

Addendum Technical Note – Surface Water

Introduction

- 1.1 An original Drainage Technical Note (TN) has been produced by White Young Green (WYG) to describe the proposed surface water strategy for the Lyminster Bypass. The TN, dated 22nd August 2017, is contained in Appendix A of this report.
- 1.2 Mayer Brown Limited (MBL) have subsequently been appointed as the Consulting Engineers who will undertake the detailed design the proposed drainage for the scheme.
- 1.3 The drainage strategy as described in the original TN has altered since the original August 2017 issue. The purpose of this addendum technical note (Addendum TN) is to summarise the changes that have occurred to the proposed scheme.

Proposed Layout

- 1.4 The proposed layout remains the same as in the original TN, which involves the construction of a new highway that will act as a bypass between Toddington Lane and Worthing Road. It will include the construction of two new roundabouts and a bridge.
- 1.5 The proposed drainage areas, or catchments, also remain the same. The catchments are dictated by the crest (or high point) of the by-pass that occurs over Toddington Lane. These are referred to in this Addendum TN as the “Southern Catchment” and the “Northern Catchment”

Southern Catchment

- 1.6 The drainage strategy has for the southern Catchment has **not altered**.
- 1.7 Runoff from the southern section will be stored in two 1350mm diameter pipes within the carriageway, with a flow control device limiting outflow to 5l/s that will discharge into the adjacent Southern Water sewer to the south.

Persimmon Homes Thames Valley
Lyminster Bypass
Addendum Surface Water Technical Note

Northern Catchment

- 1.8 The drainage strategy for the Northern Catchment has undergone a significant alteration. The previously proposed surface water swale, attenuation tank and restriction of 10 litres / second have been removed (refer to paragraph 4.7 in the TN).
- 1.9 The proposal is to allow the surface water run-off to flow freely into the downstream drainage network and the pipe diameters have been sized accordingly. The proposed drainage network serving the northern catchment is contained in Appendix B of this Addendum TN.
- 1.10 The drainage network will also receive connections from the future development parcels.
- 1.11 The proposed run-off will discharge freely into the adjacent proposed drainage system, where the proposed peak rate of surface water discharge will be restricted to greenfield run-off rates for the critical 1in100 year return period, plus a 30% allowance for climate change.
- 1.12 It is expected that West Sussex County Council (WSCC) will adopt sewers serving the highways only, and Southern Water adopt the sewers downstream of any connections from the future land parcels.
- 1.13 See below for a brief description of the receiving / downstream drainage network.

Drainage Strategy – West of Wetlands

- 1.14 This road project is one of the many new infrastructure schemes that will serve the overall Development. The resulting run-off will flow at an unrestricted rate into the drainage network that will serve the adjacent Phase 2. Phase 2 is subject to a separate RM Planning Application by the same Applicant (Persimmon Homes).
- 1.15 The overall land use plan is contained in Appendix C of this Addendum TN. The land use plan shows the extent of the overall 19.0 hectare catchment and the location of the proposed outfall into the Black Ditch to the north of the site. Lyminster Bypass is clearly identifiable on this land use plan.
- 1.16 As described above the proposed peak rate of surface water discharge from this 19.0 hectare catchment will be restricted to greenfield rates for the critical 1in100 year return period, plus a 30% allowance for climate change. The proposed / resulting attenuation will be located in a large attenuation tank (approximately 1,300m³) located in the parking square shown in the land use plan.

Persimmon Homes Thames Valley
Lyminster Bypass
Addendum Surface Water Technical Note

- 1.17 A discharge consent for the proposed outfall has been obtained from the Environment Agency and is contained in Appendix D of this addendum TN.
- 1.18 The downstream drainage strategy report, with associated sustainable drainage, will also accompany the Phase 2 RM Planning Application.
- 1.19 The overall drainage network covering the entire 19 hectare catchment has been modelled in Micro Drainage. The results of this are contained in
- ✧ Appendix F – Drainage Network Details
 - ✧ Appendix G – 1 in 100 year Simulation Results
 - ✧ Appendix H – 1 in 30 year Simulation Results
 - ✧ Appendix I – 1 in 1 year Simulation Results

Conclusion

- 1.20 Having completed this addendum TN it is considered that is sufficient to contribute to the discharge of outline planning Conditions 10, 11 & 12
- ✧ **Condition 10:**
 - The proposed run-off will flow freely into the sustainable drainage system that will be constructed to serve the adjacent Phase 2 RM Application. Therefore, SUDS to attenuate the northern catchment of the Lyminster Bypass is not required
 - Infiltration is not proposed and the entire catchment will be restricted to greenfield discharge rates into the black ditch
 - The gullies and sewers will be offered for adoption to WSCC and Southern Water and, as such, and will be subject their maintenance and management regime
 - ✧ **Condition 11:** There are no existing watercourses or culverts affected by this RM planning application
 - ✧ **Condition 12:** A discharge consent for the proposed outfall has been obtained from the Environment Agency and is contained in Appendix D of this addendum TN.

Author: Sean Foley

Date: 04th November 2017

APPENDIX A: WYG Technical Note



Technical Note

Project	Lyminster Bypass	Date	22 nd August 2017
Note	Technical Note Drainage	Ref	A100789/170822
Author	MM	Rev	-

1.0 Introduction

- 1.1 WYG Consultancy has been appointed by Persimmon Homes (the Developer) to provide a brief for the drainage network design for a section of the Lyminster Bypass near North Littlehampton.
- 1.2 Planning permission was granted on 06/06/2012 with condition 10 required to be met before works on site begin. Condition 10 of the planning decisions states that:
- 1.3 No development shall commence until such time as a scheme to dispose of surface water drainage has been submitted to, and approved in writing by, the local planning authority. The scheme shall be implemented as approved.
- 1.4 The purpose of this technical note is to enable the discharge of condition 10.
- 1.5 A drainage design has been completed in accordance with national and local drainage policy and details of the design are discussed in section 3.
- 1.6 This Technical Note describes and provides reasoning behind the design process of the Bypass' associated drainage. The drawing Bypass Drainage - A100789_501 Rev E, is appended to this note as it is one of the main sources of evidence, along with the accompanying Micro Drainage calculations, that demonstrate that condition 10 of the outline planning consent can be discharged.

2.0 Existing Conditions and Development Proposals

- 2.1 The site of the proposed development is considered to be completely Greenfield with the exception of a few non-permanent structures such as polytunnels.
- 2.2 The development proposals involve the construction of a new highway which would act as a bypass between Toddington Lane and Worthing Road. The development will also include the construction of



Technical Note

two new roundabouts and a bridge. A connection between the proposed roundabout and Toddington Lane is also to be included.

2.3 The indicative layout of the highway and associated work can be seen in A100789_501 Rev E.

3.0 Existing Drainage

3.1 As the site is largely a Greenfield site, there is no existing drainage on site.

4.0 Proposed Drainage

4.1 It is essential to consider the drainage of any development involving a significant change in impermeable area. As such, the drainage hierarchy should be considered. The method of discharge of surface water is critical to ensuring that flood risk will not be increased elsewhere. Planning Practice Guidance and Building Regulations dictate the hierarchy for discharge options. In order of preference these are:

- ✧ To the ground (infiltration);
- ✧ To a surface water body;
- ✧ To a surface water sewer, highway drain or another drainage system;
- ✧ To a combined sewer;

4.2 A site-wide drainage strategy issued with the Outline Planning Application, set out the agreed principles for surface water discharge.

4.3 Infiltration is the most preferred method of discharge; however, due to the presence of the underlying aquifer, low lying ground close to the water table and infiltration testing in the area for other sections of the bypass yielding poor infiltration rates, the use of soakaways is considered not to be feasible.

4.4 Therefore the method of discharge to be utilised will be discharge to a surface water body. Due to the adjoining sections of the bypass, the surface water runoff will be discharged into these adjacent



Technical Note

systems before a surface water body. The bypass has a high point close to the mid-point, meaning there are two catchments, one either side of this crest.

- 4.5 The proposed drainage layout for the bypass is shown in A100789_501 Rev E.
- 4.6 Runoff from the southern section of the site is stored in two 1350mm diameter pipes with a flow control device limiting outflow to 5l/s. The flow control device discharges into the adjacent surface water system to the south.
- 4.7 Runoff from the northern section of the site is stored across two storage devices. A swale approximately 200m long is located to the west of the bypass and runs parallel to the highway. The swale collects and stores highway runoff prior to discharge through a flow control device which limits runoff to 10l/s. A storage crate, located underneath the roundabout island also connects to the flow control, allowing for additional storage during more extreme rainfall events.
- 4.8 The northern section of the highway will discharge into a swale which forms part of the drainage system for the northern section of the bypass.
- 4.9 The proposed storage crate and swale will be maintained by a Management Company appointed by the Developer.
- 4.10 Both the northern and southern highway drainage networks have been designed to operate within 1 in 100 year storm event.
- 4.11 Full details for the calculations can be seen in the attached Micro Drainage calculations.

5.0 Approval

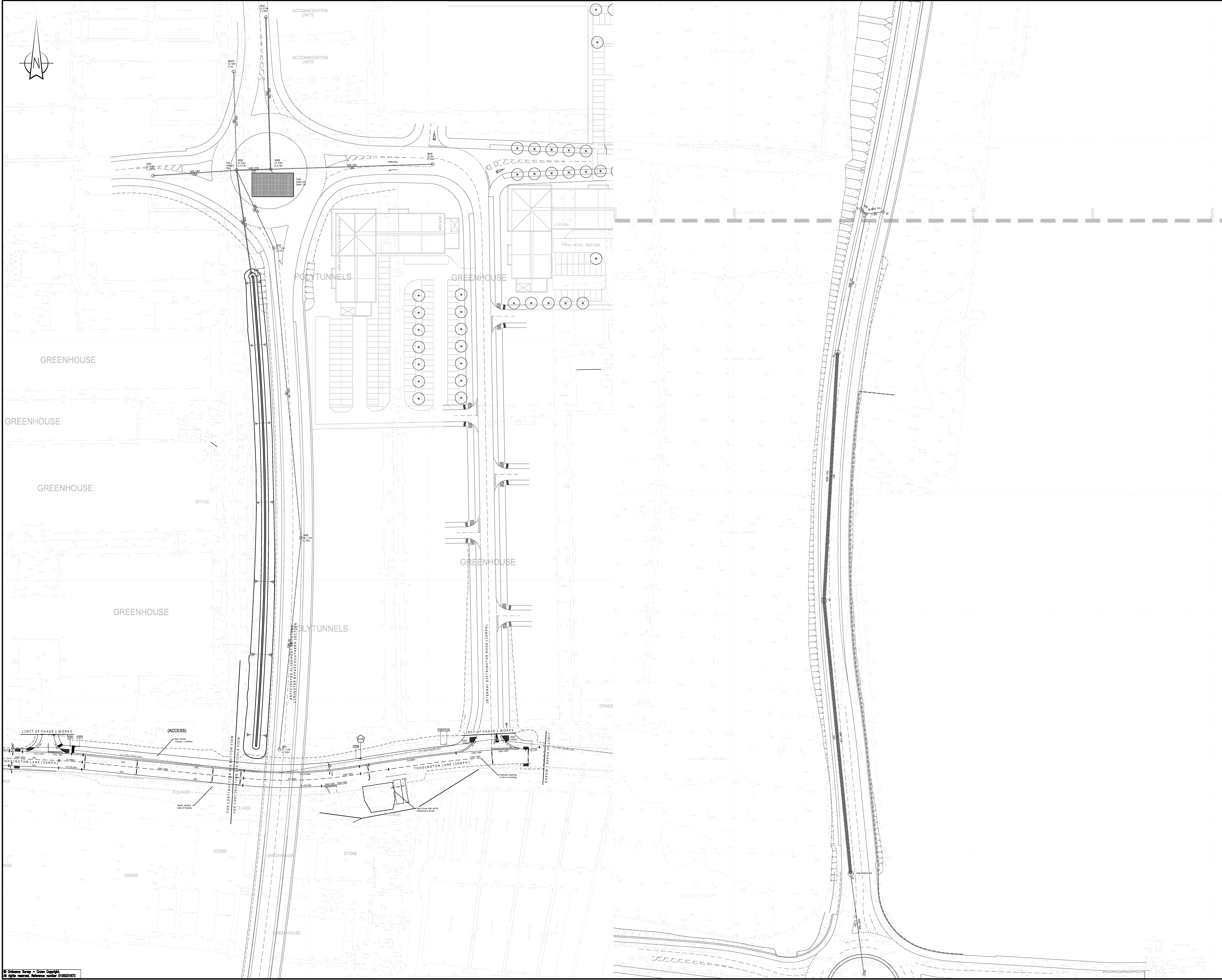
- 5.1 The proposed surface water drainage scheme is subject to approval from statutory undertakers: Southern Water and West Sussex County Council as the local Highway Authority.

ATTACHED:

A100789_501 Rev E – Bypass Drainage

Micro Drainage Calculations – Southern Bypass

Micro Drainage Calculations – Northern Bypass

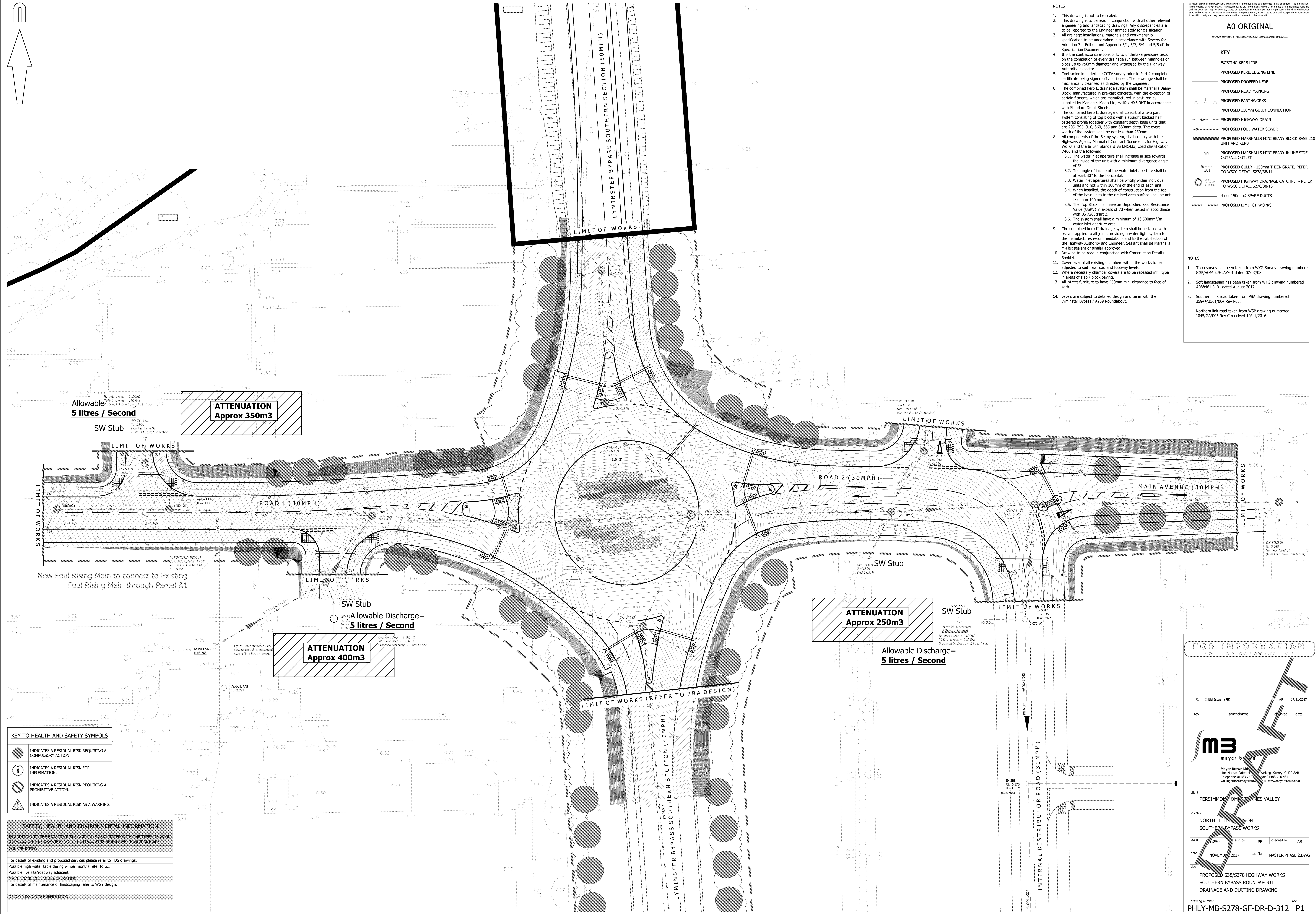
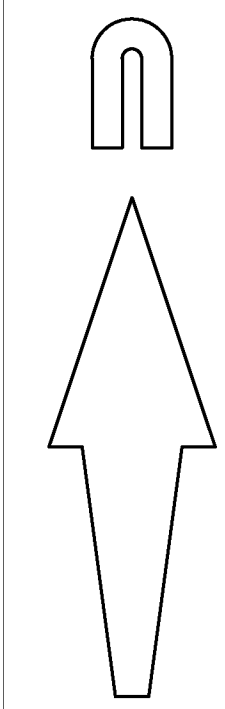


———— Kerb Drainage

———— Surface Water Drainage

REV	DETAILS	DRAWN BY	CHECKED BY	DATE
CLIENT: PERSIMMON HOMES				
PROJECT: NORTH LITTLEHAMPTON				
DRAWING TITLE: BYPASS DRAINAGE				
SCALE: 1:500		SHEET 51 OF 1 A0		
DRAWN: PG	CHECKED: MP	DATE: 19.05.17		
W Transport				
part of WYG group				
5th Floor, Longcross Court				
47 Newport Road, Cardiff, CF24 0AD				
t: 029 2062 6200 f: 029 2045 5321 e: transport.cardiff@wyg.com				
DRAWING NUMBER: A100789_501				REVISION: E

APPENDIX B: Southern Bypass & Northern Roundabout Drainage



INDICATES A RESIDUAL RISK REQUIRING A COMPULSORY ACTION.

