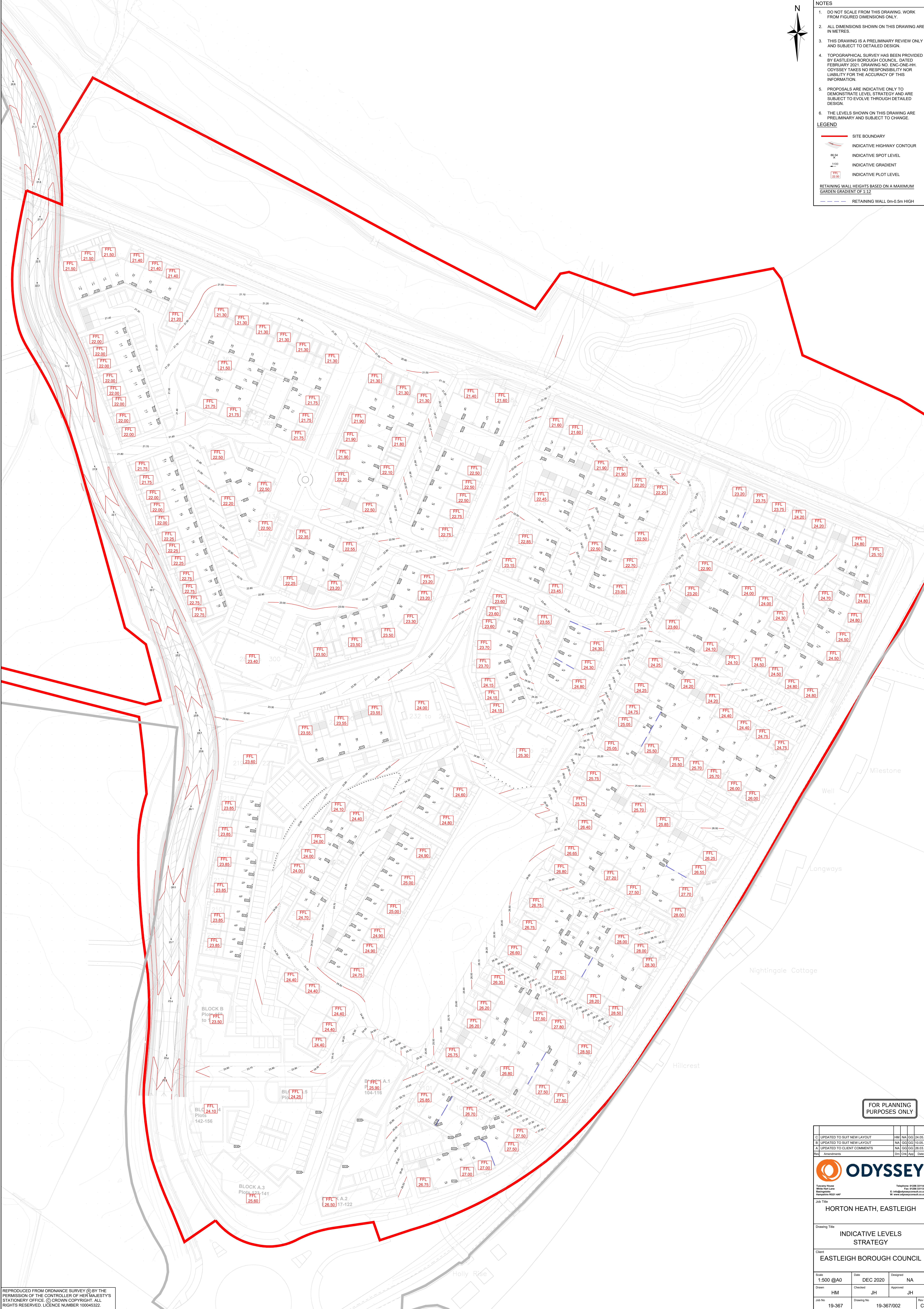


NOTES

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- THIS DRAWING IS A PRELIMINARY REVIEW ONLY AND SUBJECT TO DETAILED DESIGN.
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LEGEND

