



PREAMBLE

Silvertown Homes Limited (SHL) and Greater London Authority Land and Property (GLAP) have submitted a hybrid planning application to the London Borough of Newham (LBN) for the redevelopment of the Thameside West site, accessed off Dock Road in Newham (the Site).

SHL is a property development company and joint land owners of the Site. SHL has over 65 years combined experience at delivering high quality regeneration projects across London. GLAP is a subsidiary corporation of the Greater London Authority (GLA) and took over assets and liabilities from the London Development Agency (LDA) in 2012. GLAP is primarily focused on delivering genuinely affordable homes and jobs for London.

The proposal is to construct a new high-quality residential-led mixed-use development comprising new homes, new industrial floorspace, a new local centre, a new primary school and nursery school, new community facilities, a new public park (with associated outdoor play facilities), enhanced SINC and over 800m of new riverside walk along the River Thames with ecological / biodiversity enhancements. This development has been designed to focus its community hub around the delivery of a new Dockland Light Rail (DLR) station that is proposed to be constructed on the Site by Transport for London's (TfL) in 2023.

The proposals have been designed by Foster & Partners, John McAslan & Partners, Patel Taylor and the wider project team (listed, right) taking into account comments provided by local residents during summer and public exhibition events and comments provided during pre-application discussions with a variety of statutory and non-statutory interests, including LBN and its Design Review Panel (DRP), the Greater London Authority (GLA), Transport for London (TfL), Environment Agency (EA), Port of London Authority (PLA) and London City Airport (LCA).

This document is one of a suite of planning application documents submitted to LBN, including an Environmental Statement. The planning application is available to review at LBN's office or using LBN's online services:

Search for planning application reference number 18/03557/OUT at: <https://pa.newham.gov.uk/online-applications/search.do?action=simple>

The planning application can also be viewed on the GLA's website at: <https://www.london.gov.uk/what-we-do/planning/planning-applications-and-decisions/public-hearings>

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Phase 1 – Thameside West, London

Below Ground Drainage Strategy

Issued for Planning Approval

Issue P05 – 9th April 2020

PHASE 1 – THAMESIDE WEST, LONDON

BELOW GROUND DRAINAGE STRATEGY

ISSUED FOR INFORMATION

Quality Assurance Page

Issue	Date	Prepared By	Checked By	Approved By	Remarks
DRAFT	30/10/18	Ms. E. Hatter	Miss E. Peek/Mr. N. Gregory	Mr. P. Hayes	Original Issue
P01	29/11/18	Mr. P. McGowan	Mr. N. Gregory	Mr. P. Hayes	Planning Issue
P02	03/04/19	Mr. B. Veitch	Mr. N. Gregory	Mr. P. Hayes	Revised Planning Issue to address GLA comments
P03	28/06/19	Mr. J. Stokes	Miss E. Peek	Mr. P. Hayes	Revised to suit planning comments
P04	09/03/2020	Miss E. Peek	Miss E. Peek	Mr. P. Hayes	Revised Planning Issue
P05	09/04/2020	Miss E. Peek	Mr. N. Gregory	Mr. P. Hayes	Updated Applicant Name

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Executive Summary

Meinhardt UK Ltd has been appointed by Silvertown Homes Limited and GLA Land and Property (the Applicant) to undertake the foul and surface water below ground drainage design for Phase 1 of the proposed development known as Thameside West. This report outlines the proposed drainage strategy to date.

The site is located on the corner of North Woolwich Road and Bell Lane, E16 1YZ. The site area totals 1.24 hectares (ha) of which 0.750 ha is contributed as part of the permanent Phase 1 drainage area with the remainder of the site forming part of the temporary development and will be constructed in line with the masterplan works; the existing site is currently occupied by industrial units. It is proposed to develop the site into residential accommodation across two buildings, with an industrial unit at the ground floor of each building. A total of 401 residential units are proposed across the two buildings.

BuroHappold have been appointed to undertake the foul and surface water below ground drainage design for the masterplan which is being submitted for outline planning concurrently with the detailed planning application for Phase 1. To ensure consistency across the scheme Meinhardt UK have liaised with BuroHappold to agree a series of design parameters including the proposed surface water discharge rate and the disposal strategy.

Accordingly, the proposed surface water drainage strategy for the site has been developed to utilise sustainable drainage techniques (SuDS) to attenuate surface water at source and reduce the risk of downstream flooding of the Thames Water sewer network in the local area. The scheme that has been developed utilises podium attenuation and below ground cellular attenuation to reduce the peak surface water run-off rates from the site. It is proposed that surface water run-off will drain to the internal drainage network before discharging via gravity to the Thames Water combined water sewer in North Woolwich Road.

The proposed foul water drainage strategy for the site involves the MEP engineer's coordination of the superstructure drainage up until it exits the building and enters the below ground drainage network. A below ground drainage network of pipes and manholes will collect the foul water discharge from the property before discharging via gravity to the Thames Water combined water sewer in North Woolwich Road.

Based on Thames Water Asset records for the site and surrounding area, it is assumed that there is an existing connection from the site to the Thames Water combined water sewer in North Woolwich Road. If possible, it is proposed to reuse this existing connection, subject to confirmation of the line, level and condition of the connection which will be confirmed through a CCTV survey at the next design stage.

Refer to drainage drawings 2303-C-SK009, 2303-C-SK010, 2303-C-SK045 and 2303-C-SK052 in Appendix A for further details of the existing drainage and proposed strategy.

1 Existing Drainage

1.1 Existing Site

The existing site is located on the corner of North Woolwich Road and Bell Lane, London, E16 1YZ. The site is bound by North Woolwich Road to the North and Bell Lane to the East (Refer to Figure 1). The application site totals 1.24 hectares (ha), of which 0.93 ha forms part of detailed planning application and 0.31 ha as part of the outline application. This drainage strategy focuses on 0.75 ha of the detailed application site which incorporates the permanent site catchment area that contributes to the Phase 1 drainage strategy. The remainder of the site is part of the temporary works and will be constructed in line with the masterplan and highways drainage works which will discharge unrestricted into the site wide drainage networks.