INDICATES A RESIDUAL RISK FOR INFORMATION.

INDICATES A RESIDUAL RISK REQUIRING A PROHIBITIVE ACTION.

INDICATES A RESIDUAL RISK AS A WARNING.

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING SIGNIFICANT RESIDUAL RISKS CONSTRUCTION

For details of existing and proposed services please refer to TDS drawings.
Possible high water table during winter months refer to GL.
Possible live site/roadway adjacent.

MAINTENANCE/CLEANING/OPERATION
For details of maintenance of landscaping refer to WGY design.

DECOMMISSIONING/DEMOLITION

FOR INFORMATION
NOT FOR CONSTRUCTION

P1	Initial Issue: (PB)	AB	17/11/2017
rev.	amendment	checked	date

m3

mayer brown

Player Brown Ltd
Lime House, Central
Telephone 01483 750 437
workingford@mayerbrown.co.uk

Working: Surrey GU22 8AR
Fax: 01483 750 437
www.mayerbrown.co.uk

client

PERSIMMON HOMES - JAMES VALLEY

project

NORTH LITTLETON
SOUTHERN BYPASS WORKS

scale

1:250

drawn by

PB

checked by

AB

date

NOVEMBER 2017

cad file

MASTER PHASE 2.DWG

title

PROPOSED S38/S278 HIGHWAY WORKS
SOUTHERN BYPASS ROUNDABOUT
DRAINAGE AND DUCTING DRAWING

drawing number

PHLY-MB-S278-GF-DR-D-312

rev.

P1

NOTES

- This drawing is not to be scaled.
- This drawing is to be read in conjunction with all other relevant engineering and landscaping drawings. Any discrepancies are to be reported to the Engineer immediately for clarification.
- All drainage installations, materials and workmanship specification to be undertaken in accordance with Sewers for Adoption 7th Edition and Appendix 5/1, 5/3, 5/4 and 5/5 of the Specification Document.
- It is the contractor's responsibility to undertake pressure tests on the completion of every drainage run between manholes on pipes up to 750mm diameter and witnessed by the Highway Authority Inspector.
- Contractor to undertake CCTV survey prior to Part 2 completion certificate being signed off and issued. The sewerage shall be mechanically cleaned as directed by the Engineer.
- The combined kerb Drainage system shall be Marshalls Beany Block, manufactured in pre-cast concrete, with the exception of certain finments which are manufactured in cast iron as supplied by Marshalls Mono Ltd, Halifax HX5 9HT in accordance with Standard Detail Sheets.
- The combined kerb Drainage system shall consist of a two part system consisting of top blocks with a straight backed half battered profile together with constant depth base units that are 205, 295, 310, 360, 365 and 530mm deep. The overall width of the system shall be not less than 225mm.
- All components of the Beany system, shall comply with the Highways Agency Manual of Contract Documents for Highway Works and the British Standard BS EN1433. Load classification D400 and the following:
 - The water inlet aperture shall increase in size towards the inside of the unit with a minimum divergence angle of 5°.
 - The angle of incline of the water inlet aperture shall be at least 30° to the horizontal.
 - Water inlet apertures shall be wholly within individual units and not within 100mm of the end of each unit.
 - When installed, the depth of construction from the top of the base units to the drained area surface shall be not less than 100mm.
 - The Top Block shall have an Unpolished Skid Resistance Value (USRV) in excess of 70 when tested in accordance with BS 7263-Part 3.
 - The system shall have a minimum of 13,500mm²/m water inlet aperture area.
- The combined kerb Drainage system shall be installed with sealant applied to all joints providing a water tight system to the manufacturers recommendations and to the satisfaction of the Highway Authority and Engineer. Sealant shall be Marshalls H-Flex sealant or similar approved.
- Drawing to be read in conjunction with Construction Details Booklet.
- Cover level of all existing chambers within the works to be adjusted to suit new road and footway levels.
- Where necessary chamber covers are to be recessed infill type in areas of slab / block paving.
- All street furniture to have 450mm min. clearance to face of kerb.
- Levels are subject to detailed design and tie in with the Lyminster Bypass / A259 Roundabout.

NOTES

- Topo survey has been taken from WYG Survey drawing numbered GGP/A044023/LAY/01 dated 07/07/08.
- Soft landscaping has been taken from WYG drawing numbered A088461 SLB1 dated August 2017.
- Southern link road taken from PBA drawing numbered 35944/3501/004 Rev P03.
- Northern link road taken from WSP drawing numbered 1045/GA/005 Rev C received 10/11/2016.

A0 ORIGINAL

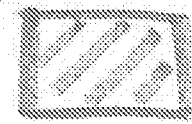
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KEY

- EXISTING KERB LINE
- PROPOSED KERB/EDGING LINE
- PROPOSED DROPPED KERB
- PROPOSED ROAD MARKING
- PROPOSED EARTHWORKS
- PROPOSED 150mm GULLY CONNECTION
- PROPOSED HIGHWAY DRAIN
- PROPOSED FOUL WATER SEWER
- PROPOSED MARSHALLS MINI BEANY BLOCK BASE 210 UNIT AND KERB
- PROPOSED MARSHALLS MINI BEANY INLINE SIDE OUTFALL OUTLET
- PROPOSED GULLY - 150mm THICK GRATE, REFER TO WSCC DETAIL S278/38/11
- PROPOSED HIGHWAY DRAINAGE CATCHPIT - REFER TO WSCC DETAIL S278/38/13
- 4 no. 150mm² SPARE DUCTS
- PROPOSED LIMIT OF WORKS

APPENDIX C: Land Uses & Drainage Area Covered

AREA COVERED BY
DRAINAGE STRATEGY
REPORT
≈ 19.0 HECTARES



RESERVED MATTERS
APPLICATION AREA



OUTFALL

Open Space - Black Soil
10.5 HA

E1 Parcel
2.42 HA

E2 Parcel
1.82 HA

E3 Parcel
1.82 HA

E4 Parcel
1.36 HA

E5 Parcel
1.32 HA

E6 Parcel
2.94 HA

Northern
Access
0.45 HA

Residential
Access
0.20 HA

Central
Access
0.26 HA

E7 Parcel
1.10 HA

E8 Parcel
1.10 HA

E9 Parcel
1.10 HA

E10 Parcel
1.10 HA

E11 Parcel
1.10 HA

E12 Parcel
1.10 HA

E13 Parcel
1.10 HA

E14 Parcel
1.10 HA

E15 Parcel
1.10 HA

E16 Parcel
1.10 HA

E17 Parcel
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E20 Parcel
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E21 Parcel
1.10 HA

E22 Parcel
1.10 HA

E23 Parcel
1.10 HA

E24 Parcel
1.10 HA

E25 Parcel
1.10 HA

E26 Parcel
1.10 HA

E27 Parcel
1.10 HA

E28 Parcel
1.10 HA

E29 Parcel
1.10 HA

- Key:
- Public Open Space - Black Soil
 - Public Open Space - General Wended
 - Playing Fields and Changing Facilities (100% - 1.79HA)
 - Alberments (100% - 0.41HA & 0.21HA)
 - SUDs
 - Residential
 - Education - School Site (100% - 2.21HA)
 - Community Centre and Youth Facility (100% - 0.42HA & 0.21HA)
 - Non-residential Land (100% - 2.92HA, Commercial - 2.94HA)
 - Recreational Land (100% - 0.21HA)
 - Retard / Industrial (up to 100% of Class A)
 - Infrastructure
 - STP exclusion - Precedence over previous RPI
 - Curb Home

A	Area of the site	19.04,17
B	Area of the site	12.09,16
C	Area of the site	12.09,16

PERSIMMON
Together, we make a home

Persimmon Homes Thames Valley
Persimmon House, Knoll Road,
Cambridge, Surrey GU11 3JQ
Tel: 01275 800000

Toddington Lane Littlehampton		27.06.16
1:2500 @ A1		
S19-GR1_006		
Parameter Plan - Land use		
Submitted	KJ	
	B	

APPENDIX D: Flood Defence Consent



Flood Defence Consent

Section 23 of the Land Drainage Act 1991

Persimmons Homes Ltd
(Thames Valley)
Persimmon House
Knoll road
Camberley
Surrey
GU15 3TQ

**Consent applying to the
construction of 1 no.
surface water outfall to
take discharge from new
development into
Ordinary Watercourse
(within the River Arun
Internal Drainage
District)**

Land south of Black Ditch,
North Littlehampton, West
Sussex

NGR: 503413, 104302

Consent number
SE_WS_2015_311_2

Effective from
30th July 2015

Disclaimer

The Environment Agency does not accept any responsibility for the design and construction of the works referred hereto and any liability for any loss or damage which may arise out of their design, construction, maintenance or use.

Our approval is given solely on river morphology, flow, ecology, and other land drainage criteria. It should not be regarded by the applicant as in any way approving the design and soundness of the proposed structure, other than in relation to its impact on flows in the watercourse and its flood plain

This Consent does not free you from the need to obtain other licences, consents, approvals (including bye-law consents) or permissions (including planning permission) which may be required in law or in order to comply with any duties or responsibilities for conservation or protection of the environment. You should ensure that the works are carried out in a proper manner so as not to adversely affect the watercourse. A copy of the Special Requirements issued by the Environment Agency is available upon request. Work should be completed as quickly as possible once started.

The works shall be carried out at your own risk and responsibility. We accept no responsibility for any loss or damage howsoever caused arising from the carrying out or construction of the works. We may occasionally make observations on health and safety aspects of the work, however this should not be taken in any way whatsoever to imply that we have a role in ensuring site safety, nor that we have approved any contractors plans.

Land ownership is not a material consideration in determining this consent. Where you are not the owner of the land (including riverbeds and other water bodies) referred to in this consent, you must obtain suitable permission from the landowner prior to the commencement of works. This Consent does not confer any rights of entry or rights over property.

If you undertake works in contravention of Section 109 of the Water Resources Act, 1991 (Restriction on erection of structures in, over or under main river), or of the terms of this consent, we may remove, alter or pull down the works and recover from you the expenses incurred in doing so.

The responsibility to ascertain the location of any services, which may be affected by the proposed works, lies solely with the Applicant/Agent.

The contents of this consent must be brought to the attention of your contractor.

If you believe that conditions have been unreasonably imposed then you have a right of appeal.

Environment Agency Consent

Consent

Section 23 of the Land Drainage Act 1991



Flood Defence Consent

Control of works affecting watercourses and/or flood defences

Consent number **SE_WS_2015_311_2**

To Persimmon Homes Ltd (Thames Valley)
of Persimmon House, Knoll Road, Camberley, Surrey GU15 3TQ

The Environment Agency, in exercise of its powers under Section 23 of the Land Drainage Act 1991 and subject to the conditions overleaf, hereby grants its consent in relation to the works or operations described in this Consent.

Watercourse: Ordinary Watercourse within the River Arun Internal Drainage District

Location: Land south of Black Ditch, North Littlehampton, West Sussex

NGR: 503413, 104302

Description of works: Construction of 1 no. precast concrete surface water outfall (with railings and flapvalve) to take discharge from new development through 525mm diameter pipe.

For the following activities:

Construction of 1 no. surface water outfall

(1) Construction of 1 no. permanent precast concrete surface water outfall (with railings and flapvalve) to take discharge from new development through 525mm diameter pipe

As detailed on Drawings: 8140927/SK12, CV8140927/SK09 and SFA 10C Headwall Plan

The Agency does not accept any responsibility for the design and construction of the works referred hereto and any liability for any loss or damage which may arise out of their design, construction, maintenance or use.

This Consent shall come into effect on **30th July 2015**

Signed on behalf of the Environment Agency

A black rectangular box redacting the signature of the official.

Partnerships and Strategic Overview Team Leader

Date of signing

30th July 2015

Environment Agency Consent SE_WS_2015_311_2
Effective date 30th July 2015

Conditions

This consent is granted subject to the following conditions:

- 1. That the headwalls are adequately keyed into the banks and bed of the watercourse to prevent erosion.**
- 2. No excavated material or debris arising from the construction of the works shall be disposed of on the site or in the floodplain without our prior agreement. Any materials, debris etc that fall into the river channel, or onto the banks of the watercourse shall be removed immediately.**
- 3. There should be no storage of materials (or chemicals/fuels) within (EIGHT) metres of the watercourse.**
- 4. No refuelling of any machinery shall take place within (EIGHT) metres of any watercourse**
- 5. No dredging of the riverbed shall take place during the construction period.**
- 6. The banks and/or bed of the watercourse where disturbed shall be restored to our reasonable satisfaction.**
- 7. We shall be afforded access to the works at all reasonable times for the purpose of inspection during construction of the works and after completion of the works.**
- 8. The construction of the works described in this consent must be completed within three years from the date of issue of this consent. Works not completed within this time, additional works and/or amendments will require a new consent.**

Informatives

- Although the ditches involved were dry when the water vole survey/report was carried out, there are water vole populations in close proximity to this site.
- It is recommended that an ecologist looks over the works footprint prior to starting the work, to ensure no burrows are disturbed.
- Water vole burrows can normally extend up to 5 metres into the river banks.
- It is a legal offence to disturb water vole and their burrows so you should be aware of the legal implications when undertaking your work.

Other information

This Note does not form part of the Certificate of Authorisation.

Pollution Prevention

You are reminded that it is an offence under Regulation 38 of The Environmental Permitting (England and Wales) Regulations 2010 to cause or knowingly permit a water discharge activity or ground water activity. Care must be taken to ensure that neither the watercourse nor groundwater becomes polluted, particularly by, for example diesel fuel, petrol and oil from machinery. All fuels, oils and chemicals must be stored securely and any large containers left on site must be bunded. Care should also be taken when filling machinery to ensure that diesel/petrol/oil is not spilt on the ground. Spillages must not be washed away, but absorbed by some medium and then removed from site to a suitable licensed waste facility. Any such incidents must be reported to the Environment Agency immediately (Emergency Tel No 0800 807060). Copies of the Environment Agency's Pollution Prevention Guidelines (PPG5) and (PPG6) are either attached for your information or if not available upon request.

Disturbance of bed and bank material in watercourses should be minimised, including when carrying out excavations. An appropriate silt control system should also be considered if material is likely to be disturbed. In-river vehicle tracking should be kept to an absolute minimum.

Any waste generated in the course of the works must be disposed of in accordance with the provision of the Environmental Protection Act 1990. Persons carrying waste are required by law to register with the Environment Agency as a Waste Carrier (subject to certain exceptions). The deposit, keeping, treating or disposal of waste should only take place at premises licensed by the Environment Agency to receive the waste (subject to certain exceptions and exemptions). When you give waste to someone else, details of the transfer of waste should be described on a document called a Duty of Care Transfer Note.

If the waste contains any properties that are hazardous to health or the environment, the waste will be classed as 'Hazardous Waste' as defined in the Hazardous Waste Regulations 2005. These Regulations place specific requirements on the producer and carrier of such waste. Further information can be found on the Agency's website (www.environment-agency.gov.uk) or by contacting the National Customer Contact Centre on 03708 506506.

The activity of importing waste into the site for use as part of the construction process, for example hardcore, must be registered by Environment Agency as an exempt activity under the Waste Management Licensing Regulations 1994.

Flood Risk Management

The structure(s) must be removed immediately, for any reason, at the request of the Area Flood Risk Manager.

Environment Agency Consent SE_WS_2015_311_2
Effective date 30th July 2015

You must ensure that any structure is clear and free of rubbish, silt and debris at all times. Regular inspections of the structure should also be carried out and the appropriate maintenance work undertaken.

Fisheries

You are strongly advised to inform the appropriate Angling Association/Interests of your proposals (where applicable), before commencing work, since the issue of a Flood Defence Consent by this Agency will not protect you from any claim for nuisance or damage which may be attributed to your works.

The free passage of fish must be maintained at all times, unless otherwise agreed in advance with the Agency.

Under the terms of the Salmon and Freshwater Fisheries Act 1975, it is an offence to cause or knowingly permit to flow, or put, into any waters containing fish, any liquid or solid matter to such an extent as to cause the water to be poisonous or injurious to fish or the spawning grounds, spawn or food of fish.

Biodiversity

Natural environments such as watercourses are important as habitats in their own right and for the plants and animals they support. There are several Acts and Regulations that ensure these special features are protected and you should be aware of and comply with this legislation. A list of relevant legislation can be found in our working method guidance.

The list of species and actions below are not exhaustive and the applicant should consult the relevant legislation regarding other concerns.

A licence for works affecting protected species may be required from Natural England. You should consult their standing advice for more information on this.

Otters and their places of rest are protected. Otters are widespread and significant tree works or works to the banks have the risk of disturbing otters and damaging their Holts. You should make an assessment of the risk to otters and where required a survey should be undertaken by a suitably qualified ecologist. Note otters sometimes lie up in drains/small watercourses so wherever possible drain entrances should be kept clear.

Bats and their habitats are protected. Bats are often found in structures and trees on or adjacent to watercourses. If your works are likely to affect structures such as bridges, walls, culverts or buildings you must consider impacts on bats. An appropriate assessment of risk and, where required a survey should be undertaken by a suitably qualified ecologist.

Water voles and their habitat are protected. If water voles are present on your site you need to consider the impacts of your work on them and an appropriate assessment of risk and where required survey should be undertaken by a suitably qualified ecologist.

