



Land North of Toddington Lane, Littlehampton

Drainage Technical Note

Project	Land North of Toddington Lane, Littlehampton	Date	27th March 2017
Note	Surface and Foul Drainage Technical Note	Ref	A100789/RM
Author	Mark Prosser	Rev	-

1.0 Introduction

WYG have been commissioned by Persimmon Homes Thames Valley (the Developer) to carry out a detailed foul and surface water drainage strategy to support a Reserved Matters application in relation to Arun District Council planning application reference LU/47/11 for a development on Land North of Toddington Lane, Littlehampton (the Development).

This technical note has been produced in support of the discharge of Conditions 10, 11, 12 and 13 of the Outline Consent dated 23 January 2013 in relation to a partial development of Parcels B2, B4 and C1.

2.0 Background & Existing Site

The Developer has received outline consent for the demolition of existing buildings and construction of up to 1,260 dwellings up to 13,000 sqm of B1 employment floorspace (including 3,000 sqm Enterprise Centre), up to 3,500 sqm of Class A local facilities, a 100 bed hotel, 60 bed care home, a new 2 Form Entry primary school, community centre, youth and leisure facilities, combined heat & power plant, extension to existing household recycling centre, landscaping, replacement and additional allotments, multi-functional green infrastructure including sports pitches (& associated changing facilities), informal open space, children's play areas, primary vehicular access from a new access from the A259 bridging over the railway line with additional access from Mill Lane & Toddington Lane.

The Development will be delivered in phases, the first phase comprising Parcels A1, B3 and B5 have received full consent and are currently under construction with B3 and B5 being constructed by a separate Developer, Bovis Homes.

This technical note relates to the requirements of Conditions 10 to 13 for Phase 2 of the Development encompassing 126 units from parts of Parcels B2, B4 and C1. It also demonstrates how the detailed strategy for this Phase will tie into the overall site-wide drainage strategy submitted as part of the Outline Consent.



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The technical note should be read in conjunction with the site wide Drainage Strategy and Flood Risk Assessment (FRA) that supported the Outline Consent together with the surface and foul drainage strategies produced by Glanville Consultants to support the Reserved Matters application for Phase 1 of the Development.

3.0 Proposed Site Development

The proposed Development covered by this application comprises the construction of the Phase 2 works of 126 residential units. 114 units have previously received Reserved Matters approval and are currently under construction. The extents of the application are shown on Persimmon Homes drawing 543_PL_Site Layout_100 attached as Appendix A.

4.0 Phase 2 Surface Water Drainage Strategy

As some of the site is being developed from permeable to impermeable area, the risk of flooding downstream will increase. In order to mitigate this issue a suitable Drainage Strategy is to be put in place as required by Condition 10.

A site-wide drainage strategy, issued with the Outline Planning Application, set out the agreed principles for discharging surface water. The preferred method of disposal for surface water is infiltration but the drainage strategy demonstrated that this was not feasible at this site. The second preference is for disposal into a watercourse and the site-wide strategy provided several points of discharge from the Development into existing watercourses that connect into the Black Ditch, an ordinary watercourse and tributary of the River Arun. The majority of the site area covered by the Phase 2 works was envisaged to discharge via Outfall B. Our drawing A100789/505 included in Appendix B shows the detailed drainage strategy for area covered by this application in context of the overall strategy for the Development.

Appendix C includes our drawing A100789/500 Rev. B which shows the detailed surface and foul drainage strategy for the Phase 2 application site. The design takes account of upstream flow of 120 l/s from the Bovis developments of Parcels B3 and B5 that are currently under construction together with 15.5 l/s of flow from future development of other parcels that are intended to discharge via Outfall B (Parcels A2, B1, B6, Retail / Resi Block A and Retail / Resi Block B). These parcels will be attenuated locally to discharge into the system as shown on drawing 500 Rev. B.



