



Plots 2&3 Meadowside

Sustainable Drainage Management and Maintenance Plan

EMPLOYER:	FEC
PROJECT TITLE:	Plots 2&3 Meadowside
REFERENCE (Contract No):	0004

Plots 2&3 Meadowside
Sustainable Drainage Management and Maintenance Plan

Issue/revision	First issue
Remarks	Issued for Planning Discharge
Date	22nd June 2021
Prepared by	I Griffiths
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Plots 2&3 Meadowside Sustainable Drainage Management and Maintenance Plan

1 Introduction

The external foul and surface water drainage systems at the Meadowside Development have been designed by FEC's design consultants – WSP. The foul and surface water systems leave the site via an adoptable combined manhole on the corner of Dantzic Street and Little Nelson Street, the surface water system incorporates a sustainable drainage scheme to collect surface water from the developments external hard surfaced areas and the roofs of the Towers. The sustainable drainage system has a Pluvial Cube Attenuation Storage system which is controlled by a hydro-brake chamber. The scheme design details show the surface water is collected from the roofs of the towers and podium areas into a 800 mm deep, 90 cu.m cellular storage area below the developments external landscaped area adjacent to Plot 3. The external surface water system incorporates a hydro-brake chamber, Pluvial Cube Attenuation Storage system and two interceptor manholes within the system prior to the surface water being discharged into the 1200mm dia. combined adoptable manhole before finally discharged from site into the local sewer network. The surface water scheme design drawings are listed and included below together with verification photographs that the surface water scheme has been constructed as per the design Purpose.

2 Design Drawings

Drawing Number	Drawing Title
1002-P-WSP-DRG-51-00-2101	Plot 2&3 Below ground Drainage Sheet 1 of 2
1002-P-WSP-DRG-51-00-2102	Plot 2&3 Below ground Drainage Sheet 2 of 2
1002-P-WSP-DRG-51-00-0004	Below Ground Drainage Details Sheet 4

3 Photographs



Hydro Brake Chamber

Plots 2&3 Meadowside

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Pluvial Cube Attenuation Installation

4 Management and Maintenance Plan

The sustainable drainage scheme will require general maintenance throughout the lifetime of the project and the system has been designed to incorporate feature to allow the system to be easily maintained. The areas of the sustainable drainage scheme that requires regular inspection and maintenance are:

- Roof Outlets to ensure that all leaves or loose material is removed to prevent debris entering into the systems
- External catch pits to ensure that the debris collected in the catch pit does not impede the outlet flow from the catch pit. Debris in the catch pit to be removed on a regular basis.
- Hydro-brake Manhole to ensure that the Hydro-brake is working correctly and that all debris is removed from the manhole.

FEC will implement a planned and preventative management regime for the sustainable drainage scheme in line with the manufacturer's recommendations. These recommendations are given in CIRIA C697

It is envisaged that the following maintenance plan will be adopted as highlighted in the CIRIA C753 SUDS Manual. This will largely be delivered by the client's Facilities Management Company who will be fully inducted at the handover of Plots 2 & 3.

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Sustainable Drainage Management and Maintenance Plan

TABLE 21.3 **Operation and maintenance requirements for attenuation storage tanks**

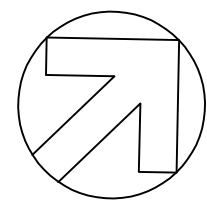
Maintenance schedule	Required action	Typical frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary.	Annually
	Remove sediment from pre-treatment structures and/or internal forebays	Annually, or as required
Remedial actions	Repair/rehabilitate 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
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required