Native Crayfish are protected. When undertaking works where native crayfish are present you need to consider the impacts of your works and an appropriate assessment of risk and where required survey should be undertaken by a suitably qualified ecologist.

Vegetation

No bankside vegetation within 7m of the watercourse is to be removed unless strictly necessary. In such cases, trees/shrubs should be limbed or coppiced, and the root base to be left intact. Scrub vegetation as possible should be retained, as this provides valuable wildlife habitat.

Trees should be protected from the works in accordance with British Standard 5837, "Trees in relation to construction", and contractors' working areas shall be clearly marked out and boundaries adhered to.

Any bankside trees or vegetation damaged or removed during the works should be replaced with native species of local provenance appropriate to the local habitat.

Birds

Breeding birds and their nests are protected under the Wildlife and Countryside Act 1981. If your work is taking place within or close to the main bird breeding season (1st March to 31st July) you should consider the impacts of your works and an appropriate assessment of risk should be undertaken.

Invasive Non-native species

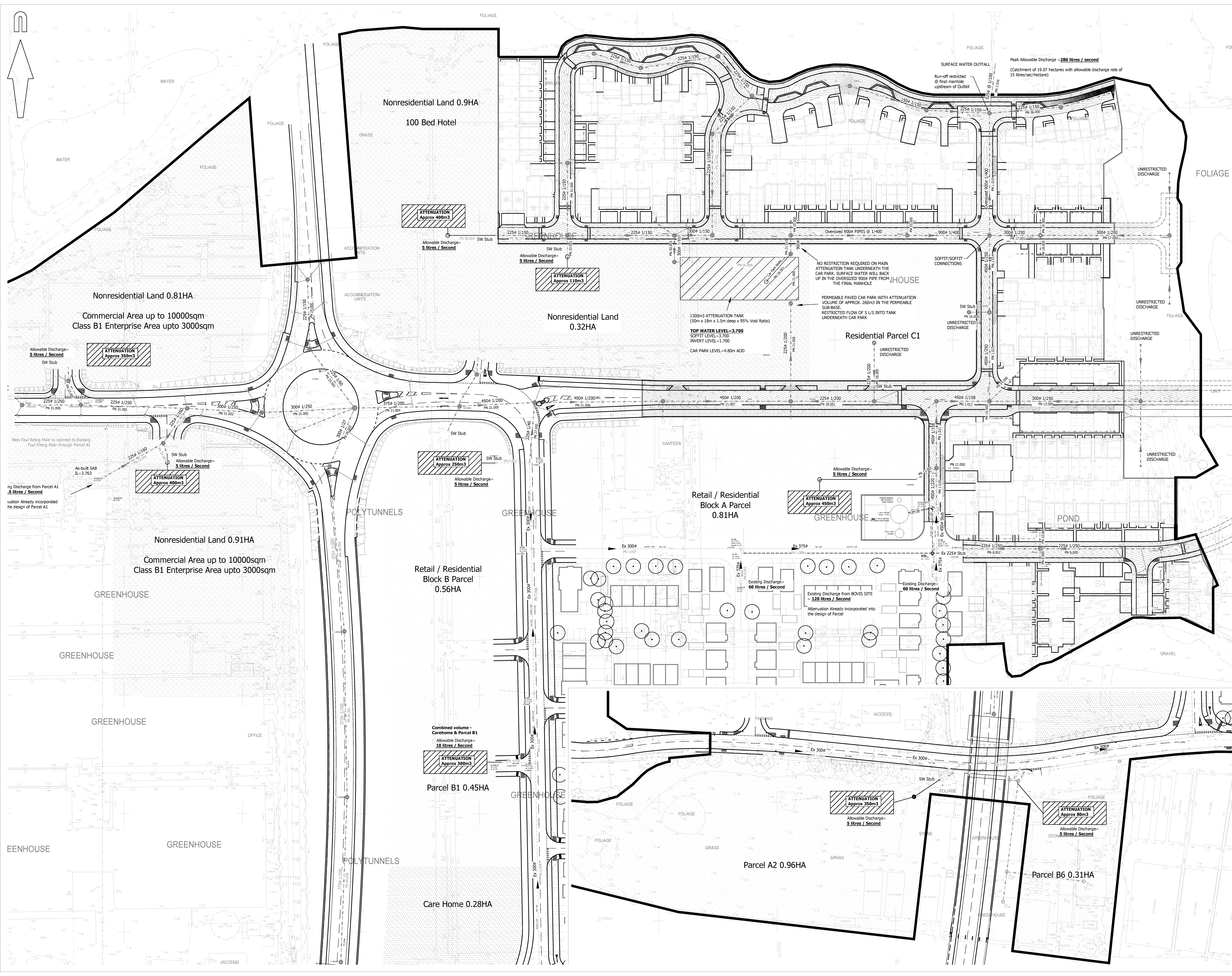
The Wildlife and Countryside Act makes it an offence to cause certain species to spread in the wild. If these species are present on your site you need to have a plan for how you will manage them and any waste containing them during your work.

Bio security

When travelling or working between watercourses there is a high risk of transferring problem species or diseases between watercourses.

This can be avoided by following the advice of the 'check, clean, dry' campaign. Simple measures such as checking for and cleaning mud and bits of vegetation from boots, equipment and machines and allowing them to dry (ideally in sunlight) can prevent the spread of problem species.

APPENDIX E: Site Wide Surface Water Strategy



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rev.	amendment	checked	date

m3
mayer brown

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Lime House, Oriental Road, Woking, Surrey GU24 0AR
Telephone 01483 750 508 Fax 01483 750 437
wokingoffice@mayerbrown.co.uk www.mayerbrown.co.uk

client
PERSIMMON HOMES THAMES VALLEY

project
NORTH LITTLEHAMPTON PHASE 2
SITE WIDE DRAINAGE STRATEGY

scale
1:500

drawn by
QJN

checked by
SF

date
NOVEMBER 2017

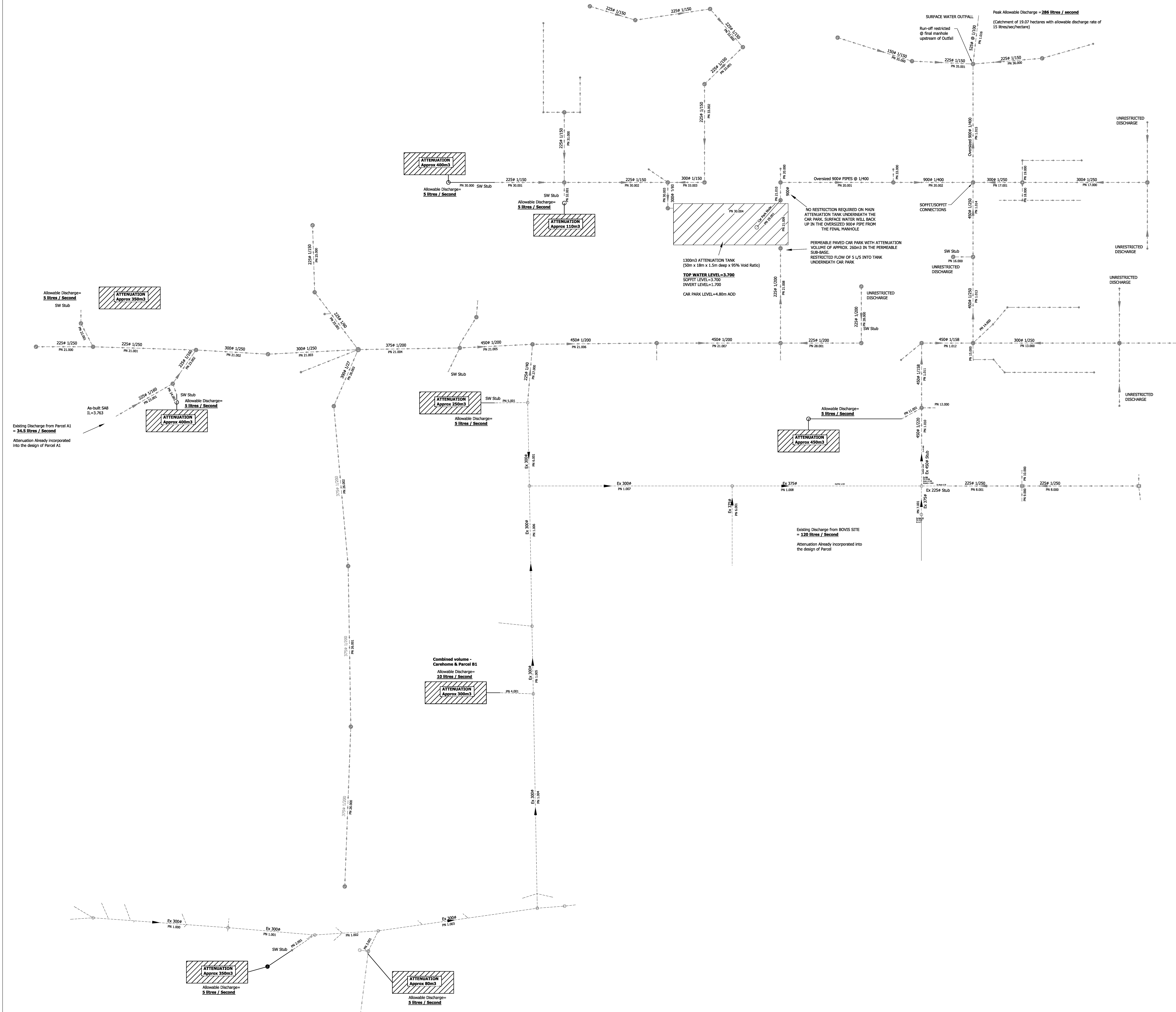
cad file
MASTER.DWG

title
SITE WIDE DRAINAGE STRATEGY DRAWING
WEST OF THE WETLANDS

drawing number
A/PHLITTLE.2/DS

rev.
P1

APPENDIX F: Windes – Network Details



Peak Allowable Discharge = **286 litres / second**
(Catchment of 19.07 hectares with allowable discharge rate of 15 litres/sec/hectare)

NO RESTRICTION REQUIRED ON MAIN ATTENUATION TANK UNDERNEATH THE CAR PARK. SURFACE WATER WILL BACK UP IN THE OVERSIZED 900mm PIPE FROM THE FINAL MANHOLE

1300m3 ATTENUATION TANK
(50m x 18m x 1.5m deep x 95% Void Ratio)
TOP WATER LEVEL=3.700
SOFFIT LEVEL=1.700
CAR PARK LEVEL=4.80m AOD

Allowable Discharge=
5 litres / Second

Existing Discharge from BOVIS SITE
= **120 litres / Second**
Attenuation Already incorporated into the design of Parcel

Combined volume -
Carehome & Parcel B1
Allowable Discharge=
10 litres / Second

ATTENUATION
Approx 300m3

ATTENUATION
Approx 350m3

Allowable Discharge=
5 litres / Second

ATTENUATION
Approx 80m3

Allowable Discharge=
5 litres / Second

Existing Discharge from Parcel A1
= **34.5 litres / Second**
Attenuation Already incorporated into the design of Parcel A1

