements for topsoil and subsoil are presented in Table 3.1.

PROCEDURE FOR PLACEMENT OF CHEMICALLY SUITABLE COVER SYSTEM

Made Ground soils are to be stripped from beneath proposed areas of landscaping to a minimum of 300 mm bgl.

Landscaped areas need to be backfilled with 150 mm chemically validated subsoil, with 150 mm topsoil overlaying this. These soils are both to be placed on a geotextile membrane to act as a separation layer to prevent soil mixing. Topsoil is required to be confirmed as chemically suitable prior to placement. Where subsoil is not placed during Remediation & Enabling works, an independent party will be required to return to site and undertake independent validation of the correct placement of subsoil.

The placement of 300 mm of clean material will be undertaken during the build phase works of the project.

The placement of subsoil and corresponding validation will be documented within the Landscaping Validation Letters (to be issued on completion of the contractor's works).

If natural drift deposits are encountered within the 300 mm strip, then excavations can cease here.

SGI will collect photographic evidence of the placement of 150 mm of certified topsoil and 150 mm of subsoil on completion of construction works. This element will also be checked by the Building Control Officer as part of the site completion.

The landscaping validation procedure is detailed in Table 5.1.

TABLE 5.1 LANDSCAPING VALIDATION PROCEDURE

PROCEDURE	METHOD
Chemical Validation	Imported subsoils and topsoil will need to be chemically analysed to confirm suitability for use with the proposed cover system prior to installation and completion of the landscaping systems. SGI will issue an email to the appropriate party with an assessment of the chemical suitability of both subsoil and topsoil. If acceptable, the materials can be installed to the required depth, at which time the landscaping areas will be deemed complete following a validation procedure by a suitability-qualified engineer.
Trial Holes	Trial holes are deemed necessary for all landscaping areas, given that the 300 mm cover system will need to be placed on each landscaping area during the build phase.
Validation	Photographic evidence will be taken by SGI of the topsoil placement, demonstrating the depth of topsoil and practical completion of works are required for each and every landscaping area. For landscaping areas where subsoil depths require validation by a third party during the build phase, photographs will be taken and collated by SGI.
Validation Certificate	Once the photographs of the placement of topsoil (over the clean material) have been provided, SGI will issue a validation certificate to demonstrate that the required subsoil and topsoil have been placed in the required landscaped areas, along with the chemical analysis.
Completion Report	Upon completion of all landscaping areas within the development, a Completion Report will be issued providing confirmation that all remediation requirements have been achieved.

Plate 1 provides an example of validation photographs that will be required for each area of landscaping.

PLATE I EXAMPLE COVER SYSTEM VALIDATION

Plot No: 4 (Car Park Landscaping)		
Depth of Strata (m bgl)	0.00-0.30	Validated TOPSOIL

Depth of Cover System Materials



Depth of Cover System Materials



Depth of Cover System at Ground Level and in Relation to Unit / Structure



I trust this information is satisfactory to your requirements, and should I be able to be of any further assistance, please do not hesitate to contact me.