- SITE BOUNDARY
- INDICATIVE HIGHWAY CONTOUR
- INDICATIVE SPOT LEVEL
- INDICATIVE GRADIENT
- INDICATIVE PLOT LEVEL
- RETAINING WALL HEIGHTS BASED ON A MAXIMUM GARDEN GRADIENT OF 1:12
- RETAINING WALL 0m-0.5m HIGH



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C	UPDATED TO SUIT NEW LAYOUT	HM	NA	GG	24.05.21
B	UPDATED TO SUIT NEW LAYOUT	NA	GG	GG	10.05.21
A	UPDATED TO CLIENT COMMENTS	NA	GG	GG	26.03.21
Rev	Amendments	Des	Chk	App	Date

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Job Title
HORTON HEATH, EASTLEIGH

Drawing Title
**INDICATIVE LEVELS
STRATEGY**

Client
EASTLEIGH BOROUGH COUNCIL

Scale 1:500 @A0	Date DEC 2020	Designed NA
Drawn HM	Checked JH	Approved JH
Job No 19-367	Drawing No 19-367/002	Rev C

Project Name : Horton Heath, Eastleigh

Job No : 19-367

Note Title : Flood Risk Assessment and Drainage Strategy - Addendum 2

Author : JW

Checked : GG

Approved : GG

Date : September 2021

1.0 INTRODUCTION

1.1 Background

1.1.1 Odyssey was commissioned by Eastleigh Borough Council (EBC) to undertake a Flood Risk Assessment (FRA) and Water Management Strategy to be submitted in association with a planning application in support of a proposed development for a site at Horton Heath, Eastleigh.

1.1.2 The wider One Horton Heath development has obtained planning permission via two separate applications. The new composite outline planning permission for the wider site would increase the number of proposed dwellings from circa 1,500 to 2,500. The FRA and Water Management Strategy relates to the First Residential Parcel (FRP) of the development for 393 of the 2,500 dwellings.

1.1.3 The FRA and Water Management Strategy were submitted to EBC as part of the full planning application (reference F/20/89500) for the proposed FRP development.

1.1.4 Following the submission of the application, comments were received regarding whether the Water Management Strategy meets Points i and ii of Policy DM6 of the Eastleigh Local Plan (2016 to 2036). Policy DM6 regards sustainable surface water management and watercourse management.

1.1.5 This technical note presents that the proposed Water Management Strategy meets the requirements of Points i and ii of Policy DM6.

2.0 POLICY REQUIREMENTS

2.1.1 Policy DM6 of the Eastleigh Local Plan (ELP) states:

“New development in areas at risk of flooding or development of more than 10 dwellings or employment facilities, facilities with a site area of 0.5 hectares or more that drain into a waterway within the Itchen or Hamble catchment or drain directly to coastal waters will only be permitted if they include Sustainable Urban Drainage systems (SuDS). Within smaller developments mechanized systems will be considered.

In order to reduce flooding and maintain water quality (in accordance with DM8).

SuDS schemes should:

- i. Manage surface water runoff as close to its source as possible and include at least three forms of naturalized filtration within the treatment train wherever feasible;***
- ii. Be designed in accordance with the CIRIA C697 SuDS Manual or equivalent national or local guidance;***
- iii. Ensure that discharge rates at least mirror greenfield rates before development;*
- iv. Where discharge is to a wetland or wet woodland habitat, flows off site must mirror the natural hydrological pathways;*
- v. Include clear arrangements for their whole life management and maintenance.*

Where a watercourse is present on a development site, it should be retained or restored into a natural state and enhanced where possible. The culverting of any watercourse will not generally be permitted and development should wherever possible remove any existing culverts and increase on-site flood storage. Development should be laid out to enable maintenance of the watercourse.

Where development drains into a water way connected to the Natura 2000 or Ramsar network a site specific Construction Environment plan must be prepared before construction.”