ATTENUATION
Approx 350m3

Allowable Discharge=
5 litres / Second

ATTENUATION
Approx 400m3

Allowable Discharge=
5 litres / Second

ATTENUATION
Approx 110m3

Allowable Discharge=
5 litres / Second

Mayer Brown Ltd		Page 1								
Lion House Oriental Road Woking GU22 8AR	Littlehampton Overall Surface Network West of Wetlands									
Date November 2017	Designed by S Foley									
File Test_Simulation_Tank ...	Checked by									
XP Solutions	Network 2013.1									
Existing Network Details for Storm										
* - Indicates pipe has been modified outside of System 1										
	PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)	
	* 1.000	59.000	0.251	235.1	0.066	2.00	0.600	o	300	
	* 1.001	38.000	0.163	233.1	0.040	0.00	0.600	o	300	
	* 2.000	12.808	0.200	64.0	0.533	5.00	0.600	o	300	
	* 2.001	12.001	0.080	150.0	0.000	2.00	0.600	o	150	
	* 1.002	27.675	0.121	228.7	0.045	0.00	0.600	o	300	
	* 3.000	19.930	0.200	99.6	0.200	5.00	0.600	o	300	
	* 3.001	10.000	0.067	149.3	0.000	2.00	0.600	o	150	
	* 1.003	70.062	0.300	233.5	0.047	0.00	0.600	o	300	
	* 1.004	94.210	0.425	221.7	0.153	0.00	0.600	o	300	
	* 4.000	20.000	0.065	307.7	0.438	5.00	0.600	o	300	
	* 4.001	14.532	0.097	149.8	0.000	2.00	0.600	o	150	
	* 1.005	30.500	0.140	217.9	0.046	0.00	0.600	o	300	
	* 1.006	59.368	0.270	219.9	0.088	0.00	0.600	o	300	
	* 5.000	19.999	0.595	33.6	0.480	5.00	0.600	o	300	
	* 5.001	14.532	0.105	138.4	0.000	2.00	0.600	o	150	
	* 5.002	36.500	0.150	243.3	0.070	0.00	0.600	o	300	
	* 1.007	88.421	0.300	294.7	0.077	0.00	0.600	o	300	
	* 6.000	20.006	0.100	200.1	0.700	5.00	0.600	o	375	
	* 6.001	14.650	0.875	16.7	0.000	5.00	0.600	o	375	
	* 1.008	77.584	0.400	194.0	0.077	0.00	0.600	o	375	
	PN	US/MH Name	US/CL (m)	US/IL (m)	US C.Depth (m)	DS/CL (m)	DS/IL (m)	DS C.Depth (m)	Ctrl	US/MH (mm)
	* 1.000	TL_SW01	6.380	5.170	0.910	6.790	4.919	1.571		1050
	* 1.001	TL_SW02	6.790	4.919	1.571	6.800	4.756	1.744		1200
	* 2.000	Parcel A2_1	6.800	5.200	1.300	6.900	5.000	1.600		1200
	* 2.001	Parcel A2_2	6.900	5.000	1.750	6.800	4.920	1.730	Hydro-Brake®	1200
	* 1.002	TL_SW03	6.800	4.756	1.744	6.780	4.635	1.845		1200
	* 3.000	Parcel B6_1	6.900	5.000	1.600	6.900	4.800	1.800		1200
	* 3.001	Parcel B6_2	6.900	4.800	1.950	6.780	4.733	1.897	Hydro-Brake®	1200
	* 1.003	TL_SW04	6.780	4.635	1.845	6.380	4.335	1.745		1200
	* 1.004	TL_SW05	6.380	4.335	1.745	7.055	3.910	2.845		1200
	* 4.000	Parcel B1&CH_1	7.220	4.200	2.720	7.220	4.135	2.785		1200
	* 4.001	Parcel B1&CH_2	7.220	4.135	2.935	7.055	4.038	2.867	Hydro-Brake®	1200
	* 1.005	Ex. SB10	7.055	3.910	2.845	6.900	3.770	2.830		1200
	* 1.006	Ex. SB9	6.900	3.770	2.830	6.570	3.500	2.770		1200
	* 5.000	Block B_1	6.380	4.500	1.580	6.380	3.905	2.175		1200
	* 5.001	Block B_2	6.380	3.905	2.325	6.360	3.800	2.410	Hydro-Brake®	1200
	* 5.002	Ex. SB17	6.360	3.650	2.410	6.570	3.500	2.770		1200
	* 1.007	Ex. SB8	6.570	3.500	2.770	5.810	3.200	2.310		1350
	* 6.000	BovisA_1	5.600	4.100	1.125	5.600	4.000	1.225		1200
	* 6.001	BovisA_2	5.600	4.000	1.225	5.810	3.125	2.310	Hydro-Brake®	1200
	* 1.008	Ex SB7	5.810	3.125	2.310	4.700	2.725	1.600		1350
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Lion House Oriental Road Woking GU22 8AR	Littlehampton Overall Surface Network West of Wetlands									
Date November 2017 File Test_Simulation_Tank ...	Designed by S Foley Checked by									
XP Solutions	Network 2013.1									
Existing Network Details for Storm										
	PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)	
	*	7.000	20.000	0.175	114.3	0.700	5.00	0.600	o	375
	*	7.001	13.401	0.425	31.5	0.000	5.00	0.600	o	375
	*	1.009	4.916	0.025	196.6	0.000	0.00	0.600	o	450
	*	8.000	43.097	0.210	205.2	0.114	2.00	0.600	o	300
	*	9.000	6.800	0.100	68.0	0.106	2.00	0.600	o	225
	*	10.000	6.800	0.100	68.0	0.146	2.00	0.600	o	225
	*	8.001	43.824	0.130	337.1	0.029	0.00	0.600	o	300
	*	1.010	34.073	0.155	219.8	0.000	0.00	0.600	o	450
	*	11.000	40.643	0.100	406.4	0.567	5.00	0.600	o	300
	*	11.001	9.903	0.130	76.2	0.000	2.00	0.600	o	150
	*	12.000	6.000	0.103	58.3	0.064	2.00	0.600	o	225
	*	1.011	28.223	0.180	156.8	0.042	0.00	0.600	o	450
	*	1.012	22.432	0.140	160.2	0.038	0.00	0.600	o	450
	*	13.000	63.816	0.260	245.4	0.275	2.00	0.600	o	300
	*	14.000	12.624	0.250	50.5	0.089	2.00	0.600	o	225
	*	15.000	7.200	0.250	28.8	0.102	2.00	0.600	o	225
	*	1.013	37.575	0.160	234.8	0.038	0.00	0.600	o	450
	PN	US/MH Name	US/CL (m)	US/IL (m)	US C.Depth (m)	DS/CL (m)	DS/IL (m)	DS C.Depth (m)	Ctrl	US/MH (mm)
	*	7.000	BovisB_1	4.650	3.400	0.875	4.650	3.225	1.050	1200
	*	7.001	BovisB_2	4.650	3.225	1.050	4.700	2.800	1.525	Hydro-Brake® 1200
	*	1.009	Dummy Node	4.700	2.725	1.525	4.700	2.700	1.550	1200
	*	8.000	SW01	4.040	3.040	0.700	4.360	2.830	1.230	1200
	*	9.000	Plots 117-126	4.300	3.000	1.075	4.360	2.900	1.235	450
	*	10.000	Plots 101-116	4.300	3.000	1.075	4.360	2.900	1.235	450
	*	8.001	SW02	4.360	2.830	1.230	4.700	2.700	1.700	1200
	*	1.010	Ex SB6	4.700	2.625	1.625	4.600	2.470	1.680	1500
	*	11.000	Ret Block A	4.700	3.000	1.400	4.600	2.900	1.400	1200
	*	11.001	Ret Block A	4.600	2.900	1.550	4.600	2.770	1.680	Hydro-Brake® 1050
	*	12.000	Plots 95-100	4.600	3.000	1.375	4.600	2.897	1.478	450
	*	1.011	Outfall B-01	4.600	2.470	1.680	4.400	2.290	1.660	1500
	*	1.012	Outfall B-02	4.400	2.290	1.660	4.100	2.150	1.500	1500
	*	13.000	SW03	4.000	2.560	1.140	4.100	2.300	1.500	1200
	*	14.000	Plots 80-86	3.800	2.550	1.025	4.100	2.300	1.575	450
	*	15.000	Plots 87-94	3.800	2.550	1.025	4.100	2.300	1.575	450
	*	1.013	Outfall B-03	4.100	2.150	1.500	3.700	1.990	1.260	1500
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Lion House Oriental Road Woking GU22 8AR	Littlehampton Overall Surface Network West of Wetlands									
Date November 2017	Designed by S Foley									
File Test_Simulation_Tank ...	Checked by									
XP Solutions	Network 2013.1									
Existing Network Details for Storm										
	PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)	
	16.000	8.659	0.221	39.2	0.147	2.00	0.600	o	225	
	* 1.014	32.449	0.130	249.6	0.036	0.00	0.600	o	450	
	* 17.000	54.502	0.220	247.7	0.186	2.00	0.600	o	300	
	* 18.000	7.800	0.150	52.0	0.061	2.00	0.600	o	225	
	* 19.000	9.600	0.150	64.0	0.071	2.00	0.600	o	225	
	* 17.001	21.498	0.090	238.9	0.011	0.00	0.600	o	300	
	20.000	6.005	0.785	7.6	0.080	5.00	0.600	o	225	
	21.000	34.908	0.100	349.1	0.056	2.00	0.600	o	225	
	* 22.000	39.317	0.280	140.4	0.567	5.00	0.600	o	450	
	* 22.001	18.411	0.080	230.1	0.000	5.00	0.600	o	225	
	21.001	34.883	0.215	162.2	0.045	0.00	0.600	o	225	
	23.000	39.613	0.237	167.1	1.000	5.00	0.600	o	450	
	23.001	28.513	0.193	147.7	0.000	5.00	0.600	o	225	
	* 24.000	34.498	0.360	95.8	0.637	5.00	0.600	o	450	
	24.001	5.111	0.070	73.0	0.000	5.00	0.600	o	225	
	23.002	17.815	0.145	122.9	0.000	5.00	0.600	o	225	
	21.002	26.317	0.125	210.5	0.045	0.00	0.600	o	225	
	PN	US/MH Name	US/CL (m)	US/IL (m)	US C.Depth (m)	DS/CL (m)	DS/IL (m)	DS C.Depth (m)	Ctrl	US/MH (mm)
	16.000	C2 Resiblock A	3.700	2.275	1.200	3.700	2.054	1.421		450
	* 1.014	Outfall B-04	3.700	1.990	1.260	3.710	1.860	1.400		1500
	* 17.000	SW04	4.280	2.320	1.660	3.700	2.100	1.300		1200
	* 18.000	Plots 60-73	3.700	2.600	0.875	3.700	2.450	1.025		450
	* 19.000	Plots 74-78	3.700	2.600	0.875	3.700	2.450	1.025		450
	* 17.001	SW05	3.700	2.100	1.300	3.710	2.010	1.400		1200
	20.000	Plots 39-46	4.710	3.090	1.395	4.300	2.305	1.770		1200
	21.000	SW-LYM 01	5.040	3.740	1.075	5.500	3.640	1.635		1200
	* 22.000	Non resi	5.200	4.000	0.750	5.200	3.720	1.030		1200
	* 22.001	Non resi	5.200	3.720	1.255	5.500	3.640	1.635	Hydro-Brake®	1200
	21.001	SW-LYM 02	5.500	3.640	1.635	6.300	3.425	2.650		1200
	23.000	Parcel A1	7.000	4.000	2.550	6.000	3.763	1.787		1200
	23.001	As-built SA8	6.000	3.763	2.012	5.920	3.570	2.125	Hydro-Brake®	1200
	* 24.000	Non Resi	6.000	4.000	1.550	6.000	3.640	1.910		1200
	24.001	SW Stub 02	6.000	3.640	2.135	5.920	3.570	2.125	Hydro-Brake®	1200
	23.002	SW-LYM 03/1	5.920	3.570	2.125	6.300	3.425	2.650		1200
	21.002	SW-LYM 03	6.300	3.350	2.725	6.640	3.225	3.190		1200
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Lion House Oriental Road Woking GU22 8AR	Littlehampton Overall Surface Network West of Wetlands								
Date November 2017	Designed by S Foley								
File Test_Simulation_Tank ...	Checked by								
XP Solutions	Network 2013.1								
Existing Network Details for Storm									
	PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)
	21.003	44.406	0.160	277.5	0.033	0.00	0.600	o	300
	25.000	29.221	0.200	146.1	0.057	2.00	0.600	o	225
	25.001	31.560	0.530	59.5	0.102	0.00	0.600	o	225
	26.000	68.720	1.800	38.2	0.108	2.00	0.600	o	225
	26.001	70.010	3.200	21.9	0.108	0.00	0.600	o	225
	26.002	69.982	1.580	44.3	0.108	0.00	0.600	o	225
	26.003	26.844	1.000	26.8	0.023	0.00	0.600	o	300
	21.004	44.309	0.230	192.6	0.038	0.00	0.600	o	375
	21.005	31.743	0.160	198.4	0.231	0.00	0.600	o	450
	* 27.000	23.499	0.540	43.5	0.000	5.00	0.600	o	225
	21.006	54.130	0.280	193.3	0.040	0.00	0.600	o	450
	21.007	53.998	0.270	200.0	0.040	0.00	0.600	o	450
	28.000	24.684	0.120	205.7	0.221	5.00	0.600	o	225
	28.001	35.227	0.180	195.7	0.043	5.00	0.600	o	225
	21.008	19.302	0.170	113.5	0.043	0.00	0.600	o	450
	21.009	42.970	0.140	306.9	0.000	0.00	0.600	o	525
	29.000	7.262	0.100	72.6	0.343	5.00	0.600	o	450
	* 29.001	27.748	1.690	16.4	0.000	5.00	0.600	o	150
	* 30.000	20.005	0.100	200.1	0.630	5.00	0.600	o	450
	30.001	30.526	0.200	152.6	0.000	0.00	0.600	o	225
	31.000	30.576	1.150	26.6	0.096	5.00	0.600	o	225
PN	US/MH Name	US/CL (m)	US/IL (m)	US C.Depth (m)	DS/CL (m)	DS/IL (m)	DS C.Depth (m)	Ctrl	US/MH (mm)
21.003	SW-LYM 04	6.640	3.225	3.115	6.640	3.065	3.275		1200
25.000	SW-LYM 07	5.370	3.870	1.275	6.140	3.670	2.245		1200
25.001	SW-LYM 08	6.140	3.670	2.245	6.640	3.140	3.275		1200
26.000	PBA 01	13.700	12.200	1.275	11.900	10.400	1.275		1200
26.001	PBA 02	11.900	10.400	1.275	8.700	7.200	1.275		1200
26.002	PBA 03	8.700	7.200	1.275	7.200	5.620	1.355		1200
26.003	SW-LYM 05	7.200	5.540	1.360	6.640	4.540	1.800		1200
21.004	SW-LYM 10	6.640	2.990	3.275	5.900	2.760	2.765		1500
21.005	SW-LYM11	5.900	2.680	2.770	6.380	2.520	3.410		1350
* 27.000	ExSB17_Dum Node	6.360	3.700	2.435	6.380	3.160	2.995		1200
21.006	SW-LYM 12	6.380	2.520	3.410	6.260	2.240	3.570		1350
21.007	SW-LYM 13	6.260	2.240	3.570	5.100	1.970	2.680		1350
28.000	C2 Resiblock B	4.300	2.500	1.575	4.680	2.380	2.075		1200
28.001	SW-LYM 14/1	4.680	2.380	2.075	5.100	2.200	2.675		1200
21.008	SW-LYM 14	5.100	1.970	2.680	5.000	1.800	2.750		1350
21.009	SW-LYM 15	5.000	1.800	2.675	5.000	1.660	2.815		1800
29.000	Car Park	5.000	3.500	1.050	5.000	3.400	1.150		1200
* 29.001	Car Park	5.000	3.400	1.450	5.000	1.710	3.140	Hydro-Brake®	1200
* 30.000	Non Resi	5.300	2.700	2.150	5.300	2.600	2.250		1200
30.001	SW Stub	5.300	2.600	2.475	5.000	2.400	2.375	Hydro-Brake®	1200
31.000	SW06	5.100	3.550	1.325	5.000	2.400	2.375		1200
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Lion House Oriental Road Woking GU22 8AR			Littlehampton Overall Surface Network West of Wetlands							
Date November 2017			Designed by S Foley							
File Test_Simulation_Tank ...			Checked by							
XP Solutions			Network 2013.1							
Existing Network Details for Storm										
	PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	k (mm)	HYD SECT	DIA (mm)	
	32.000	22.482	0.200	112.4	0.250	5.00	0.600	o	450	
	32.001	5.638	0.100	56.4	0.000	5.00	0.600	o	225	
	30.002	45.139	0.300	150.5	0.084	0.00	0.600	o	225	
	* 33.000	21.924	0.110	199.3	0.071	5.00	0.600	o	225	
	* 33.001	23.225	0.160	145.2	0.071	5.00	0.600	o	225	
	33.002	42.860	0.290	147.8	0.071	5.00	0.600	o	225	
	* 33.003	16.004	0.130	123.1	0.071	5.00	0.600	o	300	
	* 30.003	7.752	0.300	25.8	0.068	0.00	0.600	o	300	
	30.004	49.146	0.140	351.0	0.000	0.00	0.600	o	450	
	21.010	7.734	0.030	257.8	0.000	0.00	0.600	o	900	
	20.001	49.171	0.135	364.2	0.064	0.00	0.600	o	900	
	34.000	5.695	0.100	57.0	0.080	5.00	0.600	o	225	
	20.002	34.760	0.085	408.9	0.020	0.00	0.600	o	900	
	* 1.015	51.616	0.130	397.0	0.064	0.00	0.600	o	900	
	35.000	34.385	0.230	149.5	0.055	5.00	0.600	o	225	
	35.001	26.630	0.180	147.9	0.055	0.00	0.600	o	225	
	36.000	30.249	0.200	151.2	0.094	2.00	0.600	o	225	
	* 1.016	21.220	0.200	106.1	0.030	0.00	0.600	o	525	
	PN	US/MH Name	US/CL (m)	US/IL (m)	US C.Depth (m)	DS/CL (m)	DS/IL (m)	DS C.Depth (m)	Ctrl	US/MH (mm)
	32.000	Non Resi	5.100	2.700	1.950	5.100	2.500	2.150		1200
	32.001	SW Stub 07	5.100	2.500	2.375	5.000	2.400	2.375	Hydro-Brake®	1200
	30.002	SW07	5.000	2.400	2.375	4.640	2.100	2.315		1200
	* 33.000	SW10	4.320	2.790	1.305	4.020	2.680	1.115		1200
	* 33.001	SW11	4.020	2.680	1.115	4.020	2.520	1.275		1200
	33.002	SW12	4.020	2.520	1.275	4.600	2.230	2.145		1200
	* 33.003	SW13	4.600	2.230	2.070	4.640	2.100	2.240		1200
	* 30.003	SW14	4.640	2.100	2.240	5.000	1.800	2.900		1200
	30.004	SW15	5.000	1.800	2.750	5.000	1.660	2.890		1200
	21.010	SW16	5.000	1.660	2.440	4.300	1.630	1.770		1800
	20.001	SW17	4.300	1.630	1.770	3.900	1.495	1.505		1800
	34.000	Plots 47-55	4.100	2.600	1.275	3.900	2.500	1.175		1200
	20.002	SW18	3.900	1.495	1.505	3.710	1.410	1.400		1800
	* 1.015	Outfall B-05	3.710	1.410	1.400	3.660	1.280	1.480		1800
	35.000	SW19	4.170	2.370	1.575	3.900	2.140	1.535		1200
	35.001	SW20	3.900	2.140	1.535	3.660	1.960	1.475		1200
	36.000	SW21	3.700	2.160	1.315	3.660	1.960	1.475		1200
	* 1.016	Outfall B-06	3.660	1.200	1.935	1.750	1.000	0.225	Hydro-Brake®	1800
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Mayer Brown Ltd			Page 6		
Lion House		Littlehampton			
Oriental Road		Overall Surface Network			
Woking GU22 8AR		West of Wetlands			
Date November 2017		Designed by S Foley			
File Test_Simulation_Tank ...		Checked by			
XP Solutions		Network 2013.1			
Online Controls for Storm					
Hydro-Brake® Manhole: Parcel A2_2, DS/PN: 2.001, Volume (m³): 3.0					
Design Head (m) 1.200 Hydro-Brake® Type Md4 Invert Level (m) 5.000					
Design Flow (l/s) 5.0 Diameter (mm) 76					
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.3	0.800	4.0	2.000	6.4
0.200	3.0	1.000	4.5	2.200	6.7
0.300	2.6	1.200	4.9	2.400	7.0
0.400	2.9	1.400	5.3	2.600	7.3
0.500	3.2	1.600	5.7	3.000	7.8
0.600	3.5	1.800	6.0	3.500	8.4
4.000	9.0	4.500	9.5	5.000	10.1
7.000	11.9	7.500	12.3	8.000	12.7
8.500	13.1	9.000	13.5	9.500	13.9
Hydro-Brake® Manhole: Parcel B6_2, DS/PN: 3.001, Volume (m³): 3.7					
Design Head (m) 0.800 Hydro-Brake® Type Md4 Invert Level (m) 4.800					
Design Flow (l/s) 5.0 Diameter (mm) 84					
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.6	0.800	4.9	2.000	7.8
0.200	4.0	1.000	5.5	2.200	8.2
0.300	3.4	1.200	6.0	2.400	8.5
0.400	3.5	1.400	6.5	2.600	8.9
0.500	3.9	1.600	7.0	3.000	9.5
0.600	4.3	1.800	7.4	3.500	10.3
4.000	11.0	4.500	11.7	5.000	12.3
7.000	14.5	7.500	15.1	8.000	15.6
8.500	16.0	9.000	16.5	9.500	16.9
Hydro-Brake® Manhole: Parcel B1&CH 2, DS/PN: 4.001, Volume (m³): 4.8					
Design Head (m) 1.000 Hydro-Brake® Type Md4 Invert Level (m) 4.135					
Design Flow (l/s) 10.0 Diameter (mm) 113					
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.3	0.800	8.9	2.000	14.1
0.200	8.2	1.000	10.0	2.200	14.8
0.300	8.0	1.200	10.9	2.400	15.4
0.400	7.1	1.400	11.8	2.600	16.0
0.500	7.2	1.600	12.6	3.000	17.2
0.600	7.8	1.800	13.3	3.500	18.6
4.000	19.9	4.500	21.1	5.000	22.2
7.000	26.3	7.500	27.3	8.000	28.1
8.500	29.0	9.000	29.9	9.500	30.7
Hydro-Brake® Manhole: Block B_2, DS/PN: 5.001, Volume (m³): 4.1					
Design Head (m) 1.000 Hydro-Brake® Type Md4 Invert Level (m) 3.905					
Design Flow (l/s) 5.0 Diameter (mm) 80					
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.4	0.800	4.5	2.000	7.1
0.200	3.5	1.000	5.0	2.200	7.4
0.300	3.0	1.200	5.5	2.400	7.7
0.400	3.2	1.400	5.9	2.600	8.0
0.500	3.5	1.600	6.3	3.000	8.6
0.600	3.9	1.800	6.7	3.500	9.3
4.000	10.0	4.500	10.6	5.000	11.2
7.000	13.2	7.500	13.7	8.000	14.1
8.500	14.5	9.000	15.0	9.500	15.4
Hydro-Brake® Manhole: BovisA_2, DS/PN: 6.001, Volume (m³): 3.9					
Design Head (m) 1.200 Hydro-Brake® Type Md5 SW Only Invert Level (m) 4.000					
Design Flow (l/s) 60.0 Diameter (mm) 293					
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Mayer Brown Ltd				Page 7					
Lion House		Littlehampton							
Oriental Road		Overall Surface Network							
Woking GU22 8AR		West of Wetlands							
Date November 2017		Designed by S Foley							
File Test_Simulation_Tank ...		Checked by							
XP Solutions		Network 2013.1							
<u>Hydro-Brake® Manhole: BovisA_2, DS/PN: 6.001, Volume (m³): 3.9</u>									
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	10.6	0.800	57.7	2.000	73.3	4.000	103.3	7.000	136.7
0.200	27.7	1.000	57.8	2.200	76.7	4.500	109.6	7.500	141.5
0.300	43.3	1.200	59.7	2.400	80.1	5.000	115.5	8.000	146.1
0.400	52.6	1.400	62.7	2.600	83.3	5.500	121.2	8.500	150.6
0.500	56.9	1.600	66.1	3.000	89.5	6.000	126.6	9.000	155.0
0.600	58.3	1.800	69.7	3.500	96.7	6.500	131.7	9.500	159.3
<u>Hydro-Brake® Manhole: BovisB_2, DS/PN: 7.001, Volume (m³): 3.7</u>									
Design Head (m)		1.200	Hydro-Brake® Type		Md5 SW Only	Invert Level (m)		3.225	
Design Flow (l/s)		60.0	Diameter (mm)		293				
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	10.6	0.800	57.7	2.000	73.3	4.000	103.3	7.000	136.7
0.200	27.7	1.000	57.8	2.200	76.7	4.500	109.6	7.500	141.5
0.300	43.3	1.200	59.7	2.400	80.1	5.000	115.5	8.000	146.1
0.400	52.6	1.400	62.7	2.600	83.3	5.500	121.2	8.500	150.6
0.500	56.9	1.600	66.1	3.000	89.5	6.000	126.6	9.000	155.0
0.600	58.3	1.800	69.7	3.500	96.7	6.500	131.7	9.500	159.3
<u>Hydro-Brake® Manhole: Ret Block A, DS/PN: 11.001, Volume (m³): 4.3</u>									
Design Head (m)		1.000	Hydro-Brake® Type		Md4	Invert Level (m)		2.900	
Design Flow (l/s)		5.0	Diameter (mm)		80				
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.4	0.800	4.5	2.000	7.1	4.000	10.0	7.000	13.2
0.200	3.5	1.000	5.0	2.200	7.4	4.500	10.6	7.500	13.7
0.300	3.0	1.200	5.5	2.400	7.7	5.000	11.2	8.000	14.1
0.400	3.2	1.400	5.9	2.600	8.0	5.500	11.7	8.500	14.5
0.500	3.5	1.600	6.3	3.000	8.6	6.000	12.2	9.000	15.0
0.600	3.9	1.800	6.7	3.500	9.3	6.500	12.7	9.500	15.4
<u>Hydro-Brake® Manhole: Non resi, DS/PN: 22.001, Volume (m³): 7.7</u>									
Design Head (m)		1.000	Hydro-Brake® Type		Md4	Invert Level (m)		3.720	
Design Flow (l/s)		5.0	Diameter (mm)		80				
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.4	0.800	4.5	2.000	7.1	4.000	10.0	7.000	13.2
0.200	3.5	1.000	5.0	2.200	7.4	4.500	10.6	7.500	13.7
0.300	3.0	1.200	5.5	2.400	7.7	5.000	11.2	8.000	14.1
0.400	3.2	1.400	5.9	2.600	8.0	5.500	11.7	8.500	14.5
0.500	3.5	1.600	6.3	3.000	8.6	6.000	12.2	9.000	15.0
0.600	3.9	1.800	6.7	3.500	9.3	6.500	12.7	9.500	15.4
<u>Hydro-Brake® Manhole: As-built SA8, DS/PN: 23.001, Volume (m³): 8.6</u>									
Design Head (m)		2.000	Hydro-Brake® Type		Md4	Invert Level (m)		3.763	
Design Flow (l/s)		34.5	Diameter (mm)		176				
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.2	0.800	22.1	2.000	34.1	4.000	48.3	7.000	63.9
0.200	15.1	1.000	24.2	2.200	35.8	4.500	51.2	7.500	66.1
0.300	24.2	1.200	26.5	2.400	37.4	5.000	54.0	8.000	68.3
0.400	25.7	1.400	28.6	2.600	38.9	5.500	56.6	8.500	70.4
0.500	23.3	1.600	30.5	3.000	41.8	6.000	59.1	9.000	72.4
0.600	21.6	1.800	32.4	3.500	45.2	6.500	61.5	9.500	74.4
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Mayer Brown Ltd			Page 8						
Lion House		Littlehampton							
Oriental Road		Overall Surface Network							
Woking GU22 8AR		West of Wetlands							
Date November 2017		Designed by S Foley							
File Test_Simulation_Tank ...		Checked by							
XP Solutions		Network 2013.1							
<u>Hydro-Brake® Manhole: SW Stub 02, DS/PN: 24.001, Volume (m³): 8.0</u>									
Design Head (m) 1.000 Hydro-Brake® Type Md4 Invert Level (m) 3.640									
Design Flow (l/s) 5.0 Diameter (mm) 80									
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.4	0.800	4.5	2.000	7.1	4.000	10.0	7.000	13.2
0.200	3.5	1.000	5.0	2.200	7.4	4.500	10.6	7.500	13.7
0.300	3.0	1.200	5.5	2.400	7.7	5.000	11.2	8.000	14.1
0.400	3.2	1.400	5.9	2.600	8.0	5.500	11.7	8.500	14.5
0.500	3.5	1.600	6.3	3.000	8.6	6.000	12.2	9.000	15.0
0.600	3.9	1.800	6.7	3.500	9.3	6.500	12.7	9.500	15.4
<u>Hydro-Brake® Manhole: Car Park, DS/PN: 29.001, Volume (m³): 2.8</u>									
Design Head (m) 1.500 Hydro-Brake® Type Md4 Invert Level (m) 3.400									
Design Flow (l/s) 5.0 Diameter (mm) 72									
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.1	0.800	3.6	2.000	5.7	4.000	8.1	7.000	10.7
0.200	2.5	1.000	4.0	2.200	6.0	4.500	8.6	7.500	11.1
0.300	2.3	1.200	4.4	2.400	6.3	5.000	9.0	8.000	11.4
0.400	2.6	1.400	4.8	2.600	6.5	5.500	9.5	8.500	11.8
0.500	2.9	1.600	5.1	3.000	7.0	6.000	9.9	9.000	12.1
0.600	3.1	1.800	5.4	3.500	7.6	6.500	10.3	9.500	12.5
<u>Hydro-Brake® Manhole: SW Stub, DS/PN: 30.001, Volume (m³): 6.0</u>									
Design Head (m) 1.000 Hydro-Brake® Type Md4 Invert Level (m) 2.600									
Design Flow (l/s) 5.0 Diameter (mm) 80									
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.4	0.800	4.5	2.000	7.1	4.000	10.0	7.000	13.2
0.200	3.5	1.000	5.0	2.200	7.4	4.500	10.6	7.500	13.7
0.300	3.0	1.200	5.5	2.400	7.7	5.000	11.2	8.000	14.1
0.400	3.2	1.400	5.9	2.600	8.0	5.500	11.7	8.500	14.5
0.500	3.5	1.600	6.3	3.000	8.6	6.000	12.2	9.000	15.0
0.600	3.9	1.800	6.7	3.500	9.3	6.500	12.7	9.500	15.4
<u>Hydro-Brake® Manhole: SW Stub 07, DS/PN: 32.001, Volume (m³): 6.3</u>									
Design Head (m) 1.000 Hydro-Brake® Type Md4 Invert Level (m) 2.500									
Design Flow (l/s) 5.0 Diameter (mm) 80									
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	2.4	0.800	4.5	2.000	7.1	4.000	10.0	7.000	13.2
0.200	3.5	1.000	5.0	2.200	7.4	4.500	10.6	7.500	13.7
0.300	3.0	1.200	5.5	2.400	7.7	5.000	11.2	8.000	14.1
0.400	3.2	1.400	5.9	2.600	8.0	5.500	11.7	8.500	14.5
0.500	3.5	1.600	6.3	3.000	8.6	6.000	12.2	9.000	15.0
0.600	3.9	1.800	6.7	3.500	9.3	6.500	12.7	9.500	15.4
<u>Hydro-Brake® Manhole: Outfall B-06, DS/PN: 1.016, Volume (m³): 40.1</u>									
Design Head (m) 2.500 Hydro-Brake® Type Md10 Invert Level (m) 1.200									
Design Flow (l/s) 286.0 Diameter (mm) 360									
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	13.1	0.500	101.5	1.200	198.1	2.000	255.7	3.000	313.1
0.200	33.1	0.600	122.7	1.400	213.9	2.200	268.2	3.500	338.2
0.300	55.6	0.800	158.1	1.600	228.7	2.400	280.1	4.000	361.6
0.400	78.8	1.000	180.8	1.800	242.6	2.600	291.5	4.500	383.5
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Mayer Brown Ltd		Page 9							
Lion House	Littlehampton								
Oriental Road	Overall Surface Network								
Woking GU22 8AR	West of Wetlands								
Date November 2017	Designed by S Foley								
File Test_Simulation_Tank ...	Checked by								
XP Solutions	Network 2013.1								
<u>Hydro-Brake® Manhole: Outfall B-06, DS/PN: 1.016, Volume (m³): 40.1</u>									
Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
5.000	404.3	6.000	442.9	7.000	478.3	8.000	511.4	9.000	542.4
5.500	424.0	6.500	460.9	7.500	495.1	8.500	527.1	9.500	557.3

