



40 SILVER STREET, READING, RG1 2ST



MORLET PROPERTIES

DRAINAGE STRATEGY

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Appendix 1 Drawing WL_1227_100_P1_Drainage Strategy

1 Introduction

Westlakes Consulting, as a division of Westlakes Engineering Ltd., has been commissioned by Morlet Properties limited to prepare a Drainage Strategy summary for a development site at 40 Silver Street, Reading, RG1 2ST.

1.1 Site Description

A site visit has not been undertaken however a topographic survey has been reviewed along with aerial and street images which suggest that the development site consists of a single storey commercial building with a tarmac hardstanding area to the front adjacent to Silver Street. The approximate total area of the site is 0.114ha which is noted as being 100% impermeable.

The site is accessed from Silver Street, which is adjacent to the eastern boundary of the site.

The site is located within a mix of commercial and residential property in an area lying south east of the centre of Reading.

The nearest surface water feature is the River Kennet which is located approximately 500m west of the site.

2 Drainage Strategy

Westlakes are undertaking the new site drainage design and have obtained details of Thames Water sewer assets in the area local to the site. The proposed strategy is set out below and is also shown on Drawing WL-1227_100 included as Appendix 1.

2.1 Existing Site Drainage and Connections to the Public Sewer

Assessment of the existing topographical survey has revealed the presence of several chambers across the site, with their individual discharge points anticipated at this time to be the separate surface water and combined networks that reside within Silver Street.

2.2 Existing Flows from Site

The site is approximately 0.114 ha in area and is considered to be 100% impermeable in its pre-development state.

It is proposed that a CCTV survey is undertaken along the existing drainage networks to not only establish the current point of discharge from the site but to also confirm the condition of the existing network for reuse.

In order to define the existing flows originating from the current car park, a 2-pipe network has been formed following the guidance contained within Microdrainage modelling software to represent the pre-development impermeable area and simulating the 1 in 100-year storm 360minute duration with results shown below in figure 1.

Figure 1 – Brownfield Flow rate

Westlakes Engineering Ltd						Page 1																																														
20 Dale Street Manchester M1 1EZ																																																				
Date 22/11/2017 11:31				Designed by eyresg																																																
File Brownfield 2 pipe netwo...				Checked by																																																
Micro Drainage				Network 2017.1.2																																																
<u>Summary of Critical Results by Maximum Level (Rank 1) for Storm</u>																																																				
<u>Simulation Criteria</u>																																																				
Areal Reduction Factor		1.000	Additional Flow - % of Total Flow		0.000																																															
Hot Start (mins)		0	MADD Factor + 10m³/ha Storage		2.000																																															
Hot Start Level (mm)		0	Inlet Coefficient		0.800																																															
Manhole Headloss Coeff (Global)		0.500	Flow per Person per Day (l/per/day)		0.000																																															
Foul Sewage per hectare (l/s)		0.000																																																		
Number of Input Hydrographs		0	Number of Storage Structures		0																																															
Number of Online Controls		0	Number of Time/Area Diagrams		0																																															
Number of Offline Controls		0	Number of Real Time Controls		0																																															
<u>Synthetic Rainfall Details</u>																																																				
Rainfall Model		FSR	Ratio R		0.400																																															
Region		England and Wales	Cv (Summer)		0.750																																															
M5-60 (mm)		18.800	Cv (Winter)		0.840																																															
Margin for Flood Risk Warning (mm)		300.0	DVD Status		OFF																																															
Analysis Timestep		Fine	Inertia Status		OFF																																															
DTS Status		ON																																																		
<u>Profile(s) Summer and Winter</u>																																																				
Duration(s) (mins)		360																																																		
Return Period(s) (years)		100																																																		
Climate Change (%)		0																																																		
<table><tr><th colspan="2"></th><th colspan="2"></th><th colspan="2"></th><th colspan="2"></th><th>Water</th></tr><tr><th>PN</th><th>US/MH</th><th>Storm</th><th>Return Period</th><th>Climate Change</th><th>First (X) Surge</th><th>First (Y) Flood</th><th>First (Z) Overflow</th><th>Level</th></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Act.</td><td>(m)</td></tr><tr><td>1.000</td><td>MH1</td><td>360 Summer</td><td>100</td><td>+0%</td><td></td><td></td><td></td><td>98.080</td></tr><tr><td>1.001</td><td>MH2</td><td>360 Summer</td><td>100</td><td>+0%</td><td></td><td></td><td></td><td>97.981</td></tr></table>																Water	PN	US/MH	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Level								Act.	(m)	1.000	MH1	360 Summer	100	+0%				98.080	1.001	MH2	360 Summer	100	+0%				97.981
								Water																																												
PN	US/MH	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Level																																												
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1.000	MH1	360 Summer	100	+0%				98.080																																												
1.001	MH2	360 Summer	100	+0%				97.981																																												
<table><tr><th colspan="2"></th><th colspan="2"></th><th colspan="2"></th><th colspan="2"></th><th>Pipe</th></tr><tr><th>PN</th><th>US/MH</th><th>Depth</th><th>Volume</th><th>Flow / Cap.</th><th>Overflow</th><th>Pipe Flow</th><th>Status</th><th>Level</th></tr><tr><td></td><td></td><td>(m)</td><td>(m³)</td><td>(l/s)</td><td>(l/s)</td><td>(l/s)</td><td>Exceeded</td><td></td></tr><tr><td>1.000</td><td>MH1</td><td>-0.070</td><td>0.000</td><td>0.56</td><td></td><td>8.9</td><td>OK</td><td></td></tr><tr><td>1.001</td><td>MH2</td><td>-0.069</td><td>0.000</td><td>0.56</td><td></td><td>8.9</td><td>OK</td><td></td></tr></table>																Pipe	PN	US/MH	Depth	Volume	Flow / Cap.	Overflow	Pipe Flow	Status	Level			(m)	(m³)	(l/s)	(l/s)	(l/s)	Exceeded		1.000	MH1	-0.070	0.000	0.56		8.9	OK		1.001	MH2	-0.069	0.000	0.56		8.9	OK	
								Pipe																																												
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1.000	MH1	-0.070	0.000	0.56		8.9	OK																																													
1.001	MH2	-0.069	0.000	0.56		8.9	OK																																													