2.1.2 The comments received concern the implementation of three forms of naturalised filtration stated in Policy DM6.

2.1.3 CIRIA C697 SuDS Manual was superseded in November 2015 by The SuDS Manual (C753), henceforth referred to as C753. C753 is considered the relevant guidance for this development.

3.0 PROPOSED WATER MANAGEMENT STRATEGY

3.1.1 The proposed Water Management Strategy is presented in the FRA (report reference 19-367-01B) and FRA Addendum 1 (report reference 19-367-04). The Water Management Strategy drawing is presented in **Appendix A** of this technical note for reference.

3.1.2 The Water Management Strategy shows that runoff from some areas of the site flow through a combination of permeable paving, swales and enhanced basins before, discharging to the ditch.

3.1.3 Surface water from some areas of the site would only be conveyed through one enhanced basin. All surface water runoff would therefore be conveyed through at least one enhanced basin at minimum.

3.1.4 The enhanced basins include the following features:

- Nitrogen reducing native marginal and aquatic species (including evergreen plants).
- The incorporation of distinct zones in the large basins providing the water quality and quantity volume storage in a number of independent cells. These features create increased attenuation, longer pollutant removal pathways (and therefore enhanced pollution removal), easier maintenance regime and more varied ecology.
- Basin Zones include a sediment forebay, permanent micro pools, attenuation storage volume above permanent pool water level, and aquatic benches surrounding the permanent micro pools, which support wetland planting, acting as a biological filter and providing ecology amenity and safety benefits. Around the micro pools, shallow wet and marshy grassland areas provide further filtration.

3.1.5 There are also some areas adjacent to the highways which would include rain gardens and bioretention areas which are separate to the enhanced basins.

3.1.6 A schematic showing the water treatment through the site, sets out the features that are proposed and the SuDS story board is presented in **Appendix B**.

3.1.7 It is therefore proposed that three forms of naturalised filtration for the site would be provided by a single enhanced basin which is split into the three components above.

3.1.8 **Section 4** sets out the ways in which the Water Management Strategy complies with C753 regarding the level of water quality treatment being provided.

4.0 WATER QUALITY

4.1 *Pollution Hazard Indices*

4.1.1 The “*pollution hazard indices for different land use classifications*” table has been extracted from C753 and applied to the development proposals, as shown in **Table 4-1**.

Table 4-1: Pollution Hazard Indices

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Residential Roofs	Very low	0.2	0.2	0.05
Individual property driveways, residential car parks, low traffic roads (e.g. cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (e.g. schools, offices) i.e. < 300 traffic movements per day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (e.g. hospitals, retail), all roads except low traffic roads and trunk roads or motorways	Medium	0.7	0.6	0.7

4.2 *Individual SuDS Mitigation Indices*

4.2.1 The proposed permeable paving, swales and enhanced attenuation basins would provide treatment for the surface water runoff from the site. The individual SuDS mitigation indices have been extracted from C753 and are set out in **Table 4-2**.

Table 4-2: Pollution Mitigation Indices

Land Use	Mitigation Indices		
	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Permeable Paving	0.7	0.6	0.7
Swale	0.5	0.6	0.6
Wetlands (Enhanced Basin)	0.8	0.8	0.8

4.2.2 The indices for the enhanced basins have been shown as equivalent to wetlands.

4.3 Combined SuDS Mitigation Indices

4.3.1 As per C753, the mitigation indices for multiple features are calculated using the following equation:

$$\text{Total SuDS Mitigation Index} = \text{mitigation index}_1 + 0.5 (\text{mitigation index}_2)$$

Scenario One – Permeable Paving and an Enhanced Basin

4.3.2 As stated in **Section 3**, some of the surface water from the site would be treated through permeable paving and an enhanced basin. The combined mitigation indices for this scenario are set out in **Table 4-3**.

Table 4-3: SuDS Mitigation Indices for Scenario One

Total Suspended Solids (TSS)	Metals	Hydrocarbons
1.1	1.0	1.1

4.3.3 Comparing the pollution indices with the mitigation indices for Scenario One shows that the level of treatment provided is significantly above the level of treatment required in C753.