Mayer Brown Ltd			Page 11																				
Lion House Oriental Road Woking GU22 8AR		Littlehampton Overall Surface Network West of Wetlands																					
Date November 2017		Designed by S Foley																					
File Test_Simulation_Tank ...		Checked by																					
XP Solutions		Network 2013.1																					
Storage Structures for Storm																							
Cellular Storage Manhole: Parcel A2_1, DS/PN: 2.000																							
Invert Level (m)5.200Safety Factor2.0																							
Infiltration Coefficient Base (m/hr)0.00000Porosity0.95																							
Infiltration Coefficient Side (m/hr)0.00000																							
<table><tr><td>Depth (m)</td><td>Area (m²)</td><td>Inf. Area (m²)</td><td>Depth (m)</td><td>Area (m²)</td><td>Inf. Area (m²)</td><td>Depth (m)</td><td>Area (m²)</td><td>Inf. Area (m²)</td></tr><tr><td>0.000</td><td>350.0</td><td>350.0</td><td>1.000</td><td>350.0</td><td>440.0</td><td>1.100</td><td>0.0</td><td>440.0</td></tr></table>						Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	350.0	350.0	1.000	350.0	440.0	1.100	0.0	440.0
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)															
0.000	350.0	350.0	1.000	350.0	440.0	1.100	0.0	440.0															
Cellular Storage Manhole: Parcel B6_1, DS/PN: 3.000																							
Invert Level (m)5.000Safety Factor2.0																							
Infiltration Coefficient Base (m/hr)0.00000Porosity0.95																							
Infiltration Coefficient Side (m/hr)0.00000																							
<table><tr><td>Depth (m)</td><td>Area (m²)</td><td>Inf. Area (m²)</td><td>Depth (m)</td><td>Area (m²)</td><td>Inf. Area (m²)</td><td>Depth (m)</td><td>Area (m²)</td><td>Inf. Area (m²)</td></tr><tr><td>0.000</td><td>80.0</td><td>80.0</td><td>1.000</td><td>80.0</td><td>128.0</td><td>1.100</td><td>0.0</td><td>128.0</td></tr></table>						Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	80.0	80.0	1.000	80.0	128.0	1.100	0.0	128.0
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)															
0.000	80.0	80.0	1.000	80.0	128.0	1.100	0.0	128.0															
Cellular Storage Manhole: Parcel B1&CH_1, DS/PN: 4.000																							
Invert Level (m)4.200Safety Factor2.0																							
Infiltration Coefficient Base (m/hr)0.00000Porosity0.95																							
Infiltration Coefficient Side (m/hr)0.00000																							
<table><tr><td>Depth (m)</td><td>Area (m²)</td><td>Inf. Area (m²)</td><td>Depth (m)</td><td>Area (m²)</td><td>Inf. Area (m²)</td><td>Depth (m)</td><td>Area (m²)</td><td>Inf. Area (m²)</td></tr><tr><td>0.000</td><td>300.0</td><td>300.0</td><td>1.000</td><td>300.0</td><td>380.0</td><td>1.100</td><td>0.0</td><td>380.0</td></tr></table>						Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	300.0	300.0	1.000	300.0	380.0	1.100	0.0	380.0
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)															
0.000	300.0	300.0	1.000	300.0	380.0	1.100	0.0	380.0															
Cellular Storage Manhole: Block B_1, DS/PN: 5.000																							
Invert Level (m)4.500Safety Factor2.0																							
Infiltration Coefficient Base (m/hr)0.00000Porosity0.95																							
Infiltration Coefficient Side (m/hr)0.00000																							
<table><tr><td>Depth (m)</td><td>Area (m²)</td><td>Inf. Area (m²)</td><td>Depth (m)</td><td>Area (m²)</td><td>Inf. Area (m²)</td><td>Depth (m)</td><td>Area (m²)</td><td>Inf. Area (m²)</td></tr><tr><td>0.000</td><td>270.0</td><td>270.0</td><td>1.000</td><td>270.0</td><td>344.0</td><td>1.100</td><td>0.0</td><td>344.0</td></tr></table>						Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	270.0	270.0	1.000	270.0	344.0	1.100	0.0	344.0
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)															
0.000	270.0	270.0	1.000	270.0	344.0	1.100	0.0	344.0															
Cellular Storage Manhole: BovisA_1, DS/PN: 6.000																							
Invert Level (m)4.100Safety Factor2.0																							
Infiltration Coefficient Base (m/hr)0.00000Porosity0.95																							
Infiltration Coefficient Side (m/hr)0.00000																							
<table><tr><td>Depth (m)</td><td>Area (m²)</td><td>Inf. Area (m²)</td><td>Depth (m)</td><td>Area (m²)</td><td>Inf. Area (m²)</td><td>Depth (m)</td><td>Area (m²)</td><td>Inf. Area (m²)</td></tr><tr><td>0.000</td><td>225.0</td><td>225.0</td><td>1.200</td><td>225.0</td><td>297.0</td><td>1.300</td><td>0.0</td><td>297.0</td></tr></table>						Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	225.0	225.0	1.200	225.0	297.0	1.300	0.0	297.0
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)															
0.000	225.0	225.0	1.200	225.0	297.0	1.300	0.0	297.0															
Cellular Storage Manhole: BovisB_1, DS/PN: 7.000																							
Invert Level (m)3.400Safety Factor2.0																							
Infiltration Coefficient Base (m/hr)0.00000Porosity0.95																							
Infiltration Coefficient Side (m/hr)0.00000																							
<table><tr><td>Depth (m)</td><td>Area (m²)</td><td>Inf. Area (m²)</td><td>Depth (m)</td><td>Area (m²)</td><td>Inf. Area (m²)</td><td>Depth (m)</td><td>Area (m²)</td><td>Inf. Area (m²)</td></tr><tr><td>0.000</td><td>225.0</td><td>225.0</td><td>1.200</td><td>225.0</td><td>297.0</td><td>1.300</td><td>0.0</td><td>297.0</td></tr></table>						Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	225.0	225.0	1.200	225.0	297.0	1.300	0.0	297.0
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)															
0.000	225.0	225.0	1.200	225.0	297.0	1.300	0.0	297.0															
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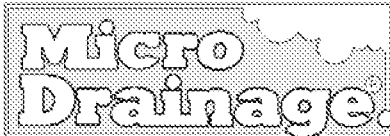
Mayer Brown Ltd		Page 12																																																																																												
Lion House Oriental Road Woking GU22 8AR	Littlehampton Overall Surface Network West of Wetlands																																																																																													
Date November 2017	Designed by S Foley																																																																																													
File Test_Simulation_Tank ...	Checked by																																																																																													
XP Solutions	Network 2013.1																																																																																													
<u>Cellular Storage Manhole: Ret Block A, DS/PN: 11.000</u> Invert Level (m) 3.000 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>450.0</td><td>450.0</td><td>1.000</td><td>450.0</td><td>560.0</td><td>1.100</td><td>0.0</td><td>560.0</td></tr></table> <u>Cellular Storage Manhole: Non resi, DS/PN: 22.000</u> Invert Level (m) 4.000 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>360.0</td><td>360.0</td><td>1.000</td><td>360.0</td><td>452.0</td><td>1.100</td><td>0.0</td><td>452.0</td></tr></table> <u>Cellular Storage Manhole: Parcel A1, DS/PN: 23.000</u> Invert Level (m) 4.000 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>500.0</td><td>500.0</td><td>1.000</td><td>500.0</td><td>590.0</td><td>1.100</td><td>0.0</td><td>590.0</td></tr></table> <u>Cellular Storage Manhole: Non Resi, DS/PN: 24.000</u> Invert Level (m) 4.000 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>400.0</td><td>400.0</td><td>1.000</td><td>400.0</td><td>500.0</td><td>1.100</td><td>0.0</td><td>500.0</td></tr></table> <u>Porous Car Park Manhole: Car Park, DS/PN: 29.000</u> Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 50.0 Membrane Percolation (mm/hr) 1000 Length (m) 50.0 Max Percolation (l/s) 694.4 Slope (1:X) 0.0 Safety Factor 2.0 Depression Storage (mm) 5 Porosity 0.30 Evaporation (mm/day) 3 Invert Level (m) 4.500 Cap Volume Depth (m) 0.000 <u>Cellular Storage Manhole: Non Resi, DS/PN: 30.000</u> Invert Level (m) 2.700 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>400.0</td><td>400.0</td><td>1.000</td><td>400.0</td><td>500.0</td><td>1.100</td><td>0.0</td><td>500.0</td></tr></table> <u>Cellular Storage Manhole: Non Resi, DS/PN: 32.000</u> Invert Level (m) 2.700 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	450.0	450.0	1.000	450.0	560.0	1.100	0.0	560.0	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	360.0	360.0	1.000	360.0	452.0	1.100	0.0	452.0	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	500.0	500.0	1.000	500.0	590.0	1.100	0.0	590.0	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	400.0	400.0	1.000	400.0	500.0	1.100	0.0	500.0	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	400.0	400.0	1.000	400.0	500.0	1.100	0.0	500.0	©1982-2012 Micro Drainage Ltd	
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)																																																																																						
0.000	450.0	450.0	1.000	450.0	560.0	1.100	0.0	560.0																																																																																						
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)																																																																																						
0.000	360.0	360.0	1.000	360.0	452.0	1.100	0.0	452.0																																																																																						
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)																																																																																						
0.000	500.0	500.0	1.000	500.0	590.0	1.100	0.0	590.0																																																																																						
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)																																																																																						
0.000	400.0	400.0	1.000	400.0	500.0	1.100	0.0	500.0																																																																																						
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)																																																																																						
0.000	400.0	400.0	1.000	400.0	500.0	1.100	0.0	500.0																																																																																						