Therefore, the Brownfield run off rate for the critical storm has been calculated as 8.9 l/s.

4.1.11 In order to provide a significant betterment over the existing discharge rate currently experienced from the site a reduction in flow of 30% will be applied to the proposed development providing a discharge rate of 6.23 l/s.

2.3 Surface Water Drainage Strategy

It is proposed that all surface water flows arising from the new development will be collected by a network of pipes before discharging to surface water infiltration feature located within the proposed landscaped areas. Any additional flows generated by the proposed development not able to be recharged to the ground will be discharged via an overflow to the existing surface water sewer within Silver Lane, shown on the drainage strategy drawing WL_1227_100_P1.

In order to further reduce the amount of surface run off the developer will investigate the use of porous paving and soft landscaping.

It is noted that the suitability of infiltration as well as porous paving will be influenced by the permeability of the underlying ground and whether contamination is present, which will be considered as the design processes.

Should infiltration not be possible, it is proposed that surface water from the site is allowed to discharge into the 300mm diameter dedicated surface water sewer in Silver Street at the reduced brownfield rate above. The rate of discharge will however need to be confirmed by the local drainage authority and Thames Water who will take into account the capacity of the sewer and check their records for history of surcharging or flooding in the network.

The site surface water drainage will be designed in accordance with current best practice to provide adequate capacity not to flood for a 1 in 30-year storm event and flood water generated from a 1 in 100 year plus climate change storm event (+30%) shall be constrained within the site boundary so not to cause off-site flooding. The risk of flooding elsewhere should not be increased as a result of the development proposals.

All redundant drains, sewers and manholes within the site will be removed or filled.

