Mount Hermon Care Home, Brighton Road, Lancing, BN15 8 RB – Care Home Development

Foul and Surface Water Drainage Strategy

November 2022

Project No. CE3054

Ward Associates (Consulting Engineers) Ltd

Cyclops House, Link Business Park, York YO10 3JB
Tel +44(0)1904 544401
enquiries@wa-eng.co.uk

Contents

1. INTRODUCTION 3
2. EXISTING SITE 3
3. SURFACE WATER DRAINAGE STRATEGY 4
4. EFFECTS OF DEVELOPMENT ON OTHER SITES 7
5. FOUL DRAINAGE STRATEGY 7
6. CONCLUSIONS AND RECOMMENDATIONS 8

APPENDIX A - EXISTING AND PROPOSED SITE PLAN
APPENDIX B - SYNTEGRA CONSULTING - DRAINAGE STRATEGY REPORT
APPENDIX C - PROPOSED IMPERMEABLE AREAS
APPENDIX D - SOUTHERN WATER RECORD
APPENDIX E - SURFACE WATER SUDS CALCULATIONS
APPENDIX F - DRAINAGE LAYOUT AND DETAILS
APPENDIX G - SITE INVESTIGATION REPORT
APPENDIX H - AQUACELL TECHNICAL DETAILS
APPENDIX I - MAINTENANCE MANAGEMENT PLAN

Revision History

Rev	Date	Purpose/Status	Comments
A	06-10-2021	Information	For comment
B	06-11-2022	Information	Updated to suit latest layout

1. INTRODUCTION

1.1. WARD Associates Consulting Engineers Limited have been commissioned by Anavo to prepare a Foul and Surface Water Drainage strategy report for a proposed Care Home development at Mount Hermon Care Home, Brighton Road, Lancing, BN15 8RB.

1.2. This report will describe and outline proposals for the disposal of foul and surface water from the site. It will also include SuDS calculations to support the proposed drainage strategy.

1.3. This report will provide a layout for disposal of foul and surface water from the development.

1.4. This report has been prepared for the sole use of Anavo. No other third party may rely upon or reproduce the contents of this report without the written approval of WARD Associates (Consulting Engineers) Ltd. If any unauthorised third party comes into the possession of this report, they rely on it entirely at their own risk and WARD do not owe them any Duty of Care or Skill.

2. EXISTING SITE

2.1. The site occupies an area of 0.257ha as denoted by the redline boundary. The site contains two buildings and a number of outbuildings utilised as part of the care home and one separate dwelling house. A copy of the existing site layout is shown in Appendix A.

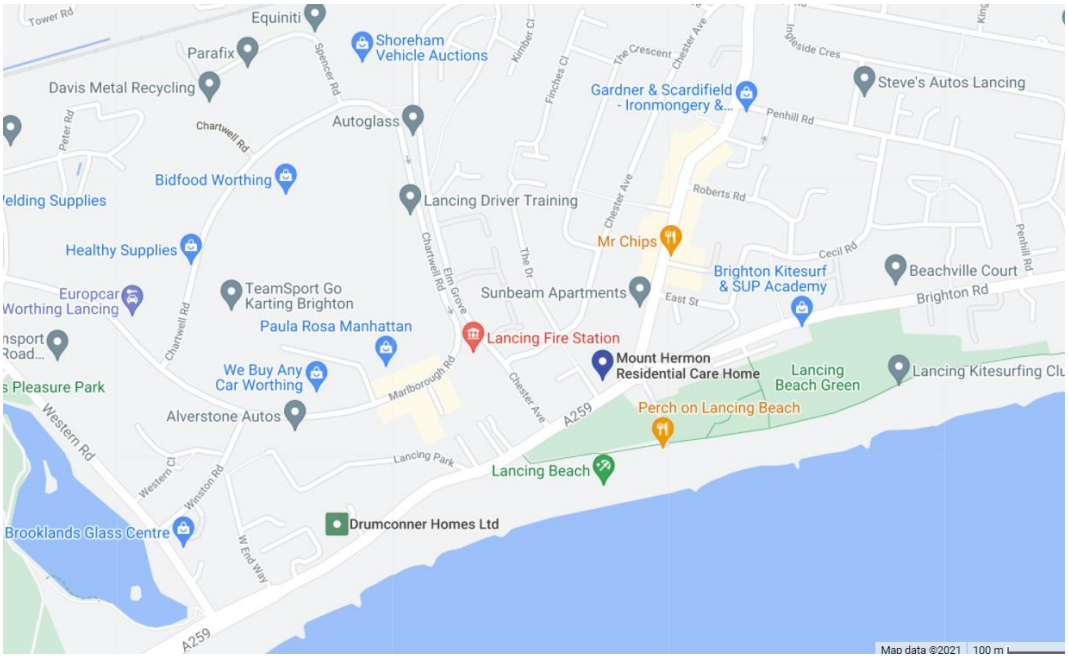


Figure 1 – Site Location plan

2.2. The site is accessed directly from Brighton Road with off road parking to the front. To the south west is an existing access that serves the neighbouring properties and private garages whilst also providing access to the rear of the site. Beyond this access is an existing guest house and further residential properties.