Mayer Brown Ltd		Page 13																																				
Lion House	Littlehampton																																					
Oriental Road	Overall Surface Network																																					
Woking GU22 8AR	West of Wetlands																																					
Date November 2017	Designed by S Foley																																					
File Test_Simulation_Tank ...	Checked by																																					
XP Solutions	Network 2013.1																																					
Cellular Storage Manhole: Non Resi, DS/PN: 32.000 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>110.0</td><td>110.0</td><td>1.000</td><td>110.0</td><td>152.0</td><td>1.100</td><td>0.0</td><td>152.0</td></tr></table> Cellular Storage Manhole: SW16, DS/PN: 21.010 Invert Level (m) 1.710 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000 <table><tr><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th><th>Depth (m)</th><th>Area (m²)</th><th>Inf. Area (m²)</th></tr><tr><td>0.000</td><td>900.0</td><td>900.0</td><td>1.500</td><td>900.0</td><td>1104.0</td><td>1.600</td><td>0.0</td><td>1104.0</td></tr></table>			Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	110.0	110.0	1.000	110.0	152.0	1.100	0.0	152.0	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	0.000	900.0	900.0	1.500	900.0	1104.0	1.600	0.0	1104.0
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)																														
0.000	110.0	110.0	1.000	110.0	152.0	1.100	0.0	152.0																														
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)																														
0.000	900.0	900.0	1.500	900.0	1104.0	1.600	0.0	1104.0																														
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APPENDIX G: Windes – 1 in 100year (+CC) Simulation Results

Mayer Brown Ltd		Page 1						
Lion House	Littlehampton							
Oriental Road	Overall Surface Network							
Woking GU22 8AR	West of Wetlands							
Date November 2017	Designed by S Foley							
File Test_Simulation_Tank ...	Checked by							
XP Solutions	Network 2013.1							
Summary of Critical Results by Maximum Level (Rank 1) for Storm								
Simulation Criteria								
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 Offline Controls 1	Number of Time/Area Diagrams 0					
Number of Online Controls 14		Number of Storage Structures 14	Number of Real Time Controls 0					
Synthetic Rainfall Details								
Rainfall Model		FEH	D3 (1km) 0.407					
Site Location GB 502850 104400 TQ 02850 04400			E (1km) 0.314					
C (1km)		-0.027	F (1km) 2.329					
D1 (1km)		0.393	Cv (Summer) 0.750					
D2 (1km)		0.274	Cv (Winter) 0.840					
Margin for Flood Risk Warning (mm)		300.0						
Analysis Timestep		2.5 Second Increment (Extended)						
DTS Status		ON						
DVD Status		ON						
Inertia Status		ON						
Profile(s)		Winter						
Duration(s) (mins)		60, 120, 240, 360, 480, 960, 1440						
Return Period(s) (years)		100						
Climate Change (%)		30						
PN	Storm	Return Period	Climate Change	First X Surchage	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
1.000	60 Winter	100	+30%	100/60 Winter	100/60 Winter			1
1.001	60 Winter	100	+30%	100/60 Winter				
2.000	480 Winter	100	+30%	100/60 Winter				
2.001	480 Winter	100	+30%	100/60 Winter				
1.002	60 Winter	100	+30%	100/60 Winter				
3.000	60 Winter	100	+30%	100/60 Winter				
3.001	60 Winter	100	+30%	100/60 Winter				
1.003	60 Winter	100	+30%	100/60 Winter				
1.004	60 Winter	100	+30%	100/60 Winter				
4.000	120 Winter	100	+30%	100/60 Winter				
4.001	60 Winter	100	+30%	100/60 Winter				
1.005	60 Winter	100	+30%	100/60 Winter				
1.006	60 Winter	100	+30%	100/60 Winter				
5.000	360 Winter	100	+30%	100/60 Winter				
5.001	360 Winter	100	+30%	100/60 Winter				
5.002	60 Winter	100	+30%	100/60 Winter		100/60 Winter	6	
1.007	60 Winter	100	+30%	100/60 Winter				
6.000	60 Winter	100	+30%	100/60 Winter				
6.001	60 Winter	100	+30%	100/60 Winter	100/60 Winter			
1.008	60 Winter	100	+30%	100/60 Winter				
7.000	60 Winter	100	+30%	100/60 Winter				
7.001	60 Winter	100	+30%	100/60 Winter				
1.009	60 Winter	100	+30%	100/60 Winter				
8.000	240 Winter	100	+30%	100/60 Winter	100/60 Winter			5
9.000	60 Winter	100	+30%	100/60 Winter	100/60 Winter			1
10.000	60 Winter	100	+30%	100/60 Winter	100/60 Winter			2
3.001	60 Winter	100	+30%	100/60 Winter				
1.010	60 Winter	100	+30%	100/60 Winter				
11.000	480 Winter	100	+30%	100/60 Winter				
11.001	480 Winter	100	+30%	100/60 Winter				
12.000	60 Winter	100	+30%	100/60 Winter				
1.011	60 Winter	100	+30%	100/60 Winter				
1.012	60 Winter	100	+30%	100/60 Winter				
13.000	60 Winter	100	+30%	100/60 Winter	100/60 Winter			1
14.000	240 Winter	100	+30%	100/60 Winter	100/60 Winter			4
15.000	240 Winter	100	+30%	100/60 Winter	100/60 Winter			4
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Mayer Brown Ltd				Page 2					
Lion House		Littlehampton							
Oriental Road		Overall Surface Network							
Woking GU22 8AR		West of Wetlands							
Date November 2017		Designed by S Foley							
File Test_Simulation_Tank ...		Checked by							
XP Solutions		Network 2013.1							
Summary of Critical Results by Maximum Level (Rank 1) for Storm									
PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.	
1.0013	60 Winter	100	+30%	100/60 Winter					
16.000	240 Winter	100	+30%	100/60 Winter	100/60 Winter				4
1.014	240 Winter	100	+30%	100/60 Winter	100/60 Winter				4
17.000	120 Winter	100	+30%	100/60 Winter					
18.000	240 Winter	100	+30%	100/60 Winter	100/120 Winter				3
19.000	240 Winter	100	+30%	100/60 Winter	100/60 Winter				3
17.001	240 Winter	100	+30%	100/60 Winter	100/120 Winter				3
20.000	240 Winter	100	+30%	100/60 Winter					
21.000	60 Winter	100	+30%	100/60 Winter	100/60 Winter				1
22.000	480 Winter	100	+30%	100/60 Winter	100/480 Winter				1
22.001	480 Winter	100	+30%	100/60 Winter	100/60 Winter				5
21.001	60 Winter	100	+30%	100/60 Winter					
23.000	120 Winter	100	+30%	100/60 Winter					
23.001	60 Winter	100	+30%	100/60 Winter					
24.000	480 Winter	100	+30%	100/60 Winter	100/360 Winter				2
24.001	480 Winter	100	+30%	100/60 Winter	100/360 Winter				2
23.002	60 Winter	100	+30%	100/60 Winter					
21.002	60 Winter	100	+30%	100/60 Winter					
21.003	60 Winter	100	+30%	100/60 Winter					
25.000	60 Winter	100	+30%	100/60 Winter	100/60 Winter				1
25.001	60 Winter	100	+30%	100/60 Winter					
26.000	60 Winter	100	+30%						
26.001	60 Winter	100	+30%						
26.002	60 Winter	100	+30%	100/60 Winter					
26.003	60 Winter	100	+30%						
21.004	60 Winter	100	+30%	100/60 Winter					
21.005	60 Winter	100	+30%	100/60 Winter					
27.000	60 Winter	100	+30%	100/60 Winter					
21.006	60 Winter	100	+30%	100/60 Winter					
21.007	480 Winter	100	+30%	100/60 Winter					
28.000	60 Winter	100	+30%	100/60 Winter	100/60 Winter				1
28.001	240 Winter	100	+30%	100/60 Winter					
21.008	480 Winter	100	+30%	100/60 Winter					
21.009	240 Winter	100	+30%	100/60 Winter					
29.000	360 Winter	100	+30%	100/60 Winter					
29.001	60 Winter	100	+30%	100/60 Winter					
30.000	480 Winter	100	+30%	100/60 Winter	100/360 Winter				2
30.001	480 Winter	100	+30%	100/60 Winter	100/360 Winter				2
31.000	240 Winter	100	+30%	100/120 Winter					
32.000	240 Winter	100	+30%	100/60 Winter	100/120 Winter				4
32.001	240 Winter	100	+30%	100/60 Winter	100/120 Winter				4
30.002	240 Winter	100	+30%	100/60 Winter					
33.000	240 Winter	100	+30%	100/60 Winter					
33.001	240 Winter	100	+30%	100/60 Winter					
33.002	240 Winter	100	+30%	100/60 Winter					
33.003	240 Winter	100	+30%	100/60 Winter					
30.003	240 Winter	100	+30%	100/60 Winter					
30.004	240 Winter	100	+30%	100/60 Winter					
21.010	240 Winter	100	+30%	100/60 Winter					
20.001	240 Winter	100	+30%	100/60 Winter					
34.000	240 Winter	100	+30%	100/60 Winter					
20.002	240 Winter	100	+30%	100/60 Winter					
1.015	240 Winter	100	+30%	100/60 Winter	100/60 Winter				
35.000	240 Winter	100	+30%	100/60 Winter					
35.001	240 Winter	100	+30%	100/60 Winter					
36.000	120 Winter	100	+30%	100/60 Winter	100/60 Winter				1
1.016	240 Winter	100	+30%	100/60 Winter	100/60 Winter				3

Mayer Brown Ltd				Page 3				
Lion House		Littlehampton						
Oriental Road		Overall Surface Network						
Woking GU22 8AR		West of Wetlands						
Date November 2017		Designed by S Foley						
File Test_Simulation_Tank ...		Checked by						
XP Solutions		Network 2013.1						
Summary of Critical Results by Maximum Level (Rank 1) for Storm								
PN	US/MH Name	Water Level (m)	Surch'd Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.002	TL_SW03	6.382	1.326	0.000	0.62	0.0	40.9	SURCHARGED
3.000	Parcel B6_1	6.407	1.107	0.000	0.08	0.0	7.5	SURCHARGED
3.001	Parcel B6_2	6.400	1.450	0.000	0.54	0.0	6.9	SURCHARGED
1.003	TL_SW04	6.320	1.385	0.000	0.69	0.0	47.8	SURCHARGED
1.004	TL_SW05	6.225	1.533	0.000	1.04	0.0	74.5	FLOOD RISK
4.000	Parcel B1&CH_1	4.990	0.490	0.000	0.19	0.0	10.4	SURCHARGED
4.001	Parcel B1&CH 2	5.380	1.095	0.000	0.63	0.0	8.4	SURCHARGED
1.005	Ex. SB16	5.768	1.558	0.000	1.13	0.0	76.2	SURCHARGED
1.006	Ex. SB9	5.837	1.827	0.000	1.59	0.0	98.8	SURCHARGED
5.000	Block B_1	5.520	0.720	0.000	0.04	0.0	6.9	SURCHARGED
5.001	Block B_2	5.525	1.470	0.000	0.46	0.0	6.3	SURCHARGED
5.002	Ex. SB17	4.993	1.043	0.000	0.20	70.9	12.9	SURCHARGED
1.007	Ex. SB8	5.067	1.267	0.000	1.32	0.0	82.4	SURCHARGED
6.000	BovisA_1	5.118	0.643	0.000	0.50	0.0	58.7	SURCHARGED
6.001	BovisA_2	5.532	1.157	0.115	0.16	0.0	58.2	FLOOD
1.008	Ex SB7	4.607	1.107	0.000	0.94	0.0	127.9	SURCHARGED
7.000	BovisB_1	4.523	0.748	0.000	0.33	0.0	52.6	FLOOD RISK
7.001	BovisB_2	4.485	0.885	0.000	0.20	0.0	51.4	FLOOD RISK
1.009	Dummy Node	4.409	1.234	0.000	1.21	0.0	158.4	FLOOD RISK
8.000	SW01	4.150	0.810	109.692	0.75	0.0	53.8	FLOOD
9.000	Plots 117-126	4.300	1.075	0.377	0.81	0.0	36.0	FLOOD
10.000	Plots 101-116	4.301	1.076	1.609	1.08	0.0	48.3	FLOOD
8.001	SW02	4.318	1.168	0.000	1.27	0.0	71.6	FLOOD RISK
1.010	Ex SB6	4.371	1.296	0.000	0.96	0.0	181.7	SURCHARGED
11.000	Ret Block A	3.963	0.663	0.000	0.27	0.0	13.9	SURCHARGED
11.001	Ret Block A	4.224	1.174	0.000	0.28	0.0	5.1	SURCHARGED
12.000	Plots 95-100	4.298	1.073	0.000	0.50	0.0	22.5	SURCHARGED
1.011	Outfall B-01	4.204	1.284	0.000	0.87	0.0	192.3	SURCHARGED
1.012	Outfall B-02	4.049	1.309	0.000	0.98	0.0	205.2	SURCHARGED
13.000	SW03	4.807	1.147	6.346	1.06	0.0	71.6	FLOOD
14.000	Plots 80-86	3.831	1.056	31.368	0.49	0.0	30.7	FLOOD
15.000	Plots 87-94	3.835	1.060	35.087	0.46	0.0	32.7	FLOOD
1.013	Outfall B-03	3.915	1.315	0.000	1.32	0.0	333.5	FLOOD RISK
16.000	C2 Resiblock A	3.730	1.230	29.732	0.60	0.0	40.0	FLOOD
1.014	Outfall B-04	3.737	1.297	38.959	1.56	0.0	278.5	FLOOD
17.000	SW04	3.746	1.126	0.000	0.69	0.0	46.0	SURCHARGED
18.000	Plots 60-73	3.706	0.881	6.148	0.40	0.0	21.7	FLOOD
19.000	Plots 74-78	3.707	0.882	6.795	0.48	0.0	25.7	FLOOD
17.001	SW05	3.705	1.205	5.398	1.21	0.0	76.1	FLOOD
20.000	Plots 39-46	3.736	0.421	0.000	0.10	0.0	12.4	SURCHARGED
21.000	SW-LYM 01	5.047	1.032	7.064	1.50	0.0	54.5	FLOOD
22.000	Non resi	5.203	0.753	2.817	0.07	0.0	16.2	FLOOD
22.001	Non resi	5.200	1.255	0.158	0.18	0.0	5.6	FLOOD
21.001	SW-LYM 02	5.094	1.229	0.000	0.99	0.0	38.0	SURCHARGED
23.000	Parcel A1	4.969	0.519	0.000	0.15	0.0	34.1	SURCHARGED
23.001	As-built SA8	5.503	1.515	0.000	0.60	0.0	23.9	SURCHARGED
24.000	Non Resi	6.006	1.556	6.388	0.04	0.0	11.2	FLOOD
24.001	SW Stub 02	6.003	2.138	3.161	0.19	0.0	7.1	FLOOD
23.002	SW-LYM 03/1	5.010	1.215	0.000	0.64	0.0	27.0	SURCHARGED
21.002	SW-LYM 03	5.086	1.511	0.000	1.44	0.0	47.7	SURCHARGED
21.003	SW-LYM 04	5.103	1.578	0.000	0.82	0.0	50.8	SURCHARGED
25.000	SW-LYM 07	5.370	1.275	0.044	0.41	0.0	16.5	FLOOD
25.001	SW-LYM 08	5.336	1.441	0.000	0.68	0.0	42.9	SURCHARGED
26.000	PBA 01	12.304	-0.121	0.000	0.43	0.0	35.6	OK
26.001	PBA 02	10.533	-0.092	0.000	0.65	0.0	70.7	OK
26.002	PBA 03	8.577	1.153	0.000	1.33	0.0	93.2	FLOOD RISK
26.003	SW-LYM 05	5.699	-0.141	0.000	0.55	0.0	106.7	OK
21.004	SW-LYM 10	5.054	1.729	0.000	1.29	0.0	169.7	SURCHARGED
21.005	SW-LYM11	4.735	1.605	0.000	1.13	0.0	236.4	SURCHARGED
27.000	ExSB17_Dum Node	4.848	0.923	0.000	0.95	0.0	68.7	SURCHARGED
21.006	SW-LYM 12	4.521	1.551	0.000	1.42	0.0	300.9	SURCHARGED
21.007	SW-LYM 13	4.248	1.558	0.000	0.60	0.0	124.2	SURCHARGED
23.000	C2 Resiblock B	4.303	1.578	2.668	1.76	0.0	58.7	FLOOD
28.001	SW-LYM 14/1	4.057	1.452	0.000	0.84	0.0	29.3	SURCHARGED
21.008	SW-LYM 14	3.997	1.577	0.000	0.62	0.0	144.8	SURCHARGED
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Mayer Brown Ltd				Page 4				
Lion House		Littlehampton						
Oriental Road		Overall Surface Network						
Woking GU22 8AR		West of Wetlands						
Date November 2017		Designed by S Foley						
File Test_Simulation_Tank ...		Checked by						
XP Solutions		Network 2013.1						
<u>Summary of Critical Results by Maximum Level (Rank 1) for Storm</u>								
PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
21.009	SW-LYM 15	3.846	1.521	0.000	0.90	0.0	217.2	SURCHARGED
29.000	Car Park	4.721	0.771	0.000	0.03	0.0	5.7	FLOOD RISK
29.001	Car Park	4.826	1.276	0.000	0.11	0.0	4.5	FLOOD RISK
30.000	Non Resi	5.309	2.159	8.628	0.05	0.0	9.5	FLOOD
30.001	SW Stub	5.306	2.481	5.785	0.20	0.0	7.7	FLOOD
31.000	SW06	3.964	0.189	0.000	0.12	0.0	11.6	SURCHARGED
32.000	Non Resi	5.104	1.954	3.878	0.03	0.0	7.5	FLOOD
32.001	SW Stub 07	5.101	2.376	1.358	0.15	0.0	6.6	FLOOD
30.002	SW07	3.947	1.322	0.000	0.64	0.0	25.8	SURCHARGED
33.000	SW10	4.028	1.013	0.000	0.23	0.0	7.7	FLOOD RISK
33.001	SW11	4.016	1.111	0.000	0.39	0.0	15.4	FLOOD RISK
33.002	SW12	3.992	1.247	0.000	0.56	0.0	22.7	FLOOD RISK
33.003	SW13	3.941	1.411	0.000	0.36	0.0	30.3	SURCHARGED
30.003	SW14	3.920	1.520	0.000	0.45	0.0	61.6	SURCHARGED
30.004	SW15	3.833	1.583	0.000	0.39	0.0	60.8	SURCHARGED
21.010	SW16	3.739	1.179	0.000	0.59	0.0	355.8	SURCHARGED
20.001	SW17	3.731	1.201	0.000	0.23	0.0	198.1	SURCHARGED
34.000	Plots 47-55	3.717	0.892	0.000	0.66	0.0	29.5	SURCHARGED
20.002	SW18	3.713	1.318	0.000	0.27	0.0	205.7	FLOOD RISK
1.015	Outfall B-05	3.696	1.386	0.000	0.37	0.0	304.1	FLOOD RISK
35.000	SW19	3.696	1.101	0.000	0.51	0.0	20.3	SURCHARGED
35.001	SW20	3.686	1.321	0.000	0.89	0.0	35.0	FLOOD RISK
35.000	SW21	3.700	1.318	0.000	1.23	0.0	48.5	FLOOD
1.016	Outfall B-06	3.670	1.945	9.606	0.83	0.0	284.1	FLOOD
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APPENDIX H: Windes – 1 in 30yr Simulation Results