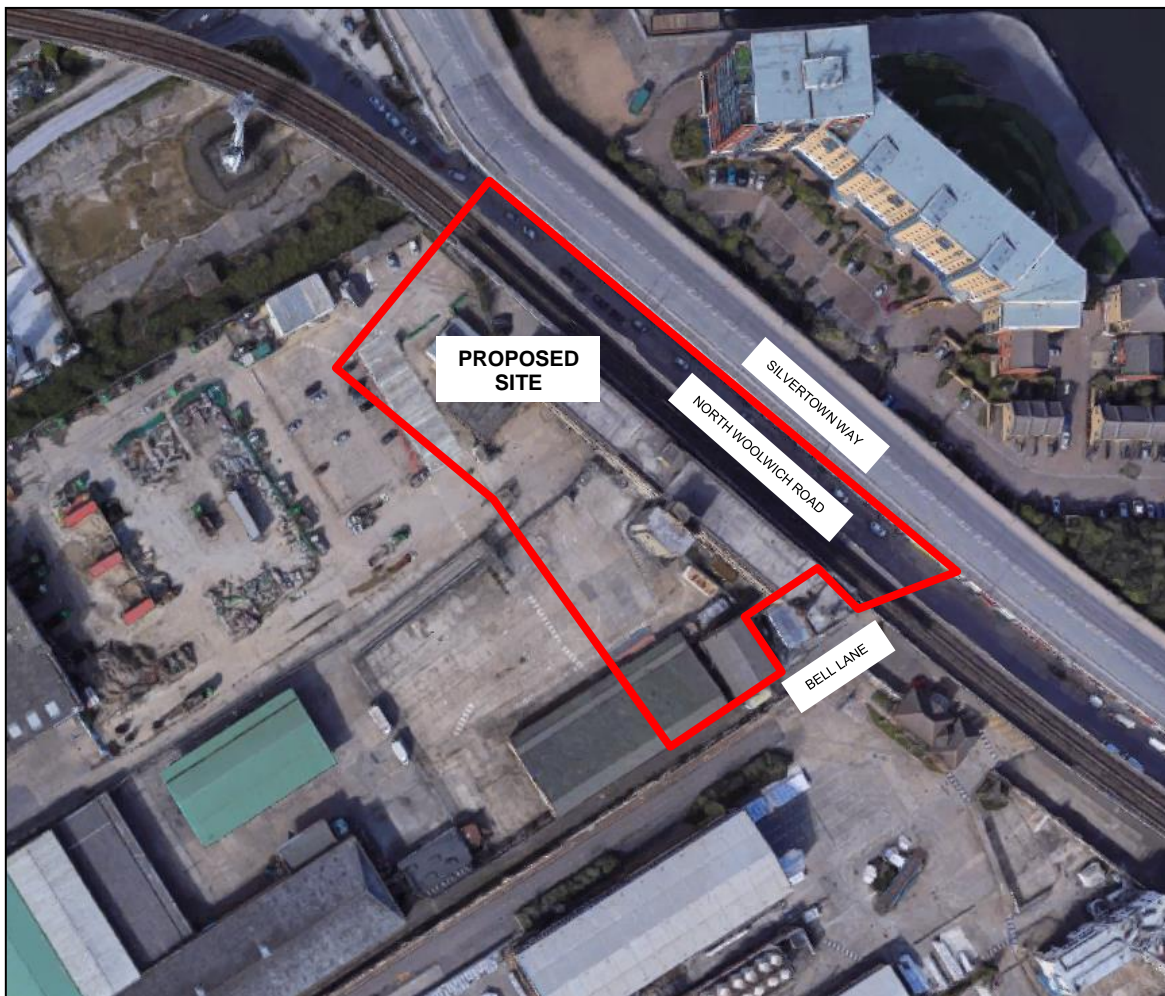


Figure 1: The Existing Site

1.2 Existing Drainage

The existing Thames Water public sewer network is outlined in Figure 2. The arrangement of the network is summarised below:

Combined Water:

- There is an existing public sewer run to the north of the site within North Woolwich Road (from TWMH0403 to TWMH1301). The diameter of this sewer varies between 375mm and 450mm.
- Another existing public sewer runs within North Woolwich Road to the north of the site (from TWMH1307 to TWMH1304). The diameter of this sewer is 600mm.

It is assumed that the existing buildings on site connect to the 600mm diameter sewer in North Woolwich Road via the connection shown to manhole TWMH1307. A CCTV survey will be undertaken at the next design stage to confirm the exact line, level and condition of this assumed connection, as well as to identify any existing private drainage located on site that is required to be retained.

Refer to Appendix B for a copy of the Thames Water Asset records for the site and surrounding area.

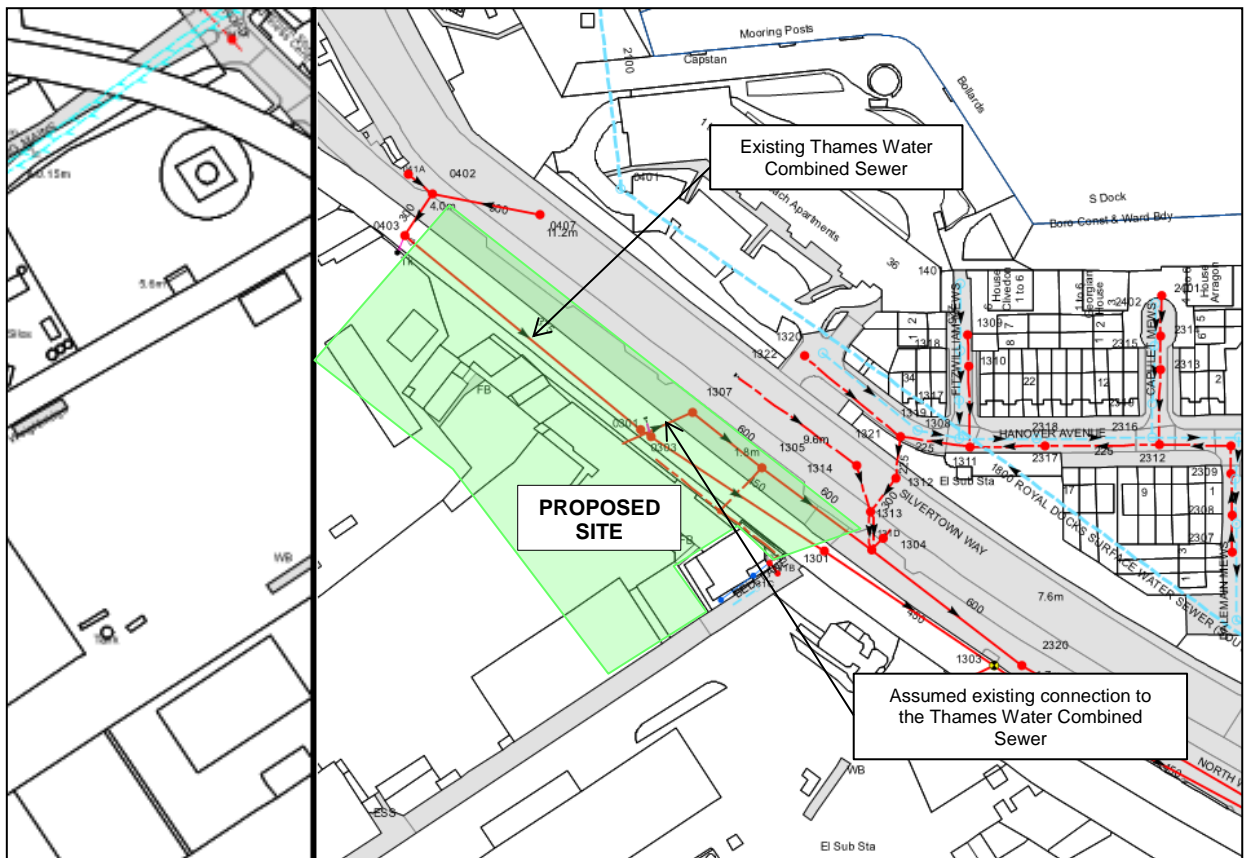


Figure 2: Existing Drainage Layout

1.3 Existing Surface Water Discharge Rate

The existing site has a total area of 0.750 hectares and is entirely hard standing.

It is assumed that the existing development discharges unrestricted into the Thames Water combined public sewer located within North Woolwich Road.