Yours sincerely,



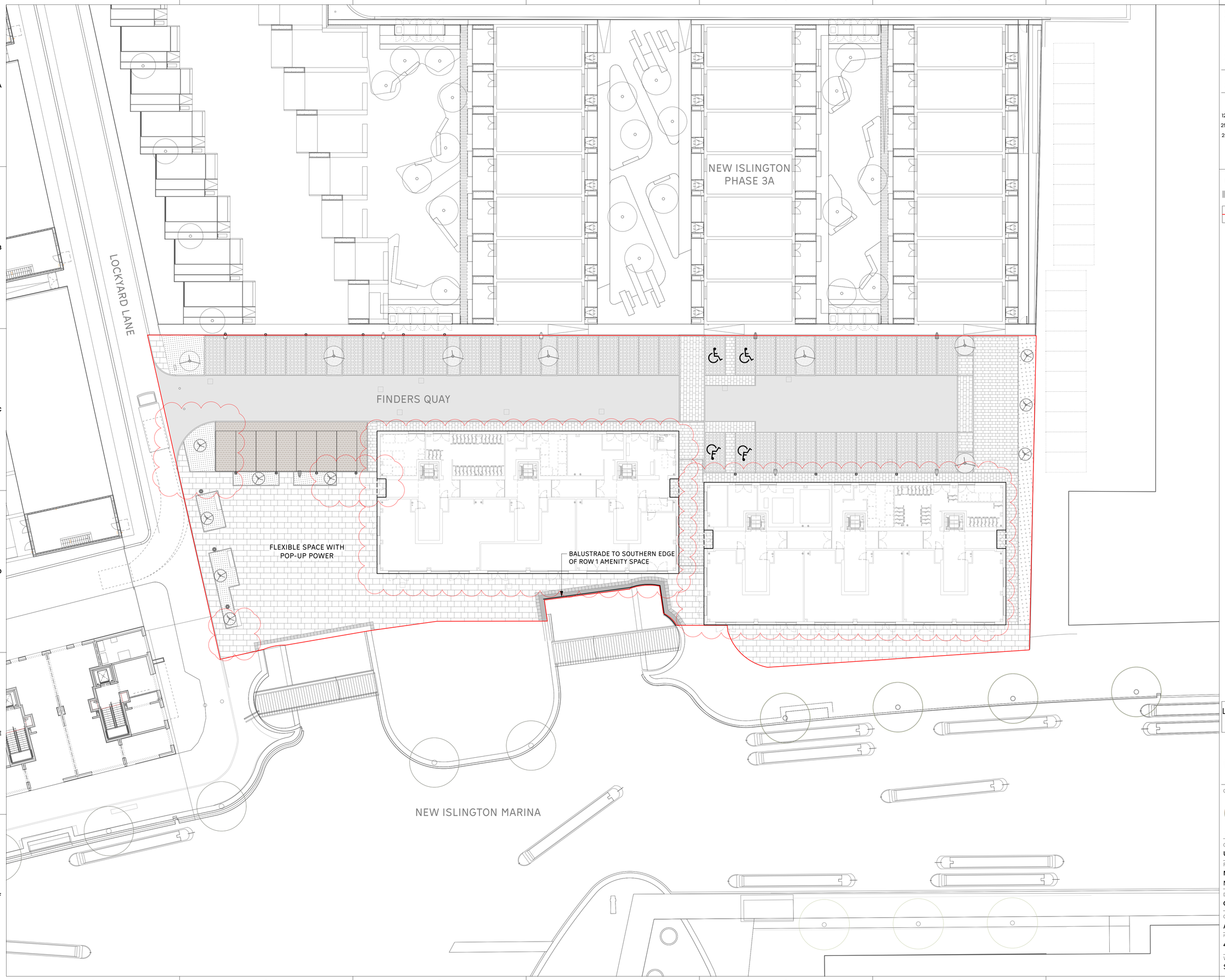
SGI Consulting Engineers Ltd

Damien Schofield
BSc (Hons), MSc
Structural Director

Enclosed;

- Appendix I – Drawings
- Appendix II – Remediation / Validation Criteria

APPENDIX I
DRAWINGS



NOTES:

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23/10/2025

REVISION HISTORY

DATE	REV	ZONE	DESCRIPTION	CHK
12/02/2025	P01		Draft Issue for Information	HF
25/09/2025	P02		GF Layout updated	HF
23/10/2025	P03		Updates to layout	AD

KEY

GENERAL INFORMATION

APPLICATION SITE BOUNDARY

LAYOUT SUBJECT TO REVIEW OF TRACKING REQUIREMENT CONFIRMATION

BIM Suitability codes
Work in Progress
S0. Initial status of WIP
Shared non Contractural
S1. Suitable for coordination
S2. Suitable for information
S3. Suitable for review & comment
S4. Suitable for approval
S5. Withdrawn
S6. Suitable for authorisation

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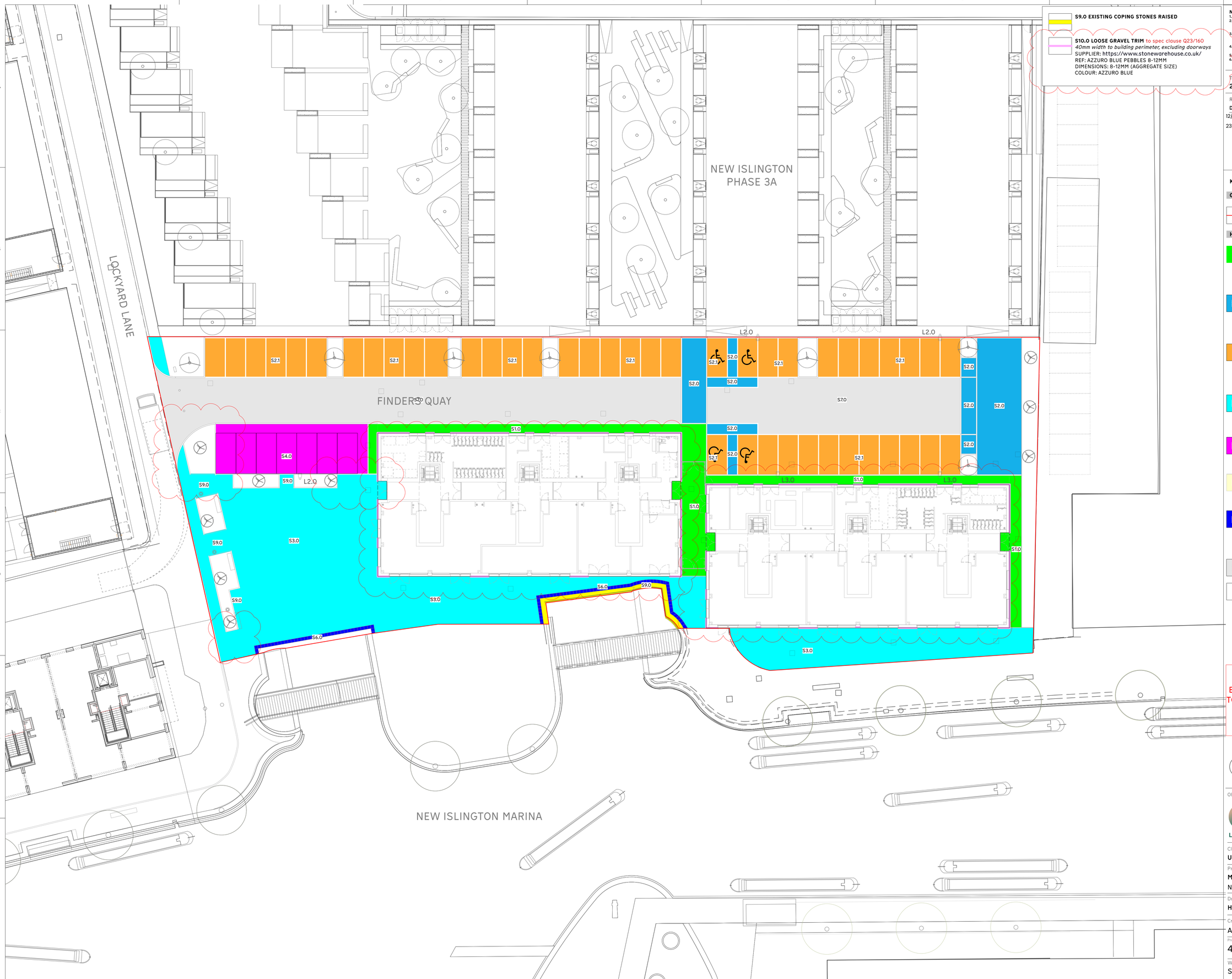
Project
Mansion House
New Islington Phase 3B

Drawing Title
General Arrangement

Created By	Checked By	Scale	Sheet Size
AD	HF	1:200	A1

Project Number	Originator	Volume	Level	File Type	Discipline	Number
420	LYR	XX	ZZ	DWG	L	1001

Work Stage	Status	Revision
Stage 4	S3 Review & comment	P03



S9.0 EXISTING COPING STONES RAISED

S10.0 LOOSE GRAVEL TRIM to spec clause Q23/160
40mm width to building perimeter, excluding doorways
SUPPLIER: https://www.stonewarehouse.co.uk/
REF: AZZURO BLUE PEBBLES 8-12MM
DIMENSIONS: 8-12MM (AGGREGATE SIZE)
COLOUR: AZZURO BLUE

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12/02/2025	P01		Draft Issue for Information	HF
23/10/2025	P02		Updates to layout	AD

KEY

GENERAL INFORMATION

APPLICATION SITE BOUNDARY

HARDWORKS

S1.0 **S1.0 BLOCK PAVING (PEDESTRIAN)** to spec clause Q24/110
SUPPLIER: https://hardscape/co.uk (OAE)
REF: SLANE SILVER GRANITE
DIMENSIONS: 300 x 150 x 80mm (L x W x D)
MATERIAL/FINISH: CONCRETE
COLOUR: SILVER GRANITE

S2.0 **S2.0 BLOCK PAVING (VEHICULAR)** to spec clause Q24/111
SUPPLIER: https://hardscape/co.uk (OAE)
REF: SLANE SILVER GRANITE
DIMENSIONS: 300 x 150 x 80mm (L x W x D)
MATERIAL/FINISH: CONCRETE
COLOUR: SILVER GRANITE

S2.1 **S2.1 BLOCK PAVING (VEHICULAR)** to spec clause Q24/112
SUPPLIER: https://hardscape/co.uk (OAE)
REF: SLANE CHARCOAL
DIMENSIONS: 200 x 100 x 80mm (L x W x D)
MATERIAL/FINISH: CONCRETE
COLOUR: CHARCOAL

S3.0 **S3.0 NATURAL STONE SLABS** to spec clause Q25/310
SUPPLIER: https://hardscape/co.uk (OAE)
REF: ***
DIMENSIONS: TO MATCH EXISTING
MATERIAL: SANDSTONE
FINISH: TO MATCH EXITING

S4.0 **S4.0 NATURAL STONE SETTS** to spec clause Q25/330
SUPPLIER: https://hardscape/co.uk (OAE)
REF: ***
DIMENSIONS: 200 x 100 x 80mm (L x W x D)
MATERIAL/FINISH: SANDSTONE/ FLAMED

S5.0 **S5.0 RESIN BOUND GRAVEL** to spec clause Q23/225
SUPPLIER: TBC
REF: RESIN BOUND NATURAL AGGREGATE PAVING
DIMENSIONS: 10mm (AGGREGATE SIZE)
COLOUR: STERLING

OMITTED

S6.0 **S6.0 HAZARD WARNING PAVING** to spec clause Q25/320
SUPPLIER: https://hardscape/co.uk (OAE)
REF: ***
DIMENSIONS: ***
MATERIAL/FINISH: SANDSTONE
COLOUR: TO MATCH EXISTING

S7.0 **S7.0 MACADAM** to spec clause Q22/109
TO VEHICULAR AREAS
TO ENGINEER'S DETAIL & SPECIFICATION

S8.0 BLOCK PAVING (VEHICULAR) to spec clause Q24/113
SUPPLIER: https://hardscape/co.uk (OAE)
REF: SLANE CHARCOAL
DIMENSIONS: 200 x 100 x 80mm (L x W x D)
MATERIAL/FINISH: CONCRETE
COLOUR: CHARCOAL

DRAFT

EXTENT OF PERMEABLE PAVING SUBJECT TO REVIEW FOLLOWING RECEIPT OF TOPO SURVEY & DEVELOPMENT OF LEVELS & DRAINAGE STRATEGY

BIM Suitability codes
Work in Progress
S0. Initial status of WIP
Shared non Contractural
S1. Suitable for coordination
S2. Suitable for information
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Client
Urban Splash