Mayer Brown Ltd			Page 1					
Lion House		Littlehampton						
Oriental Road		Overall Surface Network						
Woking GU22 8AR		West of Wetlands						
Date November 2017		Designed by S Foley						
File Test_Simulation_Tank ...		Checked by						
XP Solutions		Network 2013.1						
<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 Offline Controls		1			
Number of Online Controls		14	Number of Storage Structures		14			
Number of Time/Area Diagrams		0	Number of Real Time Controls			0		
<u>Synthetic Rainfall Details</u>								
Rainfall Model		FEH		D3 (1km)	0.407			
Site Location		GB 502850 104400 TQ 02850 04400		E (1km)	0.314			
C (1km)		-0.027		F (1km)	2.329			
D1 (1km)		0.393		Cv (Summer)	0.750			
D2 (1km)		0.274		Cv (Winter)	0.840			
Margin for Flood Risk Warning (mm)		300.0						
Analysis Timestep		2.5 Second Increment (Extended)						
DTS Status		ON						
DVD Status		ON						
Inertia Status		ON						
Profile(s)		Winter						
Duration(s) (mins)		15, 30, 60, 120, 240, 360, 480, 960, 1440						
Return Period(s) (years)		30						
Climate Change (%)		0						
PN	Storm	Return Period	Climate Change	First X Surchage	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
1.000	15 Winter	30	0%					
1.001	15 Winter	30	0%	30/15 Winter				
2.000	480 Winter	30	0%	30/60 Winter				
2.001	480 Winter	30	0%	30/15 Winter				
1.002	15 Winter	30	0%	30/15 Winter				
3.000	120 Winter	30	0%	30/15 Winter				
3.001	120 Winter	30	0%	30/15 Winter				
1.003	15 Winter	30	0%	30/15 Winter				
1.004	15 Winter	30	0%	30/15 Winter				
4.000	120 Winter	30	0%	30/60 Winter				
4.001	120 Winter	30	0%	30/15 Winter				
1.005	15 Winter	30	0%	30/15 Winter				
1.006	15 Winter	30	0%	30/15 Winter				
5.000	240 Winter	30	0%	30/30 Winter				
5.001	240 Winter	30	0%	30/15 Winter				
5.002	15 Winter	30	0%	30/15 Winter		30/15 Winter	4	
1.007	15 Winter	30	0%	30/15 Winter				
6.000	30 Winter	30	0%	30/15 Winter				
6.001	30 Winter	30	0%	30/15 Winter				
1.008	30 Winter	30	0%	30/15 Winter				
7.000	30 Winter	30	0%	30/15 Winter				
7.001	30 Winter	30	0%	30/15 Winter				
1.009	30 Winter	30	0%	30/15 Winter				
8.000	15 Winter	30	0%	30/15 Winter				
9.000	15 Winter	30	0%	30/15 Winter				
10.000	15 Winter	30	0%	30/15 Winter				
8.001	15 Winter	30	0%	30/15 Winter				
1.010	30 Winter	30	0%	30/15 Winter				
11.000	480 Winter	30	0%	30/60 Winter				
11.001	480 Winter	30	0%	30/15 Winter				
12.000	30 Winter	30	0%	30/15 Winter				
1.011	30 Winter	30	0%	30/15 Winter				
1.012	30 Winter	30	0%	30/15 Winter				
13.000	15 Winter	30	0%	30/15 Winter				
14.000	30 Winter	30	0%	30/15 Winter				
15.000	30 Winter	30	0%	30/15 Winter				
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Mayer Brown Ltd		Page 2
Lion House	Littlehampton	
Oriental Road	Overall Surface Network	
Woking GU22 8AR	West of Wetlands	
Date November 2017	Designed by S Foley	
File Test_Simulation_Tank ...	Checked by	
XP Solutions	Network 2013.1	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
1.013	30 Winter	30	0%	30/15 Winter				
16.000	30 Winter	30	0%	30/15 Winter				
1.014	15 Winter	30	0%	30/15 Winter				
17.000	15 Winter	30	0%	30/15 Winter				
18.000	15 Winter	30	0%					
19.000	15 Winter	30	0%					
17.001	15 Winter	30	0%	30/15 Winter				
20.000	15 Winter	30	0%					
21.000	15 Winter	30	0%	30/15 Winter				
22.000	480 Winter	30	0%	30/240 Winter				
22.001	360 Winter	30	0%	30/15 Winter				
21.001	15 Winter	30	0%	30/15 Winter				
23.000	120 Winter	30	0%					
23.001	120 Winter	30	0%	30/15 Winter				
24.000	480 Winter	30	0%	30/240 Winter				
24.001	480 Winter	30	0%	30/15 Winter				
23.002	15 Winter	30	0%	30/15 Winter				
21.002	15 Winter	30	0%	30/15 Winter				
21.003	15 Winter	30	0%	30/15 Winter				
25.000	15 Winter	30	0%	30/15 Winter				
25.001	15 Winter	30	0%	30/15 Winter				
26.000	15 Winter	30	0%					
26.001	15 Winter	30	0%					
26.002	15 Winter	30	0%	30/15 Winter	30/15 Winter			1
26.003	15 Winter	30	0%					
31.004	15 Winter	30	0%	30/15 Winter				
31.005	15 Winter	30	0%	30/15 Winter				
27.000	15 Winter	30	0%	30/15 Winter				
21.006	15 Winter	30	0%	30/15 Winter				
21.007	15 Winter	30	0%	30/15 Winter				
28.000	15 Winter	30	0%	30/15 Winter				
28.001	15 Winter	30	0%	30/15 Winter				
21.008	240 Winter	30	0%	30/15 Winter				
21.009	240 Winter	30	0%	30/15 Winter				
29.000	240 Winter	30	0%	30/15 Winter				
29.001	15 Winter	30	0%	30/15 Winter				
30.000	480 Winter	30	0%	30/240 Winter				
30.001	480 Winter	30	0%	30/15 Winter				
31.000	15 Winter	30	0%					
32.000	120 Winter	30	0%	30/120 Winter				
32.001	120 Winter	30	0%	30/15 Winter				
30.002	15 Winter	30	0%	30/15 Winter				
33.000	15 Winter	30	0%	30/15 Winter				
33.001	15 Winter	30	0%	30/15 Winter				
33.002	15 Winter	30	0%	30/15 Winter				
33.003	240 Winter	30	0%	30/15 Winter				
30.003	240 Winter	30	0%	30/15 Winter				
30.004	240 Winter	30	0%	30/15 Winter				
21.010	240 Winter	30	0%	30/120 Winter				
20.001	240 Winter	30	0%	30/15 Winter				
34.000	15 Winter	30	0%					
20.002	240 Winter	30	0%	30/15 Winter				
1.015	240 Winter	30	0%	30/15 Winter				
35.000	15 Winter	30	0%	30/15 Winter				
35.001	15 Winter	30	0%	30/15 Winter				
36.000	240 Winter	30	0%	30/15 Winter				
1.016	240 Winter	30	0%	30/15 Winter				

PN	US/MH Name	Water Level	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
		(m)						
1.000	TL_SW01	5.339	-0.131	0.000	0.37	0.0	25.5	OK
1.001	TL_SW02	5.324	0.105	0.000	0.58	0.0	38.7	SURCHARGED
2.000	Parcel A2_1	5.690	0.190	0.000	0.04	0.0	4.0	SURCHARGED
2.001	Parcel A2_2	5.698	0.548	0.000	0.28	0.0	3.7	SURCHARGED

Mayer Brown Ltd						Page 3		
Lion House Oriental Road Woking GU22 8AR			Littlehampton Overall Surface Network West of Wetlands					
Date November 2017			Designed by S Foley					
File Test_Simulation_Tank ...			Checked by					
XP Solutions			Network 2013.1					
Summary of Critical Results by Maximum Level (Rank 1) for Storm								
PN	US/MH Name	Water Level (m)	Surch'd Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.002	TL_SW03	5.311	0.255	0.000	0.72	0.0	47.8	SURCHARGED
3.000	Parcel B6_1	5.458	0.158	0.000	0.05	0.0	5.2	SURCHARGED
3.001	Parcel B6_2	5.461	0.511	0.000	0.34	0.0	4.4	SURCHARGED
1.003	TL_SW04	5.273	0.338	0.000	0.73	0.0	50.4	SURCHARGED
1.004	TL_SW05	5.214	0.579	0.000	1.01	0.0	73.4	SURCHARGED
4.000	Parcel B1&CH_1	4.536	0.036	0.000	0.19	0.0	10.3	SURCHARGED
4.001	Parcel B1&CH_2	4.607	0.322	0.000	0.61	0.0	8.1	SURCHARGED
1.005	Ex. SB10	4.847	0.637	0.000	1.05	0.0	71.7	SURCHARGED
1.006	Ex. SB9	4.833	0.613	0.000	1.16	0.0	82.5	SURCHARGED
5.000	Block B_1	4.966	0.166	0.000	0.03	0.0	5.8	SURCHARGED
5.001	Block B_2	4.961	0.906	0.000	0.37	0.0	5.1	SURCHARGED
5.002	Ex. SB17	4.177	0.227	0.000	0.32	65.6	21.2	SURCHARGED
1.007	Ex. SB8	4.275	0.475	0.000	1.12	0.0	69.6	SURCHARGED
6.000	BovisA_1	4.496	0.021	0.000	0.50	0.0	58.8	SURCHARGED
6.001	BovisA_2	4.425	0.050	0.000	0.14	0.0	52.6	SURCHARGED
1.008	Ex SB7	4.069	0.569	0.000	0.86	0.0	116.9	SURCHARGED
7.000	BovisB_1	3.856	0.081	0.000	0.32	0.0	50.7	SURCHARGED
7.001	BovisB_2	3.825	0.225	0.000	0.19	0.0	49.5	SURCHARGED
1.009	Dummy Node	1.769	0.594	0.000	1.31	0.0	169.1	SURCHARGED
8.000	SW01	4.009	0.669	0.000	0.43	0.0	31.2	FLOOD RISK
9.000	Plots 117-126	4.044	0.819	0.000	0.83	0.0	37.2	FLOOD RISK
10.000	Plots 101-116	4.037	0.812	0.000	1.14	0.0	51.0	FLOOD RISK
8.001	SW02	3.954	0.804	0.000	2.02	0.0	113.5	SURCHARGED
1.010	Ex SB6	3.749	0.674	0.000	1.05	0.0	159.7	SURCHARGED
11.000	Ret Block A	3.430	0.130	0.000	0.22	0.0	11.3	SURCHARGED
11.001	Ret Block A	3.633	0.583	0.000	0.20	0.0	3.7	SURCHARGED
12.000	Plots 95-100	3.621	0.396	0.000	0.38	0.0	17.2	SURCHARGED
1.011	Outfall B-01	3.611	0.691	0.000	0.94	0.0	206.2	SURCHARGED
1.012	Outfall B-02	3.470	0.730	0.000	1.00	0.0	211.0	SURCHARGED
13.000	SW03	3.481	0.831	0.000	1.31	0.0	98.4	SURCHARGED
14.000	Plots 80-86	3.363	0.588	0.000	0.33	0.0	20.7	SURCHARGED
15.000	Plots 87-94	3.357	0.582	0.000	0.34	0.0	23.7	SURCHARGED
1.013	Outfall B-03	3.341	0.741	0.000	1.52	0.0	292.1	SURCHARGED
16.000	C2 Resiblock A	3.028	0.528	0.000	0.57	0.0	37.5	SURCHARGED
1.014	Outfall B-04	2.985	0.845	0.000	1.74	0.0	308.7	SURCHARGED
17.000	SW04	2.915	0.295	0.000	1.03	0.0	68.3	SURCHARGED
18.000	Plots 60-73	2.742	-0.083	0.000	0.47	0.0	25.7	OK
19.000	Plots 74-78	2.743	-0.082	0.000	0.56	0.0	29.9	OK
17.001	SW05	2.746	0.246	0.000	1.34	0.0	122.0	SURCHARGED
20.000	Plots 39-46	3.162	-0.153	0.000	0.23	0.0	28.2	OK
21.000	SW-LYM 01	4.399	0.434	0.000	0.85	0.0	22.2	SURCHARGED
22.000	Non resi	4.474	0.024	0.000	0.06	0.0	14.5	SURCHARGED
22.001	Non resi	4.648	0.703	0.000	0.14	0.0	4.2	SURCHARGED
21.001	SW-LYM 02	4.383	0.518	0.000	0.79	0.0	30.2	SURCHARGED
23.000	Parcel A1	4.394	-0.056	0.000	0.13	0.0	28.8	OK
23.001	As-built SA8	4.349	0.361	0.000	0.62	0.0	24.8	SURCHARGED
24.000	Non Resi	4.504	0.054	0.000	0.04	0.0	12.1	SURCHARGED
24.001	SW Stub 02	4.721	0.856	0.000	0.12	0.0	4.4	SURCHARGED
23.002	SW-LYM 03/1	4.333	0.538	0.000	0.80	0.0	33.6	SURCHARGED
21.002	SW-LYM 03	4.363	0.788	0.000	1.55	0.0	51.2	SURCHARGED
21.003	SW-LYM 04	4.333	0.808	0.000	0.85	0.0	53.0	SURCHARGED
25.000	SW-LYM 07	4.357	0.262	0.000	0.59	0.0	23.7	SURCHARGED
25.001	SW-LYM 08	4.343	0.448	0.000	0.84	0.0	53.2	SURCHARGED
26.000	PBA 01	12.320	-0.105	0.000	0.55	0.0	44.7	OK
26.001	PBA 02	10.552	-0.073	0.000	0.77	0.0	83.8	OK
26.002	PBA 03	9.700	1.275	0.183	1.34	0.0	101.5	FLOOD
26.003	SW-LYM 05	5.701	-0.139	0.000	0.55	0.0	107.3	OK
21.004	SW-LYM 10	4.273	0.903	0.000	1.39	0.0	183.7	SURCHARGED
21.005	SW-LYM11	3.222	0.792	0.000	1.13	0.0	235.3	SURCHARGED
27.000	ExSB17_Dum Node	4.043	0.118	0.000	0.86	0.0	62.3	SURCHARGED
21.006	SW-LYM 12	3.759	0.789	0.000	1.36	0.0	289.6	SURCHARGED
21.007	SW-LYM 13	3.317	0.827	0.000	1.32	0.0	276.3	SURCHARGED
23.000	C2 Resiblock B	3.754	1.023	0.000	1.80	0.0	63.1	SURCHARGED
28.001	SW-LYM 14/1	3.427	0.822	0.000	2.09	0.0	72.9	SURCHARGED
21.008	SW-LYM 14	2.922	0.502	0.000	0.48	0.0	110.8	SURCHARGED
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Mayer Brown Ltd				Page 4				
Lion House		Littlehampton						
Oriental Road		Overall Surface Network						
Woking GU22 8AR		West of Wetlands						
Date November 2017		Designed by S Foley						
File Test_Simulation_Tank ...		Checked by						
XP Solutions		Network 2013.1						
Summary of Critical Results by Maximum Level (Rank 1) for Storm								
PN	US/MH Name	Water Level (m)	Surch'd Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
21.009	SW-LYM 15	2.783	0.458	0.000	0.45	0.0	109.4	SURCHARGED
29.000	Car Park	4.588	0.638	0.000	0.03	0.0	5.5	SURCHARGED
29.001	Car Park	4.709	1.159	0.000	0.10	0.0	4.3	FLOOD RISK
30.000	Non Resi	3.243	0.093	0.000	0.03	0.0	5.1	SURCHARGED
30.001	SW Stub	3.296	0.471	0.000	0.10	0.0	3.7	SURCHARGED
31.000	SW06	3.643	-0.132	0.000	0.36	0.0	33.8	OK
32.000	Non Resi	3.179	0.029	0.000	0.02	0.0	5.1	SURCHARGED
32.001	SW Stub 07	3.192	0.467	0.000	0.08	0.0	3.7	SURCHARGED
33.000	SW07	3.624	0.333	0.000	1.37	0.0	55.3	SURCHARGED
33.000	SW10	3.374	0.359	0.000	0.57	0.0	19.2	SURCHARGED
33.001	SW11	3.323	0.418	0.000	0.96	0.0	38.1	SURCHARGED
33.002	SW12	3.372	0.427	0.000	1.40	0.0	55.7	SURCHARGED
33.003	SW13	2.718	0.188	0.000	0.21	0.0	18.1	SURCHARGED
30.003	SW14	2.707	0.307	0.000	0.28	0.0	39.0	SURCHARGED
30.004	SW15	2.693	0.443	0.000	0.24	0.0	38.0	SURCHARGED
21.010	SW16	2.675	0.115	0.000	0.22	0.0	129.6	SURCHARGED
20.001	SW17	2.674	0.144	0.000	0.14	0.0	122.6	SURCHARGED
34.000	Plots 47-55	2.731	-0.094	0.000	0.63	0.0	28.0	OK
20.002	SW18	2.687	0.292	0.000	0.16	0.0	122.3	SURCHARGED
1.015	Outfall B-05	2.695	0.385	0.000	0.28	0.0	225.2	SURCHARGED
35.000	SW19	2.695	0.100	0.000	0.47	0.0	18.6	SURCHARGED
35.001	SW20	2.703	0.338	0.000	0.94	0.0	37.2	SURCHARGED
36.000	SW21	2.695	0.310	0.000	0.16	0.0	6.3	SURCHARGED
1.016	Outfall B-06	2.678	0.953	0.000	0.63	0.0	216.9	SURCHARGED
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Mayer Brown Ltd		Page 1
Lion House	Littlehampton	
Oriental Road	Overall Surface Network	
Woking GU22 8AR	West of Wetlands	
Date November 2017	Designed by S Foley	
File Test_Simulation_Tank ...	Checked by	
XP Solutions	Network 2013.1	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

