

ING Design Limited. Railway House, Railway Road, Chorley.

Drainage Strategy Report – Wellbeing Suite.

Hologic, Oaks Business Park, Crewe Road, Manchester.

Job No: 23139

Document Control Sheet

Property Hologic, Oaks Business Park, Crewe Road, Manchester

Report Title Drainage Strategy, Wellbeing Suite

Revision 2

Status Planning

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Contents

Document Control Sheet 1

Contents 2

1 Executive Summary 3

2 Surface Water Drainage Strategy:..... 4

3 Foul Water Drainage Strategy:..... 5

4 Appendix A: 6

1 Executive Summary

1.1 ING Design Limited were appointed by Building Projects Group to provide structural and civil engineering consultancy services for the new Wellbeing Suite development at the existing Hologic Site, Oaks Business Park, Crewe Road, Manchester.

1.2 Part of the service to be provided is the development of a suitable drainage strategy.

1.3 No online data was consulted.

1.4 The geotechnical information used in this report has been taken from the Phase 2 site investigation report dated 30th October 2018 and prepared by TerraConsult in respect of the proposed building extension at that time.

2 Surface Water Drainage Strategy:

2.1 The site is not located within the Conurbation Core Critical Drainage Area defined by the Manchester Trafford and Salford Strategic Flood Risk Assessment.

2.2 The previous Phase 2 site investigation describes the various geological layers encountered as Silty SAND, underlain by Peat, underlain by Silty gravelly SAND. All of which are considered very capable of providing an adequately porous filtration system for the dissipation of the surface water.

2.3 The proposed surface water drainage strategy is one based on filtration of the surface water through the underlying geology. The impermeable surface area resulting from the proposed development is approximately 20% of the total impermeable site area.

2.4 The roof of the proposed building is designed in such a way as to act like a small attenuation system.

2.5 It is also intended that all the surrounding surface treatments are porous in nature allowing any surface water direct access to the subsurface porous geology.

2.6 Approximate runoff calculations are presented in the appendix.

3 Foul Water Drainage Strategy:

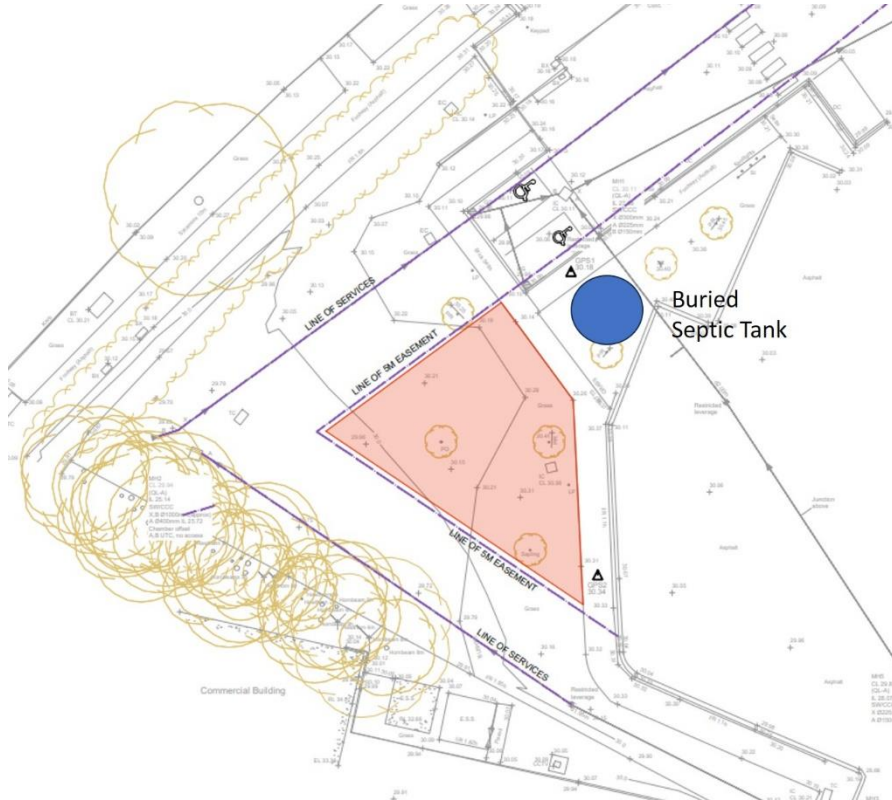
3.1 Building Regulations Approved Document H, Table 6, Recommended minimum gradients for foul drains, suggests that 1 in 80 should be the minimum for a drain run serving only 1WC.

3.2 The nearest existing foul drainage run on the site is approximately 80m from the proposed building. The invert levels on the existing foul drainage run are incompatible with the long distance and having a gravity fed system.

3.3 Based on the above it is recommended that a septic tank installation would be the most economical option.

3.4 Refer to Appendix A for indicative layout of proposed septic tank installation.

4 Appendix A:



Proposed indicative new septic tank position.

DESIGN RAINFALL 1-100 YEAR + 40% CALCULATION:

DESIGN RAINFALL

In accordance with the Wallingford Procedure

Tedds calculation version 2.0.01

Design rainfall intensity

Location of catchment area	Manchester
Storm duration	D = 30 min
Return period	Period = 100 yr
Ratio 60 min to 2 day rainfall of 5 yr return period	r = 0.360
5-year return period rainfall of 60 minutes duration	M5_60min = 18.0 mm
Increase of rainfall intensity due to global warming	p _{climate} = 40 %
Factor Z1 (Wallingford procedure)	Z1 = 0.79
Rainfall for 30min storm with 5 year return period	M5_30min _i = Z1 × M5_60min × (1 + p _{climate}) = 19.9 mm
Factor Z2 (Wallingford procedure)	Z2 = 2.03
Rainfall for 30min storm with 100 year return period	M100_30min = Z2 × M5_30min _i = 40.4 mm
Design rainfall intensity	I _{max} = M100_30min / D = 80.8 mm/hr

Maximum surface water runoff

Catchment area	A _{catch} = 587 m ²
Percentage of area that is impermeable	p = 20 %
Maximum surface water runoff	Q _{max} = A _{catch} × p × I _{max} = 2.6 l/s

DESIGN RAINFALL 1-1 YEAR CALCULATION:

DESIGN RAINFALL

In accordance with the Wallingford Procedure

Tedds calculation version 2.0.01

Design rainfall intensity

Location of catchment area	Manchester
Storm duration	D = 30 min
Return period	Period = 1 yr
Ratio 60 min to 2 day rainfall of 5 yr return period	r = 0.360
5-year return period rainfall of 60 minutes duration	M5_60min = 18.0 mm
Increase of rainfall intensity due to global warming	p _{climate} = 0 %
Factor Z1 (Wallingford procedure)	Z1 = 0.79
Rainfall for 30min storm with 5 year return period	M5_30min _i = Z1 × M5_60min = 14.2 mm
Factor Z2 (Wallingford procedure)	Z2 = 0.62
Rainfall for 30min storm with 1 year return period	M1_30min = Z2 × M5_30min _i = 8.8 mm
Design rainfall intensity	I _{max} = M1_30min / D = 17.6 mm/hr

Maximum surface water runoff

Catchment area	A _{catch} = 587 m ²
Percentage of area that is impermeable	p = 20 %
Maximum surface water runoff	Q _{max} = A _{catch} × p × I _{max} = 0.6 l/s