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All proposed surface water from the application site has been designed to connect into the piped system that will discharge at Outfall B. A Hydrobrake has been proposed in the final chamber to restrict the discharge rate to 163.6 l/s based on a catchment of 10.91 hectares and the discharge rate of 15l/s/ha as agreed in the FRA undertaken for the Outline Application. Storage will be provided in the form of a cellular crate tank system to be constructed beneath the area of the proposed public parking square (the construction of the parking square itself is not a part of this application). This storage tank has been designed to accommodate storage for a 1:100 year return period + 30% climate change for flows from the application site, the future development of the public parking square, the apartments within Parcel C1, upstream flow of 15.5 l/s from future development of Parcels A2, B1, B6 and Retail / Resi Block B, 5 l/s from the future development of Retail / Resi Block A as well as the 120 l/s flow from Parcels B3 and B5 that are currently under construction. The incoming flows from the parcels outside of the application site will be attenuated to the above rates via additional flow control devices and storage during the detailed design of the relevant phase(s). Our calculations in support of this drainage design are included as Appendix D.

It is intended that the remaining areas of Parcels B2, B4 and C1 that are not covered within this application will be attenuated and discharge into the central wetland area. Full details for that area will be included within the relevant planning application.

As required by Condition 12, Discharge Consent for Outfall B has been obtained from the Environment Agency (EA) under Consent Number SE_WS_2015_311_2 dated 30 July 2015 and included within Appendix E of this note.

It is intended that the main sewer run identified on drawing 500 Rev. B connecting the upstream development, proposed and under construction, to Outfall B will be offered for adoption by Southern Water under a Section 104 Agreement and future maintenance of this section of sewer will fall to Southern Water. Access to this network will be provided in the form of agreed easements for any sections of sewer that are outside adopted highway. The remaining surface water drainage for the Phase 2 works covered by this Reserved Matters application, including the proposed storage tank, will remain private and will be maintained by a Management Company to be appointed by the Developer. Details of a typical maintenance regime for the proposed system are attached as Appendix F.



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5.0 Foul Water Drainage Strategy

Southern Water have confirmed that Ford Treatment Works has sufficient capacity to accommodate the foul drainage from the whole development. They have also confirmed that both the foul sewer runs in Mill Lane and Toddington Lane fall to Littlehampton pumping station, located on Sea Road.

The site-wide drainage strategy report identified two potential discharge points for foul drainage; one to the west of site in Lyminster Road, and one to the south of the site in Toddington Lane. Three further potential discharge points have been identified to the west of the site within Mill Lane, Granary Way and Fullers Walk.

In order to utilise the potential discharge point in Fullers Walk a S98 sewer requisition would be required as the option would pass through adjacent third party land. If the potential discharge point in Granary Way is to be used, further confirmation of land ownership would be required.

Southern Water have previously been consulted in respect of the outline application for the whole site and the Phase 1 works. They have identified that significant existing sewer upgrade works will be necessary to accept foul water from the whole development. These upgrade works will require either upgrading existing foul sewers or laying additional parallel sewers to take the foul drainage from the site to a point where sufficient capacity is available.

Southern Water provided a Budget Estimate Offer in June 2012 of £3.04m for the construction of 4.75km of two rising mains in parallel directly to Ford Treatment Works that will serve the entire development of 1260 homes and associated uses.

A Section 98 application was submitted by the Developer to Southern Water in January 2015 and the design / cost estimate for these works is currently awaited.

It has previously been agreed as part of the Phase 1 works that foul drainage will discharge into the adopted manhole located west of the site in Mill Lane, opposite Granary Way, referenced as EXFWMH9914 via a proposed pumping station that is to be constructed in the south-western corner of the Phase 2 boundary.



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An allowance for connection into this system for up to 100 residential units prior to completion of the downstream upgrade works has been agreed with Southern Water. However, discussions are in place for this allowance to be increased subject to the signing of the S98 Agreement. The pumping station has been designed to provide 24 hour storage to enable discharge into the existing network to take place at off-peak times due to the restricted capacity. A flow monitor is fitted to the system downstream of the site and in the event that flows exceed capacity a warning will be provided at which point the pumping station would be switched off and emptied by tanker.

Foul flow from the 126 units included within this application has been calculated as 5.83l/s based on 4000 litres/dwelling/day as required by Sewers for Adoption 7th Edition. Our calculations are included in Appendix G.

It is proposed that the foul drainage for the works covered by this Reserved Matters application will connect by means of a gravity system to the proposed pumping station and from there conveyed by the rising main serving the Phase 1 works to the point of connection in Mill Lane. The detailed layout of the proposed foul sewer system is shown on drawing 500 Rev. B in Appendix C.

6.0 Summary and Conclusion

It is proposed that the surface water from the Phase 2 works covered by this Reserved Matters application will discharge at the restricted rate of 15l/s/ha as set out in the approved FRA into the watercourse at Outfall B for which discharge consent has been granted by the EA. The system has been designed to include sufficient storage to allow for previously agreed flow rates from current and future developments connected to the Outfall B network.

Maintenance of the main carrier sewer will be undertaken by Southern Water who are to adopt the system under a S104 Agreement with the maintenance of the remainder of the system being undertaken by an appointed Management Company.

Foul drainage will be conveyed via a new gravity sewer system to a new pumping station and pumped to the existing public foul sewer at an agreed connection point in Mill Lane. Downstream improvement works will be undertaken by Southern Water to provide capacity for the full site and in the event of permitted flows being exceeded before this work is completed the pumping station will be shut down and waste taken away in tankers until flow rates return to an acceptable level.

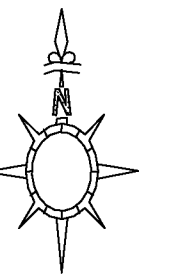
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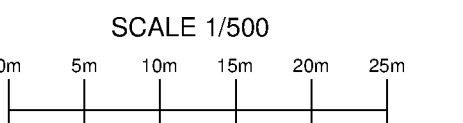


APPENDIX A

PROPOSED DEVELOPMENT LAYOUT



Littlehampton Phase 2	SGF	NO ON SITE	TOTAL SGF
Market:			
Albion	838	13	8294
Harbour	761	16	12178
Souter	951	18	17118
Hartfield	969	8	7752
Clayton	999	5	4995
Greyfriars	1068	6	6408
Leicester	1162	6	6972
Lumley	1220	5	6100
Chesham	1222	2	2444
Wolsey	1330	8	10712
Corfe	1414	3	4242
Total Market		90	87213
HA Shared Ownership			
WP2420A	803	14	11242
WP3620C	909	2	1818
WP3625A	1200	4	4800
HA Social Rented			
WP2420A	803	6	4818
WP3625A	1200	2	2400
WPLTH9320A	1014	1	1014
WPLTH9320C-01	1014	1	1014
HA-F, 2bed, 4 person	756	4	3024
HA-F-WH, 2 bed, 3 person	756	2	1512
		16	13782
Total HA (28.5%)		36	31642
TOTAL ON SITE		126	118855



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-	-	-
Rev		Date

**PERSIMMON**
Together, we make a home
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Tel: 01276 808080

Site:	Phase 2 Littlehampton	Date:	February 2017
Scale:	1:500 @ A1		
Dwg No:	543_PL_SITE LAYOUT_100		

Drawing Title:	Site Layout - INFORMATION
Drawing Status:	SUBMITTED
Drawn:	KJ
Rev:	-