The existing total site discharge rate has been calculated using the hydraulic modelling software MicroDrainage. The existing site was modelled to obtain discharge rates from the site for a series of storm events. A summary of results is provided in Table 1.1 below. For full existing surface water drainage calculations, refer to Appendix C.

Storm Event	Contributing Area	Existing Discharge Rate
1 in 1 year	7,500m ²	92.8 l/s
1 in 20 year	7,500m ²	208.7 l/s
1 in 30 year	7,500m ²	225.4 l/s
1 in 100 year	7,500m ²	279.6 l/s

Table 1.1: Existing Site Discharge Rates

1.4 Existing Foul Water Discharge Rate

The existing foul water discharge rate from the site has been calculated to be 0.45l/s based on the methodology outlined in Sewers for Adoption 7th Edition (using a design flow rate of 0.6l/s per hectare).

It is assumed that the existing development discharges unrestricted into the Thames Water combined public sewer located within North Woolwich Road.

1.5 Existing Combined Discharge Rate

The existing total combined water discharge rate has been calculated as outlined in Table 1.2.

Contributing Area	Existing Surface Water Discharge Rate [1 in 100 year storm] (l/s)	Existing Peak Foul Water Discharge Rate (l/s)	Existing Combined Discharge Rate (l/s)
0.750 ha	279.60	0.45	280.05

Table 1.2: Proposed Combined Discharge Rate

It is assumed that the existing development discharges unrestricted into the Thames Water combined public sewer located within North Woolwich Road.

2 Proposed Drainage Strategy

2.1 Surface Water Drainage

2.1.1 Design Parameters

The industry standards along with the Environment Agency and Sewers for Adoption 7th Edition dictate for below ground surface water drainage that:

- There will be no surcharging of the drainage system for a 1 in 2 year storm;
- The drainage can be surcharged with no flooding for a 1 in 30 year storm; and
- The drainage can flood on-site for a 1 in 100 year storm with a 40% climate change allowance provided the flood water remains on site and does not flood habitable areas or affect safe ingress and egress to the site for occupiers.

All surface water drainage options outlined in this report adhere to these principles.

2.1.2 Initial Consultations

2.1.2.1 Local Authority/Planning Authority – London Borough of Newham

BuroHappold have undertaken consultations with the London Borough of Newham regarding the proposed surface water discharge rates from the site during preparation of the masterplan drainage strategy.

In line with comments received from London Borough of Newham following submission of the P02 revision of this report, Meinhardt have revised the drainage strategy to restrict the surface water discharge rate from the site to the greenfield Qbar discharge rate which is 2.9 l/s for all design storms (1 in 1 year, 1 in 30 year and 1 in 100 year + 40% climate change). This has been calculated in line with the requirements of the London Plan as well as the London Borough of Newham Surface Water Management Plan.

2.1.2.2 Thames Water

A predevelopment enquiry was submitted to Thames Water on the 24th of August 2018 to confirm that there would be sufficient capacity for the development within the surrounding public sewers as well as to gain their approval in principle of the proposed discharge rate.

Meinhardt received a response from Thames Water on the 24th of September 2018 outlining:

“We’re pleased to confirm that there will be sufficient foul and surface water capacity in our sewerage network to serve your development, so long as your phasing follows the timescale you’ve suggested.

This confirmation is valid for 12 months or for the life of any planning approval that this information is used to support, to a maximum of three years.”

2.1.2.3 BuroHappold Engineering (Masterplan Drainage Engineers)

Based on correspondence received from BuroHappold dated 18.06.19, the greenfield Qbar runoff rate for the site was calculated to be 3.85l/s per ha using the IH124 methodology.

2.1.3 Proposed Surface Water Drainage Strategy

It is proposed to restrict surface water discharge from the site to 2.9 l/s (the existing greenfield Qbar run off rate) for all storm events. This represents a 99% reduction in the surface water discharge rate for a 1 in 100 year + 40% climate change storm event, as per the NPPF.

The SuDS hierarchy dictates that the preferred discharge locations for surface water run-off are:

1. Infiltration into the ground;
2. To an adjacent watercourse; or
3. A surface water sewer if other forms of outlet are not suitable.

As the development is located in Central London, infiltration into the ground will not be suitable as a means of surface water disposal due to the underlying London Clay, which is known to have a very low infiltration rate. Additionally, as a minimum distance of 5m would be required between a building and an infiltration device (in line with Building Regulations) it would not be possible to house an infiltration device on site as the building occupies the majority of the site footprint. As such, infiltration into the ground is not a viable option for this development.

Due to site constraints and the lack of available space, open SuDS are not appropriate for the proposed development. The development instead proposes green/brown roofs as well as podium landscaping to maximise the quantity of available green space. The extent of the green/brown roofs are shown within Appendix A.

The closest watercourse is the River Thames, which is located approximately 200m to the west of the site. Due to the proposed site levels Phase 1 is located at a low point on the site (approximately 2.4m AOD at ground level). As a result Meinhardt understand that it would not be possible to discharge to the River Thames without introducing a surface water pump station. As such discharge of surface water to an adjacent water course is not a feasible option for the development site.

The existing Thames Water sewer network adjacent to the site comprises of combined water sewers only, therefore discharge of surface water to a surface water sewer is not possible for the development.

Based on the above, the only feasible discharge location for surface water runoff from the site is to the Thames Water combined sewer network.

As such the proposed surface water strategy for the site has been developed to utilise sustainable drainages systems (SuDS) to attenuate surface water at source and reduce the risk of downstream flooding. The scheme will attenuate surface water using podium attenuation and a below ground attenuation tank, before discharging via gravity to the Thames Water combined sewer adjacent to the site within North Woolwich Road.

In an exceedance event, falls away from the building will prevent the egress of water into the development. High level outfalls through the podium parapet will also be provided to discharge any additional rainfall away from the building at 1st floor level during an exceedance event.

2.1.4 Allowable Discharge Rates

The proposed surface water drainage design will incorporate a 40% allowance for climate change. Refer to Table 2.1 for the proposed surface water calculations.

Storm Event	Contributing Area	Proposed Discharge Rate
1 in 100 year + 40% climate change	0.75 ha	2.9 l/s

Table 2.1: Proposed Surface Water Discharge Rate

Based on hydraulic calculations the attenuation volume required on site for a 1 in 100 year + 40 % climate change storm event and the above discharge rate is 840m³.

Refer to drainage drawings 2303-C-SK009, 2303-C-SK010, 2303-C-SK045 and 2303-C-SK052 in Appendix A for further details of the existing drainage and proposed strategy.

2.2 Foul Water Drainage

2.2.1 Design Parameters

The below ground foul drainage system will be designed to Sewers for Adoption 7th Edition, BS EN 752 Parts 3 and 4, and the Building Regulations Document H where appropriate.

2.2.2 Proposed Foul Water Drainage Strategy

The proposed foul water drainage strategy for the site involves the MEP engineer's coordination of the superstructure drainage up until it enters the below ground drainage network.

A below ground drainage network of pipes and manholes will collect the foul water discharge from the buildings and convey to a demarcation chamber, before discharging via gravity to the Thames Water combined public sewer located in North Woolwich Road (through the existing connection). The reuse of the existing connection to the sewer is subject to the line, level and condition, which will be confirmed through a CCTV survey at the next design stage.

It has been estimated that the peak foul water discharge rate for the site will be approximately 8l/s in accordance with Table 2 of the Plumbing Engineering Services Design Guide (2002). This is based on a water usage of 210 litres per day per bedroom for a studio and one bedroom flat, 130 litres per day per bedroom for a two bedroom flat and 100 litres per day per bedroom for a three bedroom flat and the penthouses. NB - this figure is indicative only and is to be confirmed by the MEP engineer.

Refer to drainage drawings 2303-C-SK009, 2303-C-SK010, 2303-C-SK045 and 2303-C-SK052 in Appendix A for further details of the existing drainage and proposed strategy.

2.3 Combined Drainage

2.3.1 Proposed Discharge Rate

The proposed total combined water discharge rate has been calculated as outlined in Table 2.2.

Contributing Area	Proposed Surface Water Discharge Rate [1 in 100 year storm] (l/s)	Proposed Peak Foul Water Discharge Rate (l/s)	Proposed Combined Discharge Rate (l/s)
0.75 ha	2.9	8	10.9

Table 2.2: Proposed Combined Discharge Rate

Based on the proposed combined discharge rate from the site the scheme will provide a 96% reduction on the pre-development flow rates from the site.

If possible the existing onsite drainage and connections to the Thames Water combined water sewer in North Woolwich Road will be reused. This will be confirmed by CCTV survey at the next design stage.

3 Sustainable Urban Drainage Solutions

Sustainable Urban drainage systems (SuDS) range from landscaping features to roof build ups and below ground attenuation. In urban areas, generally there are a large amount of site restrictions and space is constrained therefore the SuDS techniques applicable in these situations are limited. Outlined in Section 3.1 are the proposed options for this site.

3.1 Proposed Options

3.1.1 Podium Drainage System

A podium drainage system comprises a multi-layered system that covers the podium deck of a structure or basement with a deep layer of attenuation along with various layers of insulation, water proofing and finishing material. These systems are designed to retain surface water and reducing the volume of runoff by attenuating peak flows.

The system is designed to attenuate surface water discharge from a site or building and to allow the surface water to build up on the podium deck for a period of time while slowly releasing the water down the below ground drainage system via a flow control device.

These systems vary in specification and can be designed to accommodate any type of porous finishing material.

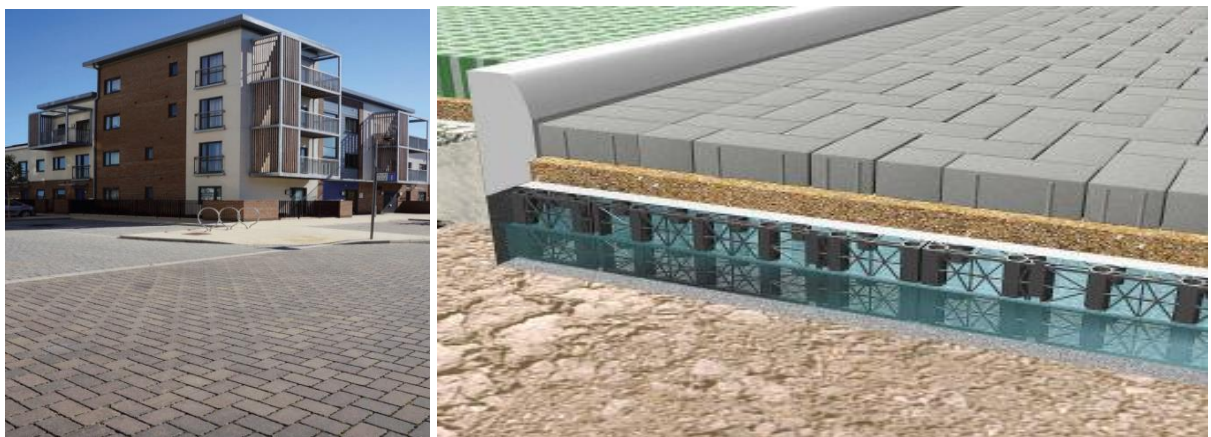


Figure 3: Typical podium attenuation details

Advantages: Eliminates the requirement for below ground drainage attenuation and the excavation for it; with the use of planting within the landscaping water quality can be improved; with systems of 85mm attenuation or lower, the structure is generally unaffected.

Disadvantages Cost of the system itself may be more than the saving of excavation , with systems greater than 85mm there may be an implication to the structure, landscape build up is increased slightly, design and exposure may preclude use.

- Maintenance:**
- Brushing and vacuuming
 - Removal of weeds etc
 - Inspection and repair to any depressions, damaged blocks, jointing etc
 - Ongoing review of operational efficiency

3.1.2 Below Ground Cellular Attenuation

Cellular attenuation involves storing surface water within pipework or underground tanks prior to controlled discharge into the public sewer. Typically the cellular attenuation is formed with plastic “egg-crates” wrapped in impermeable geotextiles as indicated in Figure 3.1 below.



Figure 4: Typical Cellular Attenuation Tank

Some advantages and disadvantages of the use of attenuation tanks are outlined below.

- | | |
|----------------|--|
| Advantages: | Effective storage of surface water can be used below trafficked areas, can be used below public open areas, minimum maintenance. |
| Disadvantages: | Cost of excavation, sometimes complicated integration with foundations, no water quality treatment. |
| Maintenance: | <ul style="list-style-type: none">• Check inlets, outlets, control structures and overflows• Jetting and suctions as required |

3.1.3 Green Roof

A green roof comprises a multi-layered system that covers the roof of a building or podium structure with vegetation cover/landscaping over a drainage layer. These systems are designed to intercept and retain precipitation, increasing the time of concentration and reducing the volume of runoff and attenuation peak flows. Green roofs can be anything from a thin growing layer of sedums and mosses to grass, plants, shrubs and large trees.

These roofs vary in specification and can be designed to attract bird and invertebrate species. Green and brown roofs can also participate in attenuating rain water and increasing time of concentration. This may reduce the requirement for below ground storage attenuation on the site.

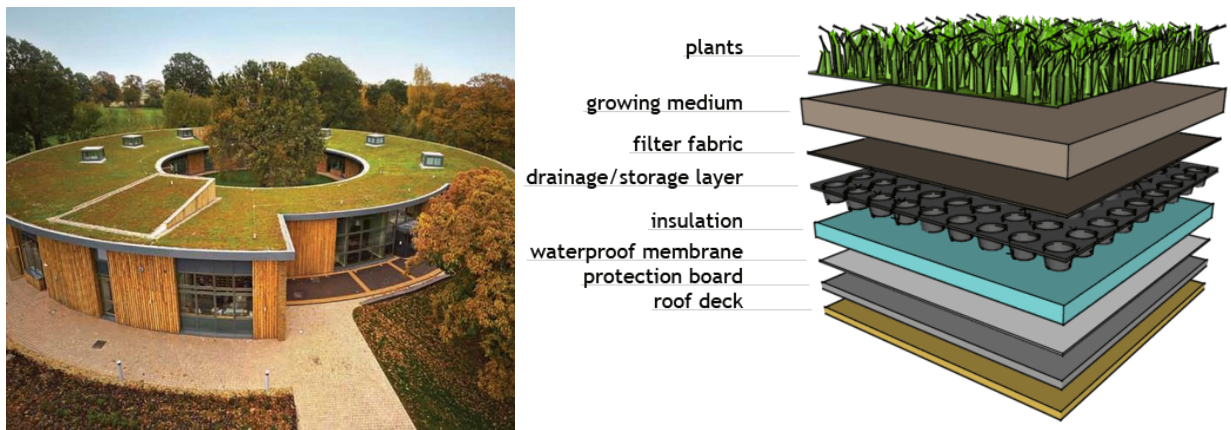


Figure 5: Typical green roof details

Advantages: Mimic greenfield state of building footprint, good removal of pollutants, ecological and amenity benefits, improve air quality, insulates building.

Disadvantages Cost, possible increase in structural loading, roof height, design and exposure may preclude use

- Maintenance:**
- Check inlets, outlets, control structures and overflows
 - Litter and debris removal
 - Irrigation during establishment
 - Weeding and plant replacement
 - Silt removal
 - Repair erosion
 - Replacement of topsoil
 - Surface treatment to encourage infiltration

3.2 Proposed Maintenance Strategy

The proposed maintenance strategy is in line with the SuDS Manual as well as manufacturer’s guidance. An inspection checklist should be generated based on the maintenance strategy to facilitate consistent inspection of the condition of the system and as a method for recording inspections. Inspections should also be accompanied by photographic records to assist with the monitoring of the system.

The full maintenance regime is to be outlined in the Operation and Maintenance Manual and overseen by the Building Management team. The manufacturer’s maintenance guidance shall be placed in the Operation and Maintenance Manual and it is recommended that an annual maintenance report should be prepared and retained within the Operation and Maintenance Manual.

Specific maintenance needs of the system should be monitored, and maintenance schedules adjusted to suit the specific requirements of the site.

All inspections of the SuDS system should comply with relevant health and safety legislation.

3.2.1 Podium Drainage and Below Ground Cellular Attenuation

Surface water will be collected and temporarily stored in cellular storage tanks prior to controlled discharge to the Thames Water surface water sewers at the approved discharge rate. These tanks can be located at ground floor or on podium decks.

Catchpits will be located to trap sediment and prevent entry of any silt and pollutants into the downstream system. These catchpits should be cleaned out regularly and most suppliers/manufacturers recommend that cleaning should take place every 6 months.

A guideline maintenance regime is outlined in Table 3.1 below.

Maintenance Schedule	Required Action	Recommended Frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action. Monthly for 3 months	Monthly for 3 months, then six monthly
	Debris removal from catchment surface (where may cause risks to performance)	Monthly
	Rainfall infiltrates into blocks from above, check the surface of filter for blockage by silt, algae or other matter. Remove and replace surface infiltration medium as necessary.	Monthly (and after large storms)
	Remove sediment from pre-treatment structures	Annually, or as required
Remedial actions	Repair/rehabilitation of inlets, outlet, overflows, and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually and after large storms

Table 3.1: Operation and maintenance requirements for attenuation tanks

3.2.2 Green Roof

Intensive green roofs are likely to require inspections and maintenance. Grassed areas may require mowing weekly or fortnightly, plant beds may require weeding on a weekly or fortnightly basis during the growing season, and wildflower meadows may require annual mowing with the cuttings removed. Extensive green roofs should normally only require biannual or annual visits to remove litter, check fire breaks and drains; in some cases, weeding of unwanted plants may be required.

All maintenance actions carried out at roof level must be in full compliance with the appropriate health and safety regulations, and particularly those specifically dealing with working at height. Safety fastenings should be required for all personnel working on the roof.

A guideline maintenance regime has been outlined in Table 3.2 below.

Maintenance Schedule	Required Action	Recommended Frequency
Regular Inspections	Inspect all components including soil substrate, vegetation, drains, irrigation systems (if applicable), membranes and roof structure for proper operation, the integrity of waterproofing and structural stability.	Annually and after severe storms
	Inspect soil substrate for evidence of erosion channels and identify any sediment sources	Annually and after severe storms
	Inspect drain inlets to ensure unrestricted runoff from the drainage layer to the conveyance or roof drain system	Annually and after severe storms
	Inspect the underside of the roof for evidence of leakage	Annually and after severe storms
Regular Maintenance	Remove debris and litter to prevent clogging of inlet drains and interference with plant growth	Six monthly and annually or as required
	During establishment (i.e. year one), Replace dead plants as required	Monthly (but usually the responsibility of manufacturer)
	Post-establishment, replace dead plants as required (where > 5% of coverage)	Annually (in autumn)
	Remove fallen leaves and debris from deciduous plant foliage	Six monthly or as required
	Remove nuisance and invasive vegetation, including weeds	Six monthly or as required
	Mow grass, prune shrubs and manage another planting (if appropriate) as required – clippings should be removed and not allowed to accumulate	Six monthly or as required
Remedial Actions	If erosion channels are evident, these should be stabilized with extra soil substrate similar to the original material, and sources of erosion damage should be identified and controlled	As required
	If drain inlets have settled, cracked or moved, investigate and repair as appropriate	As required

Table 3.2: Operation and maintenance requirements for green roofs

3.2.3 Flow Controls

A flow control device will be located within the demarcation chamber to restrict discharge from the site to the Thames Water sewer in accordance with the drainage strategy.

A guideline maintenance regime is outlined in Table 3.3 below.

Maintenance Schedule	Required Action	Recommended Frequency
Regular maintenance	Removal of any debris or sediment with potential to obstruct flow control	Monthly for 3 months, then six monthly or as required
Remedial actions	Repair/replacement of flow control device	As required
	Where a blockage has resulted in a flooded manhole, drain down and unblock as required	As required

Monitoring	Inspect/check flow control is in good condition and operating as designed, hose down as required	Monthly for 3 months, then six monthly
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Table 3.3: Operation and maintenance requirements for flow controls

Appendix A – Proposed Drainage Strategy Drawings

NOTE:

- PROPOSED RESTRICTED DISCHARGE RATE FOR 1 IN 100 YEAR STORM + 40% CLIMATE CHANGE = 2.9l/s (GREENFIELD QBAR RUNOFF RATE)
- ATTENUATION VOLUME REQUIRED TO ACHIEVE ABOVE RESTRICTED DISCHARGE RATE = CIRCA 840m³
- APPROXIMATE PODIUM DECK AREA = 2180m²
- JMP HAVE ALLOWED FOR 400mm PAVING BUILD UP OVER PODIUM DECK. ASSUMED 300mm ATTENUATION LAYER CAN BE ACCOMMODATED WITHIN THIS BUILDUP, TO BE CONFIRMED DURING DETAILED DESIGN
- REFER TO MEINHARDT SKETCH 2303-C-SK052 FOR DETAILS OF BELOW GROUND DRAINAGE AT GROUND LEVEL