Scenario Two – Swales and an Enhanced Basin

4.3.4 Some of the surface water from the site would be treated through a swale and an enhanced basin. The combined indices for this scenario are set out in **Table 4-4**.

Table 4-4: SuDS Mitigation Indices for Scenario Two

Total Suspended Solids (TSS)	Metals	Hydrocarbons
0.9	1.0	1.0

4.3.5 Comparing the pollution indices with the mitigation indices for Scenario Two shows that the level of treatment provided is significantly above the level of treatment required in C753.

Scenario Three – Two consecutive Enhanced Basins

4.3.6 Some of the surface water from the site would be treated through two consecutive enhanced basins. The combined indices for this scenario are set out in **Table 4-5**.

Table 4-5: SuDS Mitigation Indices for Scenario Three

Total Suspended Solids (TSS)	Metals	Hydrocarbons
1.2	1.2	1.2

4.3.7 Comparing the pollution indices with the mitigation indices for Scenario Three shows that the level of treatment provided is significantly above the level of treatment required in C753.

Scenario Four – A Single Enhanced Basin

4.3.8 All of the surface water would, as a minimum, be conveyed through one enhanced basin. The mitigation indices presented in **Table 4-2** show that one enhanced basin alone provides higher levels of treatment than required in C753.

5.0 CONCLUSION

5.1.1 Odyssey was commissioned by EBC to complete a Flood Risk Assessment and Water Management Strategy to be submitted in association with a planning application in support of a proposed development for a site at Horton Heath, Eastleigh.

5.1.2 Following the submission of the application, comments were received regarding whether the Water Management Strategy meets Points i and ii of Policy DM6 of the ELP.

5.1.3 This technical note confirms that the provision of three forms of naturalised filtration on site would be via single enhanced SuDS basins. The single enhanced basins will be split into three different components such as the sediment forebay, permanently wet area and wetland planting. Water quality treatment standards as required by C753 would be exceeded for all scenarios on site.

Therefore, it is proposed that the proposed Water Management Strategy satisfies Point i and ii of Policy DM6 of the ELP.

APPENDIX A

Water Management Strategy



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 3. CULVERTED DITCH LEVELS HAVE BEEN INTERPOLATED FROM SURVEY UNDERTAKEN BY LIGHTSOURCE SURVEYS LTD IN APRIL 2018.
 4. PROPOSALS ARE INDICATIVE ONLY TO DEMONSTRATE DRAINAGE STRATEGY AND ARE SUBJECT TO EVOLVE THROUGH DETAILED DESIGN.
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 6. LIGHTING DESIGN IS INDICATIVE AND SUBJECT TO CHANGE AT DETAILED DESIGN.
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- LEGEND**
- SITE BOUNDARY
 - PROPOSED FOUL SEWER & MANHOLE
 - PROPOSED SURFACE WATER SEWER & MANHOLE
 - VORTEX FLOW CONTROL
 - PROPOSED PERMEABLE PAVING
 - PROPOSED HEADWALL
 - INDICATIVE ATTENUATION BASIN
 - BASIN EARTHWORKS EXTENT
 - INDICATIVE RAIN GARDEN
 - PROPOSED SWALE

P:19-367 - Horton Heath, EastleighTechAcadDrawings000 Series19-367-001 Preliminary Engineering Layout.dwg

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C	UPDATED TO SUIT NEW LAYOUT	NA	JH	GS	24.05.21
B	UPDATED TO INCLUDE CDM INFORMATION	NA	JH	GS	12.02.21
A	UPDATED TO CLIENT COMMENTS	NA	JH	GS	15.12.20
Rev	Amendments	Des	Dra	App	Date