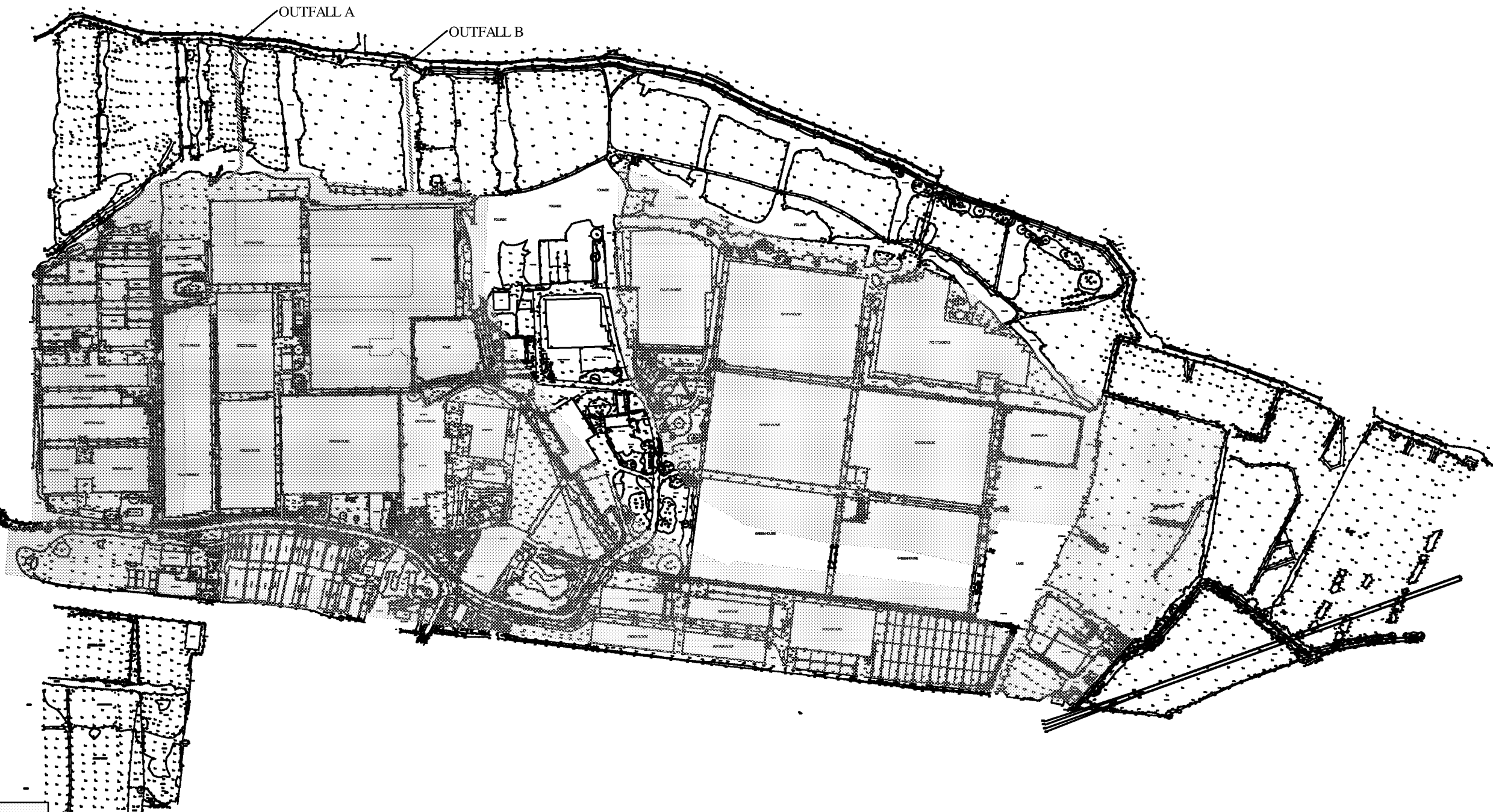
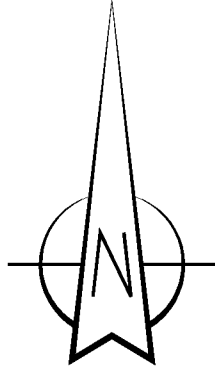
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APPENDIX B

SITE-WIDE DRAINAGE STRATEGY



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REV	DETAILS	DRAWN	CHECKED	DATE

KEY

 OUTFALL A CATCHMENT

 OUTFALL B CATCHMENT

 FUTURE PHASES - DETAILS TBC AT FUTURE DESIGN
BASED ON APPROVED OUTLINE STRATEGY

 APPLICATION BOUNDARY PHASE 2

PROJECT: NORTH LITTLEHAMPTON

DRAWING TITLE: SITE WIDE DRAINAGE STRATEGY

DRAWN: MRM	CHECKED: MP	DATE: 30.03.2017	SCALE: 1:5000	SHEET SIZE: A3
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CLIENT: PERSIMMON

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