FOR INFORMATION

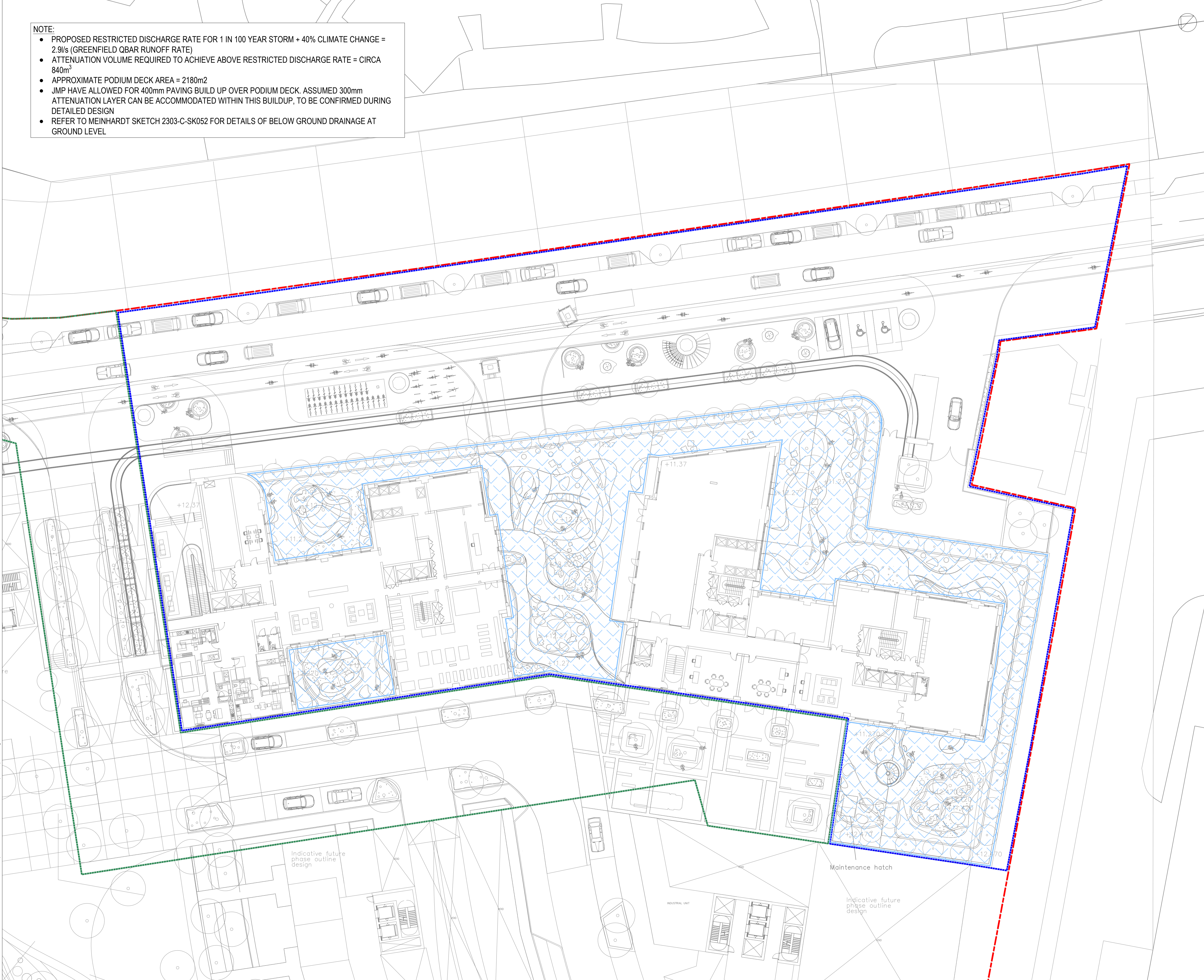
REV	DESCRIPTION	BY	DATE
001	FOR INFORMATION	EP	14.08.18
002	FOR INFORMATION	EP	30.10.18
003	FOR INFORMATION	PMG	29.11.18
004	REVISED FOLLOWING PLANNING COMMENTS	BV	02.04.19
005	STORAGE SIZES AMENDED TO SUIT REVISED DISCHARGE RATE	JS	27.05.19
006	REVISED TO SUIT UPDATED ARCLANDSCAPE ARC LAYOUTS	EP	09.03.2020

NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
3. THIS DRAWING IS BASED ON:
 - PATEL TAYLOR DRAWING 522-PT-MP-TYP-DR-L-PL-1016 _S02-P07 RECEIVED 06.03.2020

KEY:

- SITE BOUNDARY
- DETAILED APPLICATION BOUNDARY
- OUTLINE APPLICATION BOUNDARY
- PROPOSED PODIUM ATTENUATION



CDM RESIDUAL CIVIL / STRUCTURAL DESIGN RISKS



PROJECT
THAMESIDE WEST

CLIENT
KEYSTONE PARTNERSHIP

TITLE
PHASE 1A
PROPOSED SURFACE WATER ATTENUATION
PODIUM DECK

DISCIPLINE			SCALE @ A1
CIVILS DRAWING			1:250
DRAWN	DESIGNED	CHECKED	APPROVED
EP	EP	AOR	PH
DRAWING No			ISSUE
2303-C-SK009			106



FOR INFORMATION

REV	DESCRIPTION	BY	DATE
001	FOR INFORMATION	EP	14.08.18
002	FOR INFORMATION	EP	30.10.18
003	FOR INFORMATION	PMG	30.11.18

NOTES:

- DO NOT SCALE FROM THIS DRAWING.
- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
- THIS DRAWING IS BASED ON:
 - THAMES WATER ASSET RECORDS RECEIVED 19.07.18

KEY:

- SITE BOUNDARY
- DETAILED APPLICATION BOUNDARY
- OUTLINE APPLICATION BOUNDARY
- ExSW → ExSW → EXISTING SURFACE WATER SEWER
- ExFW → ExFW → EXISTING FOUL WATER SEWER
- ExCMBD → EXISTING COMBINED DRAINAGE
- EXISTING SURFACE WATER MANHOLE
- EXISTING SURFACE WATER MANHOLE
- EXISTING FOUL WATER MANHOLE

CDM RESIDUAL CIVIL / STRUCTURAL DESIGN RISKS

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Telephone: +44 (0)20 7831 7969
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PROJECT
THAMESIDE WEST