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Job Title:
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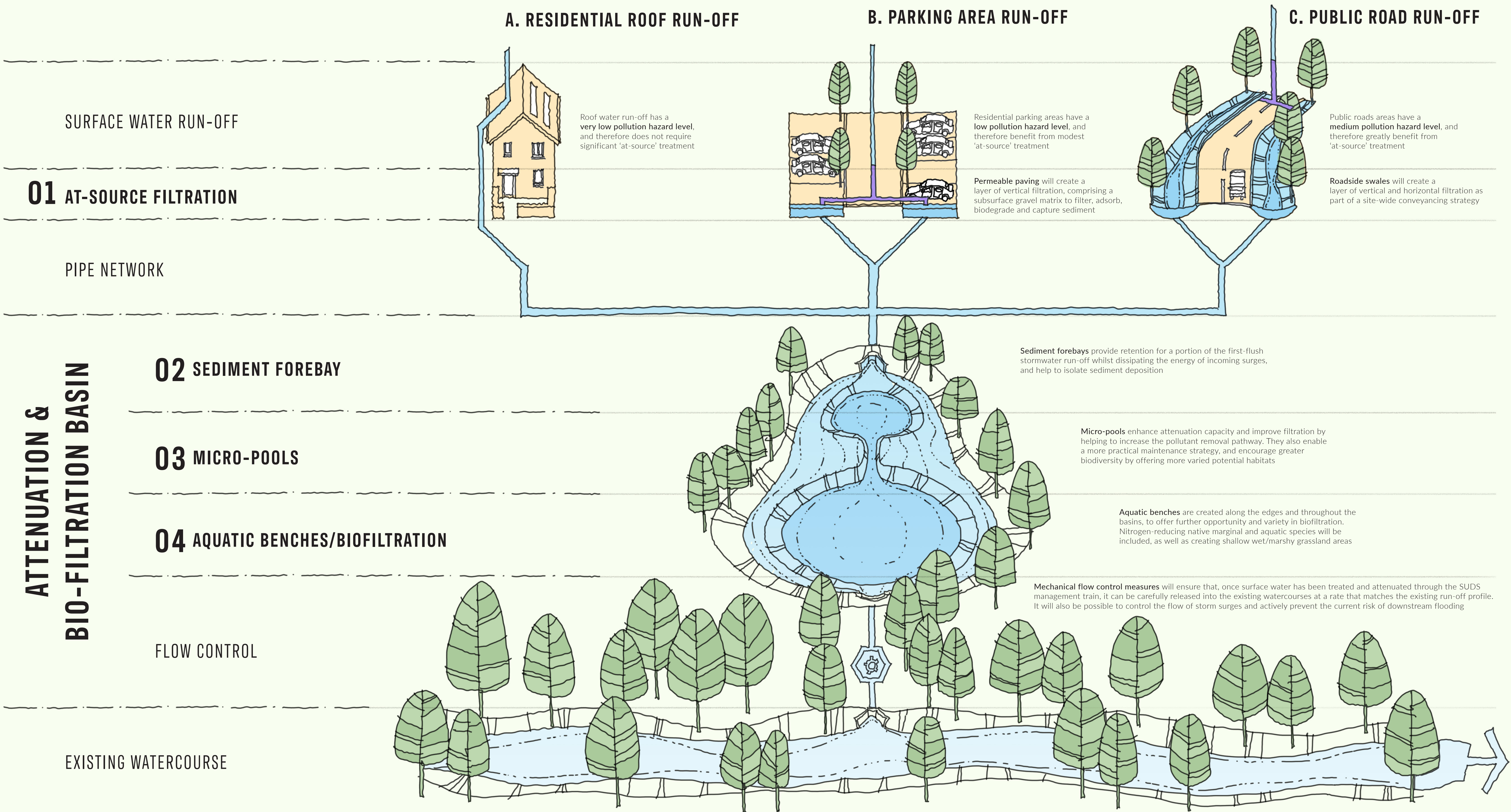
Drawing Title:
DRAINAGE STRATEGY

Client:
EASTLEIGH BOROUGH COUNCIL

Scale: 1:500 @A0	Date: NOV 20	Designed: NA
Drawn: JA	Checked: JW	Approved: JH
Job No: 19-367	Drawing No: 19-367/001	Rev: C

APPENDIX B

SuDS Story Board





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