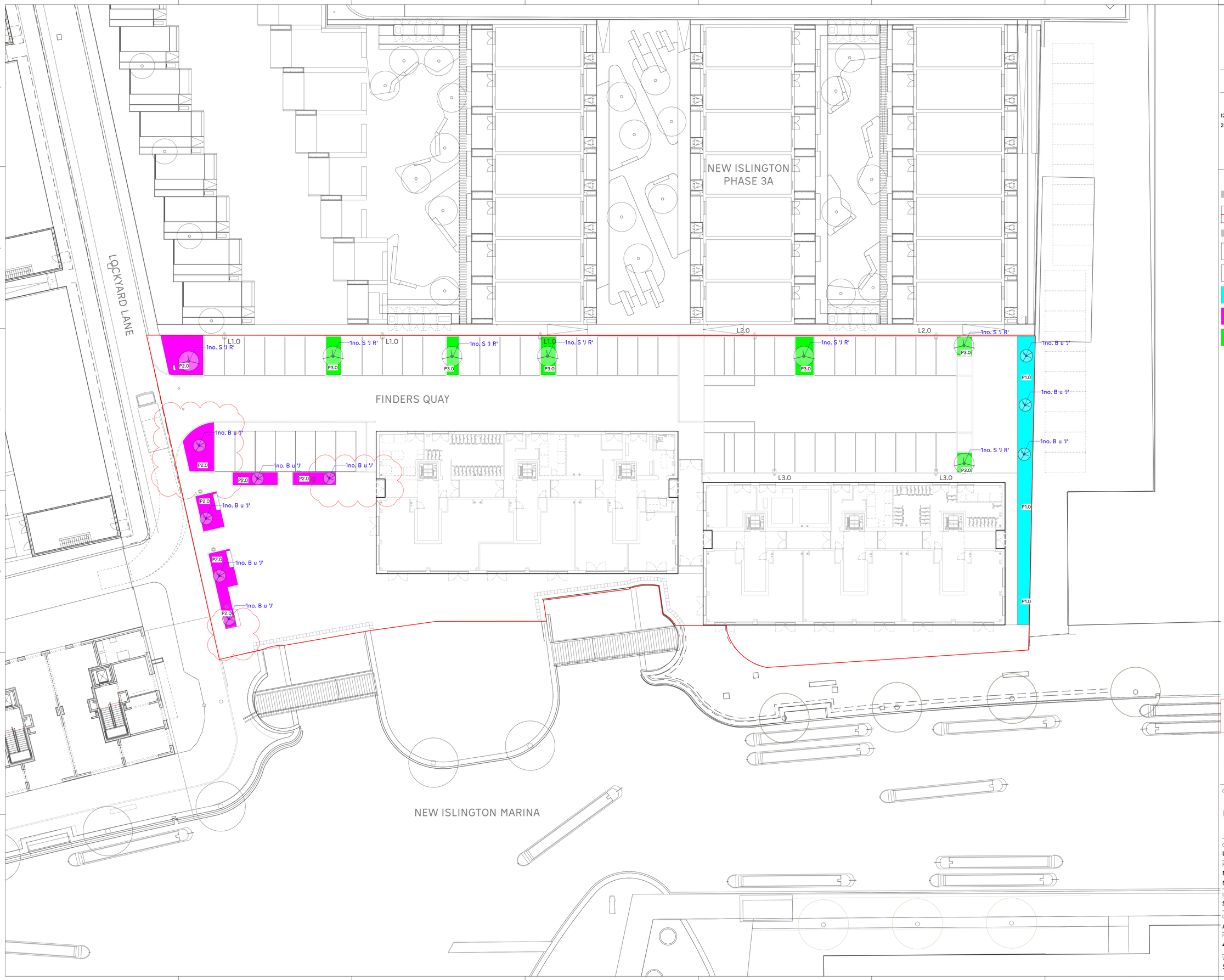
Project
Mansion House
New Islington Phase 3B

Drawing Title
Hardworks

Created By	Checked By	Scale	Sheet Size
AD	HF	1:200	A1

Project Number	Originator	Volume	Level	File Type	Discipline	Number
420	LYR	XX	ZZ	DWG	L	2001

Work Stage	Status	Revision
Stage 4	S3 Review & comment	P02



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23/10/2025	P02		Updates to layout	AD

KEY

GENERAL INFORMATION

APPLICATION SITE BOUNDARY

SOFTWORKS

CLEAR-STEM TREE PLANTING
Refer to Planting Schedule

MULTI-STEM TREE PLANTING
Refer to Planting Schedule

P1.0 **ORNAMENTAL SHRUBS AND GRASSES MIX 1**
Refer to Planting Schedule

P2.0 **ORNAMENTAL SHRUBS AND GRASSES MIX 2**
Refer to Planting Schedule

P3.0 **ORNAMENTAL SHRUBS AND GRASSES MIX 3**
Refer to Planting Schedule

FOR PLANTING SPECIES PLEASE REFER TO DRAWING NO. M80153_3B_L300

BIM Suitability codes	
Work in Progress	
S0.	Initial status of WIP
Shared non Contractural	
S1.	Suitable for coordination
S2.	Suitable for information
S3.	Suitable for review & comment
S4.	Suitable for approval
S5.	*Withdrawn*
S6.	Suitable for authorisation