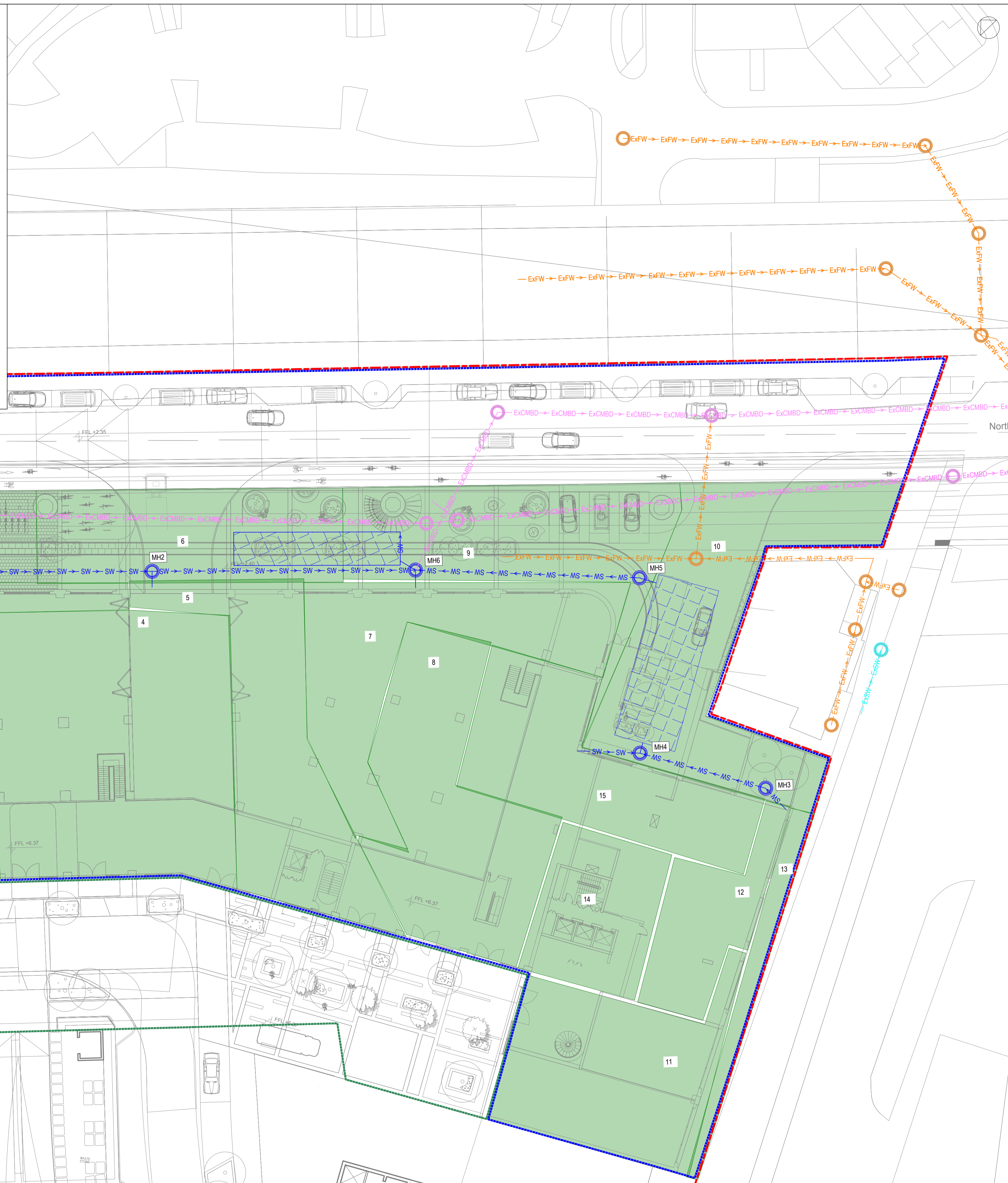
CLIENT
KEYSTONE PARTNERSHIP

TITLE
PHASE 1A
EXISTING DRAINAGE

DISCIPLINE			SCALE @ A1
CIVILS DRAWING			1:250
DRAWN	DESIGNED	CHECKED	APPROVED
EP	EP	AOR	PH
DRAWING No			ISSUE
2303-C-SK010			103

DRAINAGE CATCHMENT AREAS

AREA NUMBER	RECEIVING MANHOLE	AREA (ha)	TOTAL AREA (ha)
1	MH1	0.073	0.173
2		0.046	
3		0.054	
4	MH2	0.092	0.196
5		0.051	
6		0.053	
7	MH6	0.048	0.161
8		0.055	
9		0.058	
10	MH5	0.076	0.076
11	MH3	0.047	0.078
12		0.021	
13		0.010	
14	MH4	0.021	0.066
15		0.045	
GRAND TOTAL AREA		0.750	



FOR INFORMATION

REV	DESCRIPTION	BY	DATE
001	FOR INFORMATION	EP	27.06.19
002	REVISED TO SUIT UPDATED ARCLANDSCAPE ARC LAYOUTS	EP	09.03.2020

NOTES:
 1. THIS DRAWING IS BASED ON:
 • PATEL TAYLOR DRAWING 522-PT-MP-TYP-DR-L-PL-1013_S02-P07 RECEIVED 06.03.2020

- KEY:
- SITE BOUNDARY
 - DETAILED APPLICATION BOUNDARY
 - OUTLINE APPLICATION BOUNDARY
 - SW → SW PROPOSED SURFACE WATER SEWER
 - ExSW → ExSW EXISTING SURFACE WATER SEWER
 - ExFW → ExFW EXISTING FOUL WATER SEWER
 - ExCMBD → ExCMBD EXISTING COMBINED DRAINAGE
 - PROPOSED SURFACE WATER CHAMBER
 - EXISTING SURFACE WATER CHAMBER
 - EXISTING FOUL WATER CHAMBER
 - EXISTING COMBINED WATER CHAMBER
 - PROPOSED BELOW GROUND CELLULAR ATTENUATION TANK
 - PROPOSED DRAINAGE CATCHMENT AREAS