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 Offline Controls	1	Number of Time/Area Diagrams	0
Number of Online Controls	14	Number of Storage Structures	14	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	D3 (1km)	0.407
Site Location	GB 502850 104400 TQ 02850 04400	E (1km)	0.314
C (1km)	-0.027	F (1km)	2.329
D1 (1km)	0.393	Cv (Summer)	0.750
D2 (1km)	0.274	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	ON
Inertia Status	ON

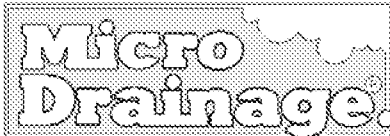
Profile(s)

Duration(s) (mins)	15, 30, 60, 120, 240, 360, 480, 960, 1440	Winter
Return Period(s) (years)		2
Climate Change (%)		0

PN	Storm	Return Period	Climate Change	First X Surchage	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
1.000	15 Winter	2	0%					
1.001	15 Winter	2	0%					
2.000	480 Winter	2	0%					
2.001	480 Winter	2	0%	2/15 Winter				
1.002	15 Winter	2	0%					
3.000	60 Winter	2	0%					
3.001	60 Winter	2	0%	2/15 Winter				
1.003	15 Winter	2	0%					
1.004	15 Winter	2	0%					
4.000	120 Winter	2	0%					
4.001	120 Winter	2	0%	2/30 Winter				
1.005	15 Winter	2	0%					
1.006	15 Winter	2	0%					
5.000	240 Winter	2	0%					
5.001	240 Winter	2	0%	2/15 Winter				
5.002	30 Winter	2	0%				0	
1.007	30 Winter	2	0%					
6.000	30 Winter	2	0%					
6.001	30 Winter	2	0%					
1.008	30 Winter	2	0%					
7.000	30 Winter	2	0%					
7.001	30 Winter	2	0%					
1.009	30 Winter	2	0%					
8.000	15 Winter	2	0%					
9.000	15 Winter	2	0%					
10.000	15 Winter	2	0%					
8.001	15 Winter	2	0%					
1.010	30 Winter	2	0%					
11.000	480 Winter	2	0%					
11.001	480 Winter	2	0%	2/15 Winter				
12.000	15 Winter	2	0%					
1.011	30 Winter	2	0%					
1.012	60 Winter	2	0%					
13.000	15 Winter	2	0%					
14.000	15 Winter	2	0%					
15.000	15 Winter	2	0%					

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Mayer Brown Ltd				Page 2				
Lion House		Littlehampton						
Oriental Road		Overall Surface Network						
Woking GU22 8AR		West of Wetlands						
Date November 2017		Designed by S Foley						
File Test_Simulation_Tank ...		Checked by						
XP Solutions		Network 2013.1						
Summary of Critical Results by Maximum Level (Rank 1) for Storm								
PN	Storm	Return Climate Period Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.	
1.013	60 Winter	2 0%						
16.000	60 Winter	2 0%						
1.014	60 Winter	2 0%						
17.000	15 Winter	2 0%						
18.000	15 Winter	2 0%						
19.000	15 Winter	2 0%						
17.001	15 Winter	2 0%						
20.000	15 Winter	2 0%						
21.000	15 Winter	2 0%						
22.000	360 Winter	2 0%						
22.001	360 Winter	2 0%	2/15 Winter					
21.001	15 Winter	2 0%						
23.000	60 Winter	2 0%						
23.001	60 Winter	2 0%	2/15 Winter					
24.000	360 Winter	2 0%						
24.001	360 Winter	2 0%	2/15 Winter					
23.002	60 Winter	2 0%						
21.002	60 Winter	2 0%	2/15 Winter					
21.003	60 Winter	2 0%						
25.000	15 Winter	2 0%						
25.001	15 Winter	2 0%						
26.000	15 Winter	2 0%						
26.001	15 Winter	2 0%						
26.002	15 Winter	2 0%						
26.003	15 Winter	2 0%						
21.004	15 Winter	2 0%						
21.005	15 Winter	2 0%						
27.000	480 Winter	2 0%						
21.006	15 Winter	2 0%						
21.007	15 Winter	2 0%						
28.000	15 Winter	2 0%						
28.001	15 Winter	2 0%						
21.008	15 Winter	2 0%						
21.009	240 Winter	2 0%						
29.000	240 Winter	2 0%	2/15 Winter					
29.001	240 Winter	2 0%	2/15 Winter					
30.000	480 Winter	2 0%						
30.001	480 Winter	2 0%	2/60 Winter					
31.000	15 Winter	2 0%						
32.000	120 Winter	2 0%						
32.001	120 Winter	2 0%	2/15 Winter					
30.002	15 Winter	2 0%						
33.000	15 Winter	2 0%						
33.001	15 Winter	2 0%						
33.002	15 Winter	2 0%						
33.003	15 Winter	2 0%						
30.003	15 Winter	2 0%						
30.004	240 Winter	2 0%						
21.010	240 Winter	2 0%						
20.001	240 Winter	2 0%						
34.000	15 Winter	2 0%						
20.002	240 Winter	2 0%						
1.015	60 Winter	2 0%						
35.000	15 Winter	2 0%						
35.001	15 Winter	2 0%						
36.000	15 Winter	2 0%						
1.016	60 Winter	2 0%	2/15 Winter					
PN	US/MH Name	Water Level (m)	Surch'd Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	TL_SW01	5.249	-0.221	0.000	0.14	0.0	9.9	OK
1.001	TL_SW02	5.013	-0.206	0.000	0.21	0.0	14.0	OK
2.000	Parcel A2_1	5.397	-0.103	0.000	0.03	0.0	3.7	OK
2.001	Parcel A2_2	5.394	0.244	0.000	0.22	0.0	2.9	SURCHARGED
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Mayer Brown Ltd						Page 3		
Lion House Oriental Road Woking GU22 8AR			Littlehampton Overall Surface Network West of Wetlands					
Date November 2017			Designed by S Foley					
File Test_Simulation_Tank ...			Checked by					
XP Solutions			Network 2013.1					
Summary of Critical Results by Maximum Level (Rank 1) for Storm								
PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.002	TL_SW03	4.875	-0.181	0.000	0.33	0.0	21.5	OK
3.000	Parcel B6_1	5.148	-0.152	0.000	0.07	0.0	6.5	OK
3.001	Parcel B6_2	5.144	0.194	0.000	0.30	0.0	3.8	SURCHARGED
1.003	TL_SW04	4.774	-0.161	0.000	0.41	0.0	28.6	OK
1.004	TL_SW05	4.504	-0.131	0.000	0.57	0.0	41.0	OK
4.000	Parcel B1&CH_1	4.327	-0.173	0.000	0.14	0.0	7.8	OK
4.001	Parcel B1&CH 2	4.319	0.034	0.000	0.58	0.0	7.7	SURCHARGED
1.005	Ex. SB10	4.099	-0.111	0.000	0.71	0.0	48.6	OK
1.006	Ex. SB9	3.969	-0.101	0.000	0.75	0.0	53.3	OK
5.000	Block B_1	4.667	-0.133	0.000	0.04	0.0	6.7	OK
5.001	Block B_2	4.663	0.608	0.000	0.31	0.0	4.3	SURCHARGED
5.002	Ex. SB17	3.775	-0.175	0.000	0.16	0.0	10.6	OK
1.007	Ex. SB8	3.765	-0.035	0.000	0.99	0.0	61.8	OK
6.000	BovisA_1	4.254	-0.221	0.000	0.26	0.0	31.0	OK
6.001	BovisA_2	4.218	-0.157	0.000	0.08	0.0	30.9	OK
1.008	Ex SB7	3.358	-0.142	0.000	0.70	0.0	95.2	OK
7.000	BovisB_1	3.538	-0.237	0.000	0.25	0.0	38.5	OK
7.001	BovisB_2	3.490	-0.110	0.000	0.15	0.0	38.3	OK
1.009	Dummy Node	3.108	-0.067	0.000	1.00	0.0	129.1	OK
8.000	SW01	3.146	-0.194	0.000	0.25	0.0	17.7	OK
9.000	Plots 117-126	3.103	-0.122	0.000	0.39	0.0	17.2	OK
10.000	Plots 101-116	3.117	-0.108	0.000	0.54	0.0	23.9	OK
8.001	SW02	3.086	-0.044	0.000	0.98	0.0	54.8	OK
1.010	Ex SB6	2.921	-0.154	0.000	0.76	0.0	145.2	OK
11.000	Ret Block A	3.171	-0.129	0.000	0.07	0.0	3.7	OK
11.001	Ret Block A	3.167	0.117	0.000	0.18	0.0	3.2	SURCHARGED
12.000	Plots 95-100	3.073	-0.152	0.000	0.23	0.0	10.5	OK
1.011	Outfall B-01	2.746	-0.174	0.000	0.69	0.0	152.0	OK
1.012	Outfall B-02	2.590	-0.150	0.000	0.73	0.0	152.4	OK
13.000	SW03	2.740	-0.120	0.000	0.61	0.0	41.1	OK
14.000	Plots 80-86	2.623	-0.152	0.000	0.23	0.0	14.6	OK
15.000	Plots 87-94	2.624	-0.151	0.000	0.24	0.0	16.7	OK
1.013	Outfall B-03	2.516	-0.084	0.000	0.92	0.0	171.2	OK
16.000	C2 Resiblock A	2.387	-0.113	0.000	0.17	0.0	11.0	OK
1.014	Outfall B-04	2.381	-0.059	0.000	1.00	0.0	177.1	OK
17.000	SW04	2.462	-0.158	0.000	0.42	0.0	27.9	OK
18.000	Plots 60-73	2.665	-0.160	0.000	0.18	0.0	10.0	OK
19.000	Plots 74-78	2.670	-0.155	0.000	0.22	0.0	11.6	OK
17.001	SW05	2.304	-0.096	0.000	0.79	0.0	49.9	OK
20.000	Plots 39-46	3.135	-0.180	0.000	0.09	0.0	10.9	OK
21.000	SW-LYM 01	3.832	-0.133	0.000	0.33	0.0	8.6	OK
22.000	Non resi	4.178	-0.272	0.000	0.02	0.0	4.8	OK
22.001	Non resi	4.176	0.231	0.000	0.11	0.0	3.4	SURCHARGED
21.001	SW-LYM 02	3.740	-0.125	0.000	0.40	0.0	15.4	OK
23.000	Parcel A1	4.135	-0.315	0.000	0.12	0.0	27.0	OK
23.001	As-built SA8	4.104	0.116	0.000	0.62	0.0	24.7	SURCHARGED
24.000	Non Resi	4.188	-0.262	0.000	0.02	0.0	5.1	OK
24.001	SW Stub 02	4.191	0.326	0.000	0.10	0.0	3.7	SURCHARGED
23.002	SW-LYM 03/1	3.705	-0.090	0.000	0.67	0.0	28.1	OK
21.002	SW-LYM 03	3.605	0.030	0.000	1.15	0.0	38.0	SURCHARGED
21.003	SW-LYM 04	3.399	-0.126	0.000	0.64	0.0	39.6	OK
25.000	SW-LYM 07	3.943	-0.152	0.000	0.23	0.0	9.2	OK
25.001	SW-LYM 08	3.758	-0.137	0.000	0.33	0.0	20.6	OK
26.000	PBA 01	12.271	-0.154	0.000	0.21	0.0	17.3	OK
26.001	PBA 02	10.480	-0.145	0.000	0.27	0.0	29.1	OK
26.002	PBA 03	7.318	-0.107	0.000	0.54	0.0	41.2	OK
26.003	SW-LYM 05	5.638	-0.202	0.000	0.23	0.0	44.2	OK
21.004	SW-LYM 10	3.223	-0.142	0.000	0.69	0.0	91.4	OK
21.005	SW-LYM11	2.926	-0.204	0.000	0.57	0.0	113.9	OK
27.000	ExSB17_Dum Node	3.700	-0.225	0.000	0.00	0.0	0.0	OK
21.006	SW-LYM 12	2.760	-0.210	0.000	0.55	0.0	116.4	OK
21.007	SW-LYM 13	2.485	-0.205	0.000	0.56	0.0	117.8	OK
28.000	C2 Resiblock B	2.669	-0.056	0.000	0.89	0.0	29.7	OK
28.001	SW-LYM 14/1	2.564	-0.041	0.000	1.00	0.0	34.8	OK
21.008	SW-LYM 14	2.231	-0.189	0.000	0.63	0.0	147.6	OK
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Mayer Brown Ltd						Page 4		
Lion House Oriental Road Woking GU22 8AR			Littlehampton Overall Surface Network West of Wetlands					
Date November 2017			Designed by S Foley					
File Test_Simulation_Tank ...			Checked by					
XP Solutions			Network 2013.1					
Summary of Critical Results by Maximum Level (Rank 1) for Storm								
PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
21.009	SW-LYM 15	2.130	-0.195	0.000	0.29	0.0	69.0	OK
29.000	Car Park	4.517	0.567	0.000	0.03	0.0	5.4	SURCHARGED
29.001	Car Park	4.557	1.007	0.000	0.10	0.0	4.2	SURCHARGED
30.000	Non Resi	2.915	-0.235	0.000	0.02	0.0	4.4	OK
30.001	SW Stub	2.918	0.093	0.000	0.08	0.0	3.3	SURCHARGED
31.000	SW06	3.606	-0.169	0.000	0.14	0.0	13.1	OK
32.000	Non Resi	2.855	-0.295	0.000	0.02	0.0	5.1	OK
32.001	SW Stub 07	2.854	0.129	0.000	0.08	0.0	3.4	SURCHARGED
30.002	SW07	2.539	-0.086	0.000	0.68	0.0	27.5	OK
33.000	SW10	2.873	-0.142	0.000	0.28	0.0	9.5	OK
33.001	SW11	2.791	-0.114	0.000	0.48	0.0	19.0	OK
33.002	SW12	2.658	-0.087	0.000	0.68	0.0	27.5	OK
33.003	SW13	2.368	-0.162	0.000	0.42	0.0	35.9	OK
30.003	SW14	2.254	-0.146	0.000	0.52	0.0	71.0	OK
30.004	SW15	2.093	-0.157	0.000	0.15	0.0	22.8	OK
21.010	SW16	2.080	-0.480	0.000	0.25	0.0	148.6	OK
20.001	SW17	2.078	-0.452	0.000	0.17	0.0	144.4	OK
34.000	Plots 47-55	2.676	-0.149	0.000	0.24	0.0	10.9	OK
20.002	SW18	2.061	-0.334	0.000	0.17	0.0	124.2	OK
1.015	Outfall B-05	2.043	-0.267	0.000	0.20	0.0	160.8	OK
35.000	SW19	2.436	-0.159	0.000	0.18	0.0	7.4	OK
35.001	SW20	2.232	-0.133	0.000	0.35	0.0	13.7	OK
36.000	SW21	2.257	-0.128	0.000	0.39	0.0	15.4	OK
1.016	Outfall B-06	1.979	0.254	0.000	0.45	0.0	154.9	SURCHARGED
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APPENDIX I: Windes – 1 in 1yr Simulation Results