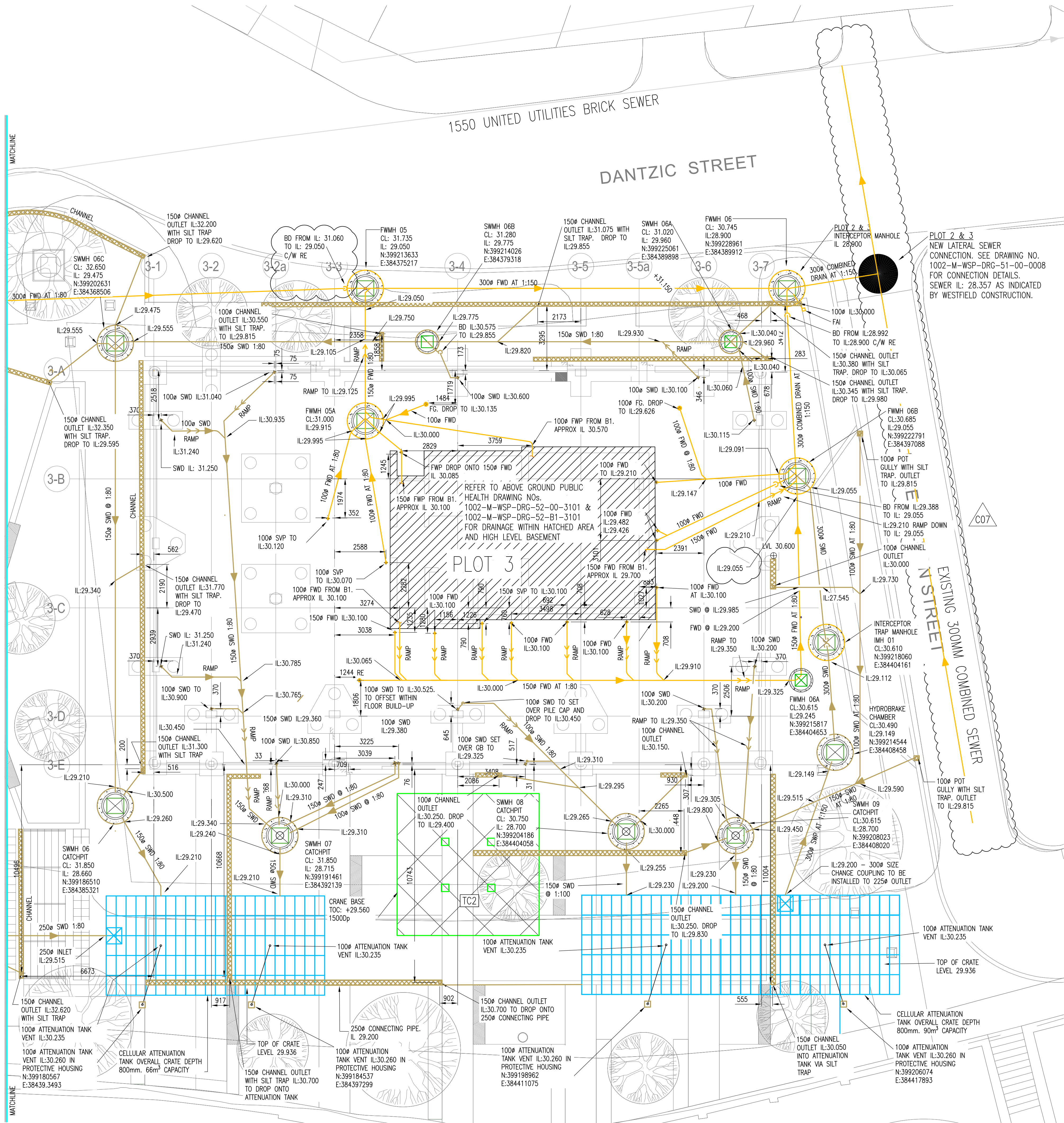
ABBREVIATIONS
 SWNH - SURFACE WATER MANHOLE
 FWMH - FOUL WATER MANHOLE
 CPMH - CATCH PIT MANHOLE
 FCC - FLOW CONTROL CHAMBER
 CMH - COMBINED MANHOLE
 ATT TANK - ATTENUATION TANK
 RG - ROAD GULLY
 FW - FOUL WATER
 SW - SURFACE WATER
 UU - UNITED UTILITIES

1. THIS DRAWING IS TO BE READ IN CONNECTION WITH ALL OTHER WSP DRAWINGS AND SPECIFICATIONS.
2. ALL DIMENSIONS WHERE SHOWN ARE IN MILLIMETERS (mm) UNLESS STATED OTHERWISE.
3. THIS DRAWING IS TO BE READ IN CONNECTION WITH ALL ARCHITECTS, LANDSCAPE ARCHITECTS AND STRUCTURAL ENGINEERS DRAWINGS.
4. ALL PREWORK BENDS ARE TO BE INSTALLED WITH SHARP BENDS. ELBOW BENDS SHOULD NOT BE USED.
5. ALL BURRED DRUMS WITHIN THE BUILDING TO BE IN A HOPE.
6. PLANT GULLIES (PG) AND FLOOR GULLIES (FG) TO BE AS HADE CODE 348.
7. CARAC GULLIES (CG) TO BE AS HADE TMS051.
8. DRAIN POINTS (DP) ARE TO BE MEDIUM RADIUS BENDS.
9. ALL DRAINAGE WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH BUILDING REGULATIONS AND TO BE IN ACCORDANCE WITH SPECIFICATION FOR THE WATER INDUSTRY (LATEST REVISIONS) WHERE APPROPRIATE.
10. ALL COVERS AND FRAMES TO BE MINIMUM LOW CLASS AS INDICATED ON THE MANHOLE SCHEDULE.
11. DRAINAGE LAYOUT SUBJECT TO APPROVAL FROM RELEVANT APPROVING BODIES.
12. ALL PIPE CONNECTIONS WILL BE MADE SUFFICIENT TO SUFFIT UNLESS OTHERWISE SPECIFIED.
13. REFER TO PUBLIC HEALTH ENGINEERS DRAWINGS FOR HIGH LEVEL, INTERNAL DRAINAGE.
14. REFER TO LANDSCAPE ARCHITECTS DRAWINGS FOR LANDSCAPING DESIGN & LANDSCAPE DRAINAGE GULLY/DRAINAGE LOCATIONS.
15. DRAINAGE GULLIES TO BE MANHOLESD 050-DMS-DRG-51-00-0007 FOR PLANT+IN DRAWINGS AND SPECIFICATION.
16. ATTENTION: LOK LOCATION IS DIMENSIONED AND SET OUT FROM CONTRACTOR DRAWINGS. REFER TO CONTRACTOR'S AS-BUILT DRAWINGS FOR SETTING OUT.
17. REFER TO WSP DRAWING NUMBER 1002-M-WSP-DRG-51-00-0007 FOR MANHOLE SCHEDULE PRIOR TO INSTALLING CULVERTS.
18. REFER TO WSP DRAWING NUMBER 1002-M-WSP-DRG-51-00-0001 TO 1002-M-WSP-DRG-51-00-0004 FOR LOCAL MANHOLE TYPES.
19. DRAINAGE IS SHOWN PASSING THROUGH GROUND BEAMS ETC. PERPENDICULAR TO THE DRAINAGE CULVERT AT THE MINIMUM OF 100MM. WHERE POSSIBLE DRAINAGE SHOULD BE RUN STRAIGHT TO MANHOLES WITHOUT BENDS.
20. ALL PLASTIC DRAINAGE PASSING THROUGH STRUCTURE IS TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S BEST PRACTICE GUIDANCE. ETC. FILL WITH

				
8 First Street, Manchester M15 4RP Tel: +44 (0)1612 005 000 wsp.com				
CLIENT WESTFIELDS				
PROJECT CHAPMAN TAYLOR ARCHITECTS				
PROJECT MEADOWSIDE PLOT 2 & 3 MANCHESTER				
TITLE PUBLIC HEALTH SERVICES PLOT 2 & 3 BELOW GROUND DRAINAGE SHEET 1 OF 2				
SCALE @ A0: 1:100		CHECKED: AS		APPROVED: CH
PROJECT NO: 70020194	DESIGNED: KS	DRAWING: KS	DATE: OCTOBER 17	
DRAWING NO: 1002-M-WSP-DRG-51-00-2101				REV: C11
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FOR CONTINUATION REFER TO WSP DRG.NO. 1002-M-WSP-DRG-51-00-2101



LEGEND

- UNITED UTILITIES COMBINED SEWER
- PROPOSED SURFACE WATER DRAIN
- PROPOSED FOUL DRAIN
- UNITED UTILITIES ACCESS CHAMBER
- PROPOSED SURFACE WATER MANHOLE
- PROPOSED FOUL WATER MANHOLE
- DIRECTION OF FLOW
- PROPOSED SURFACE WATER CHANNEL
- PROPOSED STORMWATER ATTENUATION

ABBREVIATIONS

SMWH - SURFACE WATER MANHOLE
FWMH - FOUL WATER MANHOLE
CPMH - CATCH PIT MANHOLE
FCC - FLOW CONTROL CHAMBER
CMH - COMBINED MANHOLE
ATT TANK - ATTENUATION TANK
RG - ROAD GULLY
FW - FOUL WATER
SW - SURFACE WATER
UU - UNITED UTILITIES

ATTENUATION TANK SIZING - BROWNFIELD RUN-OFF				
DESCRIPTION	DISCHARGE RATE	STORM EVENT	CLIMATE CHANGE	TANK VOLUME (m³)
PLOTS 2 & 3	45.91 L/S	100 YEAR	40%	160m³

FOUL WATER DISCHARGE RATES			
DESCRIPTION	DISCHARGE UNITS	DISCHARGE RATE	DESIGN STANDARD
PLOT 2	1,300 DU'S	18.03 L/S	BS EN 12056
PLOT 3	654 DU'S	12.79 L/S	BS EN 12056

DO NOT SCALE

BACKGROUND DRAWING INFORMATION			
FILENAME	ORIGINATOR	DESCRIPTION	REV DATE REC'D
BACKGROUND DRAWING INFORMATION			
FILENAME	ORIGINATOR	DESCRIPTION	REV DATE REC'D
1002-M-WSP-DRG-51-00-2101	WSP	PLOT 3 FOUNDATION GA	C1 23.01.19

- NOTES**
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER WSP DRAWINGS AND SPECIFICATIONS.
 - ALL DIMENSIONS WHERE SHOWN ARE IN MILLIMETERS (mm) UNLESS STATED OTHERWISE.
 - THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ARCHITECTS, LANDSCAPE ARCHITECTS AND STRUCTURAL ENGINEERS DRAWINGS.
 - ALL PEPPERKORNS ARE TO BE INSTALLED WITH SKEWED BENDS. ELBOW BENDS SHOULD NOT BE USED.
 - ALL BURIED DRAINAGE WITHIN THE BUILDING FOOTPRINT IS TO BE IN HOPE.
 - PLANT GULLIES (PG) AND FLOOR GULLIES (FG) TO BE AS MADE 650A SERIES.
 - GARAGE GULLIES (GG) TO BE AS MADE 650A SERIES.
 - DRAIN POINTS (DP) ARE TO BE MEDIAN RADIUS REST BENDS.
 - ALL DRAINAGE WORKS TO BE CONSTRUCTED IN ACCORDANCE WITH BUILDING REGULATIONS PART A AND CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY (LATEST REVISIONS) WHERE APPROPRIATE.
 - ALL COVERS AND FRAMES TO BE MINIMUM LOAD CLASS AS INDICATED ON THE MANHOLE SCHEDULE.
 - DRAINAGE LAYOUT SUBJECT TO APPROVAL FROM RELEVANT APPROVING BODIES.
 - ALL PIPE CONNECTIONS WILL BE MADE SOFFIT TO SOFFIT UNLESS OTHERWISE SHOWN.
 - REFER TO PUBLIC HEALTH ENGINEERS DRAWINGS FOR HIGH LEVEL INTERNAL DRAINAGE.
 - REFER TO LANDSCAPE ARCHITECTS DRAWINGS FOR LANDSCAPE DESIGN & LANDSCAPE DRAINAGE GULLY/CHANNEL LOCATIONS.
 - DRAINAGE GULLIES TO BE MARSHALLS DSD SLOTT - REFER TO PLANT-E DRAWINGS AND SPECIFICATION.
 - ATTENUATION TANK LOCATION IS DIMENSIONED AND SET OUT FROM CONTRACTIONS DRAWINGS. REFER TO CONTRACTOR'S AS-BUILT DRAWINGS FOR SETTING OUT.
 - REFER TO WSP DRAWING NUMBER 1002-M-WSP-DRG-51-00-0007 FOR MANHOLE SCHEDULES.
 - REFER TO WSP DRAWING NUMBER 1002-M-WSP-DRG-51-00-0001 TO 1002-M-WSP-DRG-51-00-0004 FOR TYPICAL DETAILS.
 - DRAINAGE IS SHOWN PASSING THROUGH GROUND BEAMS ETC. PERPENDICULAR TO THE STRUCTURAL ELEMENT AT THE REQUEST OF THE STRUCTURAL ENGINEER. WHERE POSSIBLE DRAINAGE SHOULD BE RUN STRAIGHT TO MANHOLES WITHOUT BENDS.
 - ALL PLASTIC DRAINAGE PASSING THROUGH STRUCTURE IS TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S BEST PRACTICE GUIDANCE, E.G. FILLED WITH WATER PRIOR TO BACKFILLING CONCRETE.

C07	13.12.2019	JG	WESTFIELD COMMENTS INCORPORATED	JK	JK
C06	27.11.2019	JG	WESTFIELD COMMENTS INCORPORATED	JK	JK
C05	22.11.2019	JG	ATTENUATION TANK OUTLET UPDATED	JK	JK
C04	15.11.2019	JG	DESIGN UPDATED TO SUIT PROPOSED CONNECTION WITHIN LITTLE NELSON STREET	JK	JK
C03	10.05.2019	BJG	SETTING OUT DRAINAGE FWH ODB REDUCED	JK	JK
C02	07.05.2019	BJG	FAHRY LEVELS ADDED, MATCHLINE AMENDED & COMMENTS INCORPORATED	JK	JK
C01	11.04.2019	KS	PLOT 2 & 3 DRAWING SPLIT TO SHEETS 1 & 2	JK	JK
REV	DATE	BY	DESCRIPTION	CHK	APP

DRAWING STATUS

A - FIT FOR CONSTRUCTION

wsp

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CUSTOMER: WESTFIELDS

ARCHITECT: CHAPMAN TAYLOR ARCHITECTS

PROJECT: MEADOWSIDE PLOT 2 & 3 MANCHESTER

TITLE: PUBLIC HEALTH SERVICES PLOT 2 & 3 BELOW GROUND DRAINAGE SHEET 2 OF 2

SCALE @ 1:100	CHECKED: AS	APPROVED: CH
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