2.3. The site which faces the English Channel and is surrounded by a mix of residential, business, and commercial properties.

2.4. The site is relatively flat with levels rising from the highway from circa 6.5mAOD to 7.5mAod in the rear boundary. A copy of the topographical survey is shown in Appendix A.

2.5. The existing building is reaching the end of its useful life and therefore the redevelopment is justified for continued use.

2.6. Intrusive site investigation has been complete on site including infiltration testing to BRE365. A copy of the report is shown in Appendix G.

2.7. Further site testing has also been undertaken to BRE365 at the proposed soakaway location as contained within Appendix E.

2.8. The site is currently developed and therefore there exists a large degree of existing drainage on site. At the time of writing this report a CCTV drainage survey was not available, however based upon site walkover and topographical survey records it is noted that drainage discharges towards the public sewer within the public highway.

2.9. No watercourses are in proximity to the site.

3. SURFACE WATER DRAINAGE STRATEGY

3.1. The proposed development is for a Care Home with associated hardstanding areas, access road and car park. Refer to Appendix A for proposed site plan.

3.2. The drainage strategy for the Care Home development follows the YNTERGA Consulting Drainage Strategy & SUDS Appraisal Report Ref 20-6901 - Dated July 2020 submitted at planning stage. A copy of this report is contained in Appendix B.

3.3. The proposed development comprises impermeable areas including:

Care Home Building	1238 m^2
Care Home Access Road, Car Parking & Hardstanding	697 m^2
Hardstanding	18 m^2
Total Impermeable Area	**1953 m^2**

3.4. Following the hierarchy of surface water disposal, it is proposed to utilise a soakaway for discharge of the surface water from the building footprint. The access road, car parking bays and hardstanding will be discharged via permeable surfaces within infiltration into the ground.

3.5. From the site investigation report contained in Appendix G the results from TP2 to the rear of the site within the Raised Beach Gravel Deposits recorded infiltration rates to BRE365 of:

TP03 – Test 1 – 2.5 x10-5 m/s
TP03 – Test 2 – 2.7 x10-5 m/s
TP03 – Test 3 – 2.6 x10-5 m/s

3.6. TP03 is located to the rear of the site at the position of the proposed soakaway. Soakaways are to be located a minimum 5m away from existing and proposed structures.

3.7. Further testing was undertaken which recorded rates of 1.1x10-5 m/s to 1.5x10-5 m/s.

3.8. It is proposed to use the lowest recorded rate of 1.1 x10-5 m/s.

3.9. A sedum roof is proposed to the rear first floor roof area totalling an area of 160m2. No attenuation storage has been allowed for within the Sedum roof.

3.10. For the impermeable area from the proposed building the soakaway has been designed to accommodate rainfall events up to 1 in 100-year event over a range of storm durations with a 40% allowance for climate change. Soakaways will be located min 5m from the building foundations. A copy of the supporting

calculations is contained in Appendix E. The supporting calculations also demonstrate the system will half drain in less than 24 hours.

3.11. The Access Road, Car Parking failed the infiltration testing and will therefore discharge into the soakaway. Permeable paving and tarmac will be provided with storage provided within the subbase. The storage provided will be min 300mm deep with 30% void ratio. Full calculations are contained within Appendix E.

3.12. A copy of the proposed drainage layout detailing the soakaway and permeable paving areas is shown in is shown in Appendix F.

3.13. To deal with the residual risk of blockage to all onsite drainage features, the care home operator/owner will ensure maintenance of all drainage systems in line with the requirements in Ciria C753 the SuDS Manual.

3.14. A copy of the detailed Maintenance Management Plan is shown in Appendix I. This will ensure that over the lifetime of the proposed development the drainage system will be properly maintained to ensure proper functionality. A summary schedule of proposed maintenance is shown below and on the proposed drainage layout in Appendix F.

Lancing - Maintenance Schedule					
Item	Visual Inspection	Cleanse / De-sludge	CCTV Survey	Responsibility	Comments
Surface Water Drainage System (pipework, chambers etc.)	1 years	10 years	10 years	Building Owner	Cleansing to be carried as necessary
Gullies / Channels / Rainwater Stacks	Monthly	1 years	N/A	Building Owner	Cleansing to be carried as necessary
Catch Pit	Monthly	1 years	N/A	Building Owner	Cleansing to be carried as necessary
Soakaway	1 years	N/A	5 years	Building Owner	Cleansing to be carried as necessary in line with manufacturers recommendations
Packaged pumping station	Monthly	1 years	N/A	Building Owner	Cleansing to be carried as necessary in line with manufacturers recommendations

Permeable Block Paving	1 years	Swept' clean of debris every 2 years	N/A	Building Owner	Lift blocks and removed sand bedding and replace and re-bed paving- refer to individual manufacturers recommendations.
Foul Drainage System (pipework, chambers etc.)	1 year	10 years	10 years	Building Owner	Cleansing to be carried as necessary

3.15. Further details on the proposed maintenance for the package pumping station is shown in Appendix I.

3.16. It is recommended that the infiltration blