

Our ref: 0425/87tn1

21st July 2022

MILLER HOMES

DRAINAGE STRATEGY STATEMENT FOR DEVELOPMENT AT GYPSY LANE, WOMBWELL

1. Introduction

- 1.1 Miller Homes is preparing an application to discharge conditions associated with the previously granted planning permission for a residential development on land at 58 Lundhill Road, Wombwell, Barnsley, S73 0RJ. The Barnsley Council reference for the previously granted planning permission is 2019/0089. The consented proposals are for the construction of 235 residential dwellings with associated access, car parking, landscaping and public open space.
- 1.2 The original planning application was supported by an outline drainage strategy prepared by Shaun Tonge Engineering in November 208, as set out in the following drawings:
 - STE-18-12-01-01 Drainage strategy Foul
 - STE-18-12-01-02 Drainage strategy Surface water
- 1.3 Condition 10 of planning permission 2019/0089 requires that "No development shall take place until: (a) Full foul and surface water drainage details, including a scheme to reduce surface water run off by at least 30% and a programme of works for implementation, have been submitted to and approved in writing by the Local Planning Authority; (b) Porosity tests are carried out in accordance with BRE 365, to demonstrate that the subsoil is suitable for soakaways; (c) Calculations based on the results of these porosity tests to prove that adequate land area is available for the construction of the soakaways."

- 1.4 To support the Discharge of Conditions application, this Drainage Strategy Statement has been prepared to confirm the final proposed foul and surface water drainage strategy for the development, which has been progressed by further on-site investigations and additional detailed design since the original outline drainage strategy was defined.
- 1.5 This statement should be read in conjunction with the following ARP drawings and calculations:

•	0425-87-03.01	Section 104 Layout – Sheet 1 of 2
•	0425-87-03.02	Section 104 Layout – Sheet 2 of 2
•	0425-87-07.01	Typical Drainage Details – Sheet 1 of 2
•	0425-87-07.02	Typical Drainage Details – Sheet 2 of 2
•	0425-87-09.01	Impermeable Area Plan – Sheet 1 of 2
•	0425-87-09.02	Impermeable Area Plan – Sheet 2 of 2
•	0425-87-09.03	Gully Catchment Area Plan – Sheet 1 of 2
•	0425-87-09.04	Gully Catchment Area Plan – Sheet 2 of 2
•	425-87 V1 - Network 1	Surface Water Hydraulic Calculations – Network 1
•	425-87 V1 - Network 2	Surface Water Hydraulic Calculations – Network 2

- 1.6 The statement should also be read in conjunction with Eastwood Consulting Engineers letter report PR/AJK/47055/004 'Report on Soakaway Testing' (dated 18th July 2022) which is included in Appendix 2.
- 1.7 This report has been initially prepared for the use and reliance of the Client only. The report shall not be relied upon or transferred to any other parties without the written agreement of ARP Associates. For the avoidance of any doubt, where ARP Associates enters into a letter of reliance for the benefit of a third party, that third party will be permitted to rely on the report. No responsibility will be accepted where this report is used, either in its entirety or in part, by any other party without ARP Associates consent.
- Attention is drawn to the requirements of the Construction Design and Management Regulations
 2015, and in particular, the duties and obligations of the Client.

2. <u>Surface Water Drainage Strategy</u>

- 2.1 <u>Existing Surface Water Run-off</u> The site is currently undeveloped 'greenfield' land with no known existing formal surface water drainage system, although the presence of existing land drainage cannot be discounted. Some runoff is currently likely to infiltrate, but more likely the majority simply runs towards the lowest areas of the site.
- 2.2 <u>Proposed Surface Water Runoff Destination</u> The proposed means of managing surface water runoff from the proposed development has been considered with respect to the hierarchy set out in Building Regulations Part H (2010) as follows:
 - 2.2.1 Infiltration The outline surface water drainage strategy prepared by Shaun Tonge Engineering in November 2018 (drawing STE-18-12-01-02) proposed the use of infiltration for the drainage of individual plots in some areas of the site. This proposal was based on initial intrusive ground investigations and infiltration testing which had been undertaken by Hamson Barron Smith in May 2018. This initial infiltration testing was undertaken at four locations, which produced variable results.
 - 2.2.2 Further intrusive site investigation works were undertaken by Eastwood Consulting Engineers in December 2018 and April 2022, which included additional soakaway test locations.
 - 2.2.3 A detailed summary and further interpretation of the outcomes of both the original Hamson Barron Smith May 2018 investigation and the two further investigations by Eastwood Consulting Engineers has been prepared by Eastwood Consulting Engineers, and is documented in letter report PR/AJK/47055/004 'Report on Soakaway Testing' (dated 18th July 2022) which is included in Appendix 2. This overarching report concludes that the drainage of surface water from the development by infiltration is simply not feasible in some areas of the site, and is not appropriate in other areas of the site. On this basis the use of soakaways has now been discounted.
 - 2.2.4 *Watercourse* There are no watercourses within or adjacent to the site which can serve as a point of discharge for surface water.