CDM RESIDUAL CIVIL / STRUCTURAL DESIGN RISKS



PROJECT
THAMESIDE WEST

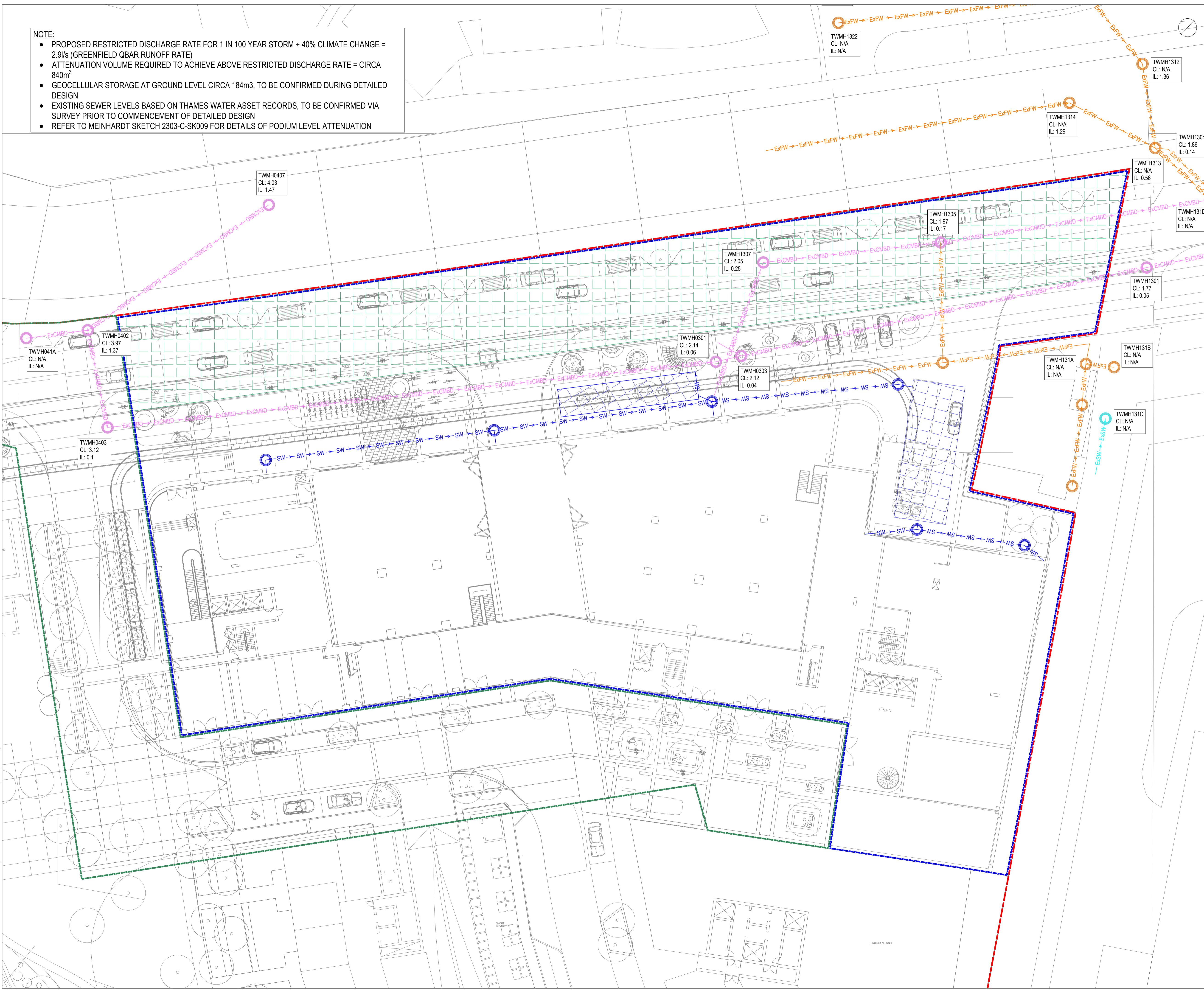
CLIENT
KEYSTONE PARTNERSHIP
 TITLE
PHASE 1 DRAINAGE CATCHMENT AREAS

DISCIPLINE	SCALE @ A1		
CIVILS DRAWING	1:250		
DRAWN	DESIGNED	CHECKED	APPROVED
EP	EP	-	-
DRAWING No	ISSUE		
2303-C-SK045	102		

ISO A1 841mm x 594mm
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NOTE:

- PROPOSED RESTRICTED DISCHARGE RATE FOR 1 IN 100 YEAR STORM + 40% CLIMATE CHANGE = 2.9l/s (GREENFIELD QBAR RUNOFF RATE)
- ATTENUATION VOLUME REQUIRED TO ACHIEVE ABOVE RESTRICTED DISCHARGE RATE = CIRCA 840m³
- GEOCELLULAR STORAGE AT GROUND LEVEL CIRCA 184m³, TO BE CONFIRMED DURING DETAILED DESIGN
- EXISTING SEWER LEVELS BASED ON THAMES WATER ASSET RECORDS, TO BE CONFIRMED VIA SURVEY PRIOR TO COMMENCEMENT OF DETAILED DESIGN
- REFER TO MEINHARDT SKETCH 2303-C-SK009 FOR DETAILS OF PODIUM LEVEL ATTENUATION



FOR INFORMATION

REV	DESCRIPTION	BY	DATE
01	FOR INFORMATION	EP	09.03.2020

NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
3. THIS DRAWING IS BASED ON:
 - PATEL TAYLOR DRAWING 522-PT-MP-TYP-DR-L-PL-1013_S02-P07 RECEIVED 06.03.2020

KEY:

- SITE BOUNDARY
- DETAILED APPLICATION BOUNDARY
- OUTLINE APPLICATION BOUNDARY
- PROPOSED BELOW GROUND CELLULAR ATTENUATION
- PROPOSED AREA TO BE ADOPTED BY THE LONDON BOROUGH OF NEWHAM
- SW → SW PROPOSED SURFACE WATER SEWER
- ExSW → ExSW EXISTING SURFACE WATER SEWER
- ExFW → ExFW EXISTING FOUL WATER SEWER
- ExCMBD → ExCMBD EXISTING COMBINED DRAINAGE
- PROPOSED SURFACE WATER CHAMBER
- EXISTING SURFACE WATER CHAMBER
- EXISTING FOUL WATER CHAMBER
- EXISTING COMBINED WATER CHAMBER

CDM RESIDUAL CIVIL / STRUCTURAL DESIGN RISKS





PROJECT
THAMESIDE WEST

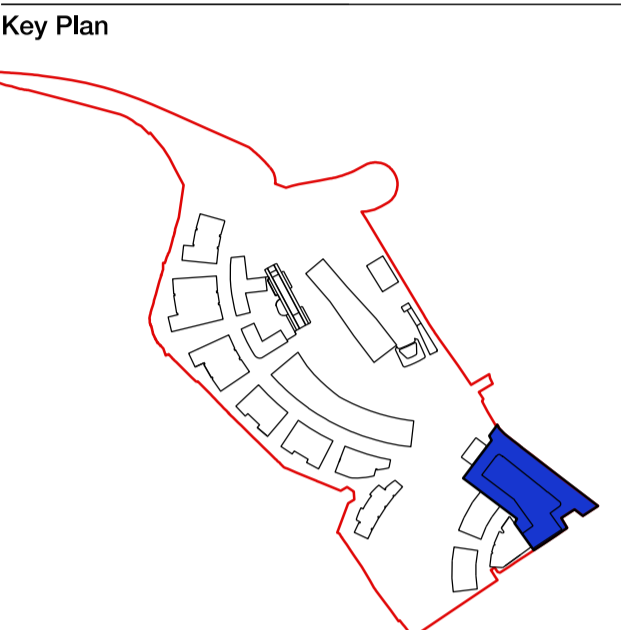
CLIENT
KEYSTONE PARTNERSHIP













TITLE
PHASE 1A
PROPOSED SURFACE WATER DRAINAGE
GROUND FLOOR

DISCIPLINE			SCALE @ A1
CIVILS DRAWING			1:250
DRAWN	DESIGNED	CHECKED	APPROVED
EP	EP	CR	PH
DRAWING No			ISSUE
2303-C-SK052			101

General Notes
 DO NOT SCALE. All dimensions must be checked on site, errors are to be reported.
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 Contractors must ensure that cross referenced drawings and specifications noted on these drawings are checked on a regular basis to ensure that the latest revisions are used.

Key Plan
 Thameside West planning application boundary
 Detailed and Outline application boundary



- Key**
-  Brown roof
 -  Planting Species 1
 -  Planting Species 2
 -  'Interest' planting
 -  Raised planter
 -  Concrete block paving
 -  Seating
 -  Shrub and Ground Cover
 -  Tree specimen
 -  Hedge Species 1
 -  Hedge Species 2
 -  Hedge Species 3

Issue Record

Issue	By	Chk	Date
P04 - Draft GLA planning	EP	RM	06.03.2020
P03 - For Information	EP	TS	29.11.2018
P02 - For Information	EP	TS	23.11.2018
P01 - First issue - For Information	EP	TS	07.11.2018

Title
 Phase 1 Landscape
 Roof Level

Project
 Thameside West Landscape

Scale
 1:250 @ A1 1:500 @ A3

Status **Revision**
 S2 - For Information P04

Drawing Number
 522-PT-MP-TYP-DR-L-PL-1017

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