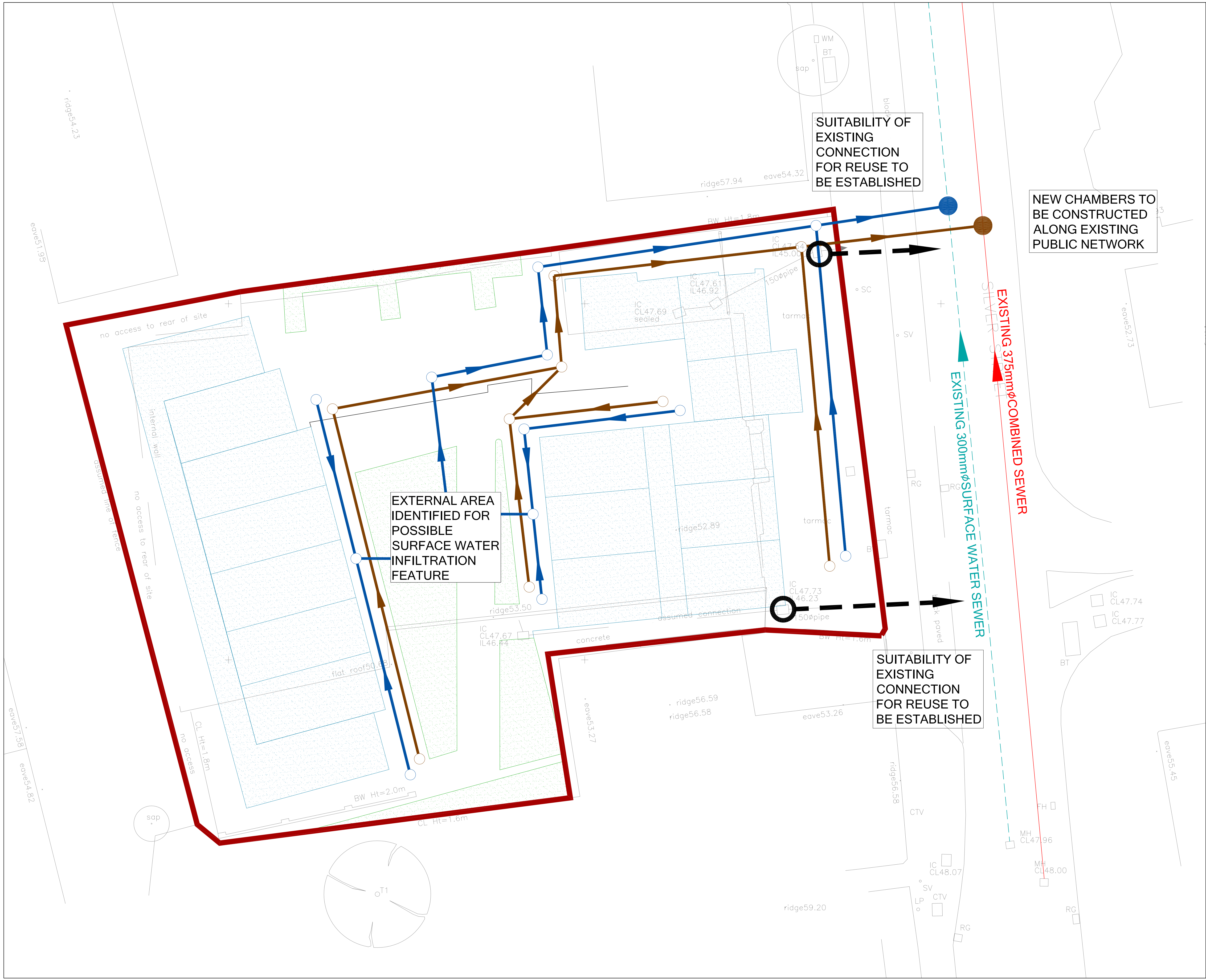
Discussions should be held with Thames Water and the local drainage authority regarding the discharge of surface waters. Discharge restrictions and connection charges may apply.

2.4 Foul Flows

It is proposed to connect foul flows generated by the proposed development to the existing 375mm diameter combined sewer located within Silver Street, shown on the drainage strategy drawing WL_1227_100_P1.



Appendix 1 Drawing WL_1227_100_P1_Drainage Strategy



GENERAL NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. ALL LEVELS ARE IN METRES.
3. SURVEY GRID IS BASED ON NATIONAL GRID COORDINATES, SURVEY INFORMATION SUPPLIED.
4. ALL DIMENSIONS TO BE CHECKED ON SITE BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. ANY DISCREPANCIES SHOULD BE REPORTED TO THE ENGINEER IMMEDIATELY.
5. THIS DRAWING TO BE READ IN CONJUNCTION WITH THE RELEVANT ENGINEERS AND SPECIALISTS DRAWINGS TOGETHER WITH THEIR SPECIFICATIONS.
6. DO NOT SCALE FROM THIS DRAWING, ONLY WRITTEN OR CALCULATED DIMENSIONS TO BE USED.

LEGEND

- PROPOSED SITE BOUNDARY
- PROPOSED FOUL WATER SEWER
- PROPOSED SURFACE WATER SEWER
- EXISTING COMBINED SEWER
- EXISTING SURFACE WATER SEWER
- PROPOSED SURFACE WATER OUTFALL CHAMBER
- PROPOSED FOUL WATER OUTFALL CHAMBER
- PROPOSED SURFACE WATER INSPECTION CHAMBER
- PROPOSED FOUL WATER INSPECTION CHAMBER
- EXISTING DRAINAGE CONNECTION FROM THE SITE, SUITABILITY FOR REUSE TO BE ESTABLISHED FOLLOWING COMPLETION OF DETAILED CCTV INVESTIGATION
- DEVELOPMENT
- LANDSCAPE

P1	22.11.17	PRELIMINARY ISSUE	GE	PH	CP
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Client MORLET PROPERTIES					
Project 40 SILVER STREET					
Title INDICATIVE DRAINAGE LAYOUT					
Drawing No. WL_1227_100					Revision P1
Scale 1:100 @ A1			Date 22.11.2017		
Drawn GE	Chk PH	App CP			
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