- 2.2.5 *Public Sewer* Yorkshire Water public sewer records (included in Appendix 1 for reference) show that there is an existing 150mm diameter surface water public sewer in Lundhill Road to the south of the site, and the head of an existing 225mm diameter surface water public sewer is located in Gypsy Lane approximately 70m east of the site. The outline surface water drainage strategy prepared by Shaun Tonge Engineering in November 2018 (drawing STE-18-12-01-02) proposed the discharge of surface water from roads and plots in areas where infiltration had been deemed to be unsuitable, to the above surface water public sewers, via two points of connection.
- 2.2.6 It was proposed that surface water from the south-western part of the site would be drained to the existing 150mm diameter surface water public sewer in Lundhill Road (at a point near its junction with Gypsy Lane), whilst surface water from the north-eastern part of the site would be drained to the 225mm foul public sewer in Gypsy Lane (at a point to the east of the site). It was proposed that the discharge from each network would be made at a restricted rate, with attenuation provided by means of an attenuation tank located at the downstream end of each network.
- 2.2.7 As set out above, through further investigation it has been concluded that the drainage of individual plots by infiltration is not appropriate. Therefore, it is proposed that surface water runoff from all areas of the site shall be discharged to the surface water public sewers. The current proposals for surface water drainage, as shown in ARP drawings 0425-87-03.01 and 0425-87-03.02, follow the same principles as the original strategy in terms of the two points of discharge to the public sewer. However, there is an increase in the impermeable area draining to each point, due to the move away from the use of infiltration.
- 2.3 <u>Attenuation and Storage</u> It is a requirement of the NPPF to ensure that surface water run-off from any proposed development has negligible consequence downstream. The discharge of surface water to the public sewer shall therefore be restricted to 3.5l/s at each of the two outfalls.
- 2.4 As per the requirements of the Lead Local Flood Authority, the proposed surface water systems have been designed to accommodate a 1 in 30 year storm event without flooding, and to accommodate the 1 in 100 year plus 40% climate change allowance event without causing flooding of property or third-party land.

- 2.5 As shown in ARP drawings 0425-87-09.01 and 0425-87-09.02, the proposed impermeable area of the south-western area of the site (surface water Network 1, draining to the sewer in Lundhill Road) has been determined to be 2.139ha, and the proposed impermeable area of the north-eastern area of the site (surface water Network 2, draining to the sewer in Gypsy Lane) has been determined to be 1.397ha.
- 2.6 Based on the above limiting discharge rates and proposed impermeable areas, detailed hydraulic calculations have been prepared for each surface water network. The calculations show that, to accommodate the 1 in 100 year plus 40% climate change allowance event, a tank of approximately 2,033m³ is required at the downstream end of Network 1, and a tank of approximately 1,095m³ is required at the downstream end of Network 2. The proposed tanks and the proposed discharge arrangements are shown in ARP drawings 0425-87-03.01 and 0425-87-03.02.
- 2.7 <u>Exceedance Flow Routes</u> For rainfall events in excess of the design standard (i.e. greater than 1 in 100 year plus climate change event) the capacity of the drainage system is likely to be exceeded. There also remains a residual risk of flows leaving the surface water drainage system in the event of a blockage.
- 2.8 So that exceedance flows do not adversely affect properties on or off site, site levels will be designed to direct flows away from the building entrances where possible, so that any flooding remains in landscaped areas, car parks, or roads, where the consequences of surface water flooding will be less significant. Where falls towards buildings are unavoidable, additional cut-off drainage and gullies/channel drains will be provided to prevent water entering buildings during extreme events, and allow it to return to the drainage systems once flow have subsided. Refer to Appendix 3 for the site wide flood exceedance routing layout.

3. Foul Drainage Strategy

3.1 The outline foul drainage strategy prepared by Shaun Tonge Engineering in November 2018 (drawing STE-18-12-01-01), proposed discharge of domestic foul effluent from the development to the existing Yorkshire Water public sewers to the south of the site, via two points of connection. It was proposed that the south-western part of the site (approximately 150 plots) would be drained to the existing 225mm diameter foul public sewer in Lundhill Road (at a point near its junction with Gypsy Lane), whilst the north-eastern part of the site (approximately 80 plots) would be drained to the 150mm foul public sewer in Gypsy Lane (at a point near the east of the site). 3.2 The current proposals for foul drainage, as shown in ARP drawings 0425-87-03.01 and 0425-87-03.02, follow the same principles as the original strategy in terms of the two points of discharge to the public sewer. However, there is a slight change in the quantum of development draining to each point, with 136 plots in the south-western part of the site draining to the existing 225mm diameter foul public sewer in Lundhill Road and 99 plots in the north-eastern part of the site draining to the 150mm foul public sewer in Gypsy Lane.

4. Inspection and Maintenance

- 4.1 There is a residual risk of flooding from drainage systems in the event of siltation or a blockage occurring. It is therefore essential that drainage systems (including any SuDS and proprietary components) are subject to periodic inspection and maintenance, so that the design standard is not compromised, and to reduce the risk of blockage.
- 4.2 A Significant proportion of the surface water and foul drainage systems on this development have been designed to adoptable standards and therefore, once the adoption process is complete, will become the responsibility of the adopting authority - for further details refer to ARP drawing 0425-87-03.01 and 0425-87.03.02. The main access roads into the development are designed to adoptable standards and therefore, once the adoption process is complete, the highway gullies and any highway drains serving these roads will become the responsibility of the local Highway Authority.
- 4.3 The inspection and maintenance of plot drainage serving a single property and located within the curtilage of that property will remain the responsibility of the relevant property owner.
- 4.4 Responsibility for the ongoing inspection and maintenance of the remainder of the drainage systems on this development will be assigned by the developer to an appropriate individual property owner or an appropriate group of property owners, through specific clauses in individual property deeds, or shall be assigned by the developer to an appropriate Management Company.

5. <u>Conclusions</u>

- 5.1 This Drainage Strategy Statement has been prepared to confirm the final proposed foul and surface water drainage strategy for the proposed development. The statement should be read in conjunction with the relevant drawings, calculations and reports set out in Section 1.
- 5.2 The outline drainage strategy which supported the initial planning application proposed the use of individual house soakaways in some areas of the site where infiltration was initially thought to be feasible. However, through the detailed consideration of further comprehensive intrusive site investigations, it has been concluded that the drainage of surface water by infiltration is not appropriate on this site.
- 5.3 As there are no watercourses within or adjacent to the site, it is proposed that surface water will be discharged, via two separate points of connection, to the existing public surface water sewers in Lundhill Road and Gypsy Lane. Each discharge shall be limited to a maximum rate of 3.5l/s. The proposed surface water systems have been designed to accommodate a 1 in 100 year storm event plus 40% allowance for climate change, which will be retained in below-ground tanks within the site, such that it does not cause flooding of property of third party land.
- 5.4 Foul drainage will be discharged via two separate points of connection, to the existing public foul sewers in Lundhill Road and Gypsy Lane, with final connection details to be confirmed and agreed with Yorkshire Water.
- 5.5 The drainage proposals are subject to review and final approval by the Lead Local Flood Authority.

<u>Appendix 1 – Yorkshire Water Consultation and Sewer Records</u>

<u>Appendix 2 – Eastwood Consulting Engineers Report on Soakaway Testing</u>

<u>Appendix 3 – Flood Exceedance Routing Layout</u>