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Client
Urban Splash

Project
Mansion House
New Islington Phase 3B

Drawing Title
Softworks

Created By	Checked By	Scale	Sheet Size
AD	HF	1:200	A1

Project Number	Originator	Volume	Level	File Type	Discipline	Number
420	LYR	XX	ZZ	DWG	L	3001

Work Stage	Status	Revision
Stage 4	S3 Review & comment	P02

APPENDIX II
REMEDIATION / VALIDATION CRITERIA

Table A Summary of Inorganic and Hydrocarbon Toxicity Assessment for Residential without Plant Uptake

DETERMINANT	UNIT	GAC	PL
Arsenic	mg/kg	40	1
Cadmium	mg/kg	85	1
Chromium (VI)	mg/kg	6	1
Lead	mg/kg	310	1
Mercury	mg/kg	1.2	4
Nickel	mg/kg	180	1
Selenium	mg/kg	430	1
Copper	mg/kg	7100	1
Zinc	mg/kg	40000	1
Cyanide – Total	mg/kg	791	1
Phenols – Toal	mg/kg	440	1
Asbestos	mg/kg	NFD	3
Naphthalene	mg/kg	2.3	4
Acenaphthylene	mg/kg	2900	2
Acenaphthene	mg/kg	3000	1
Fluorene	mg/kg	2800	1
Phenanthrene	mg/kg	1300	2
Anthracene	mg/kg	31000	2
Fluoranthene	mg/kg	1500	2
Pyrene	mg/kg	3700	2
Benzo(a) Anthracene	mg/kg	11	2
Chrysene	mg/kg	30	2
Benzo(b) Fluoranthene	mg/kg	3.9	2
Benzo(k) Fluoranthene	mg/kg	110	2
Benzo(a) Pyrene	mg/kg	3.2	2
Indeno (123-cd) Pyrene	mg/kg	45	2
Dibenzo (a,h) Anthracene	mg/kg	0.31	2
Benzo(ghi) Perylene	mg/kg	360	2
TPH C5-C6 (aliphatic)*	mg/kg	42	4
TPH C6-C8 (aliphatic)*	mg/kg	100	4
TPH C8-C10 (aliphatic)*	mg/kg	27	4
TPH C10-C12 (aromatic)*	mg/kg	250	4
TPH C12-C6(aromatic)*	mg/kg	1800	4
TPH C16-21 (aromatic)*	mg/kg	1900	1

DETERMINANT	UNIT	GAC	PL
TPH C21-35 (aromatic)*	mg/kg	1900	1
TPH C5-C6 (aliphatic)	mg/kg	42	4
TPH C6-C8 (aliphatic)	mg/kg	100	4
TPH C8-C10 (aliphatic)	mg/kg	27	4
TPH C10-C12 (aliphatic)	mg/kg	130	4
TPH C12-C16 (aliphatic)	mg/kg	1100	4
TPH C16-C35 (aliphatic)	mg/kg	65000	1
TPH C5-C7 (aromatic)	mg/kg	370	4
TPH C7-C8 (aromatic)	mg/kg	860	4
TPH C8-C10 (aromatic)	mg/kg	47	4
TPH C10-C12 (aromatic)	mg/kg	250	4
TPH C12-C16 (aromatic)	mg/kg	1800	4
TPH C16-C21 (aromatic)	mg/kg	1900	1
TPH C21-C35 (aromatic)	mg/kg	1900	1

Notes
PL1 = soil ingestion, PL2 = dermal contact and ingestion, PL3 = dust inhalation; PL4 = Vapour/Gas inhalation
Abbreviations: GAC = general assessment criteria, N = number of samples, MC = maximum concentration; Loc of Ex = location of exceedance; PL = Contaminant pathway of that contaminant.
*The Tier 2 GAC for the hydrocarbon fraction is derived from the CIEH assessment for petroleum hydrocarbons Criteria Working Group (CWG) for both aliphatic and aromatic compounds. SGI has utilised the Tier 2 values for aliphatic compounds for the volatile and semi volatile fractions (C5-C12) and the Tier 2 values for aromatic compound for the non-volatile fractions (C12-C35). The comparison of a total (aliphatic/aromatic) compounds to an individual fraction is considered to be a conservative approach and satisfactory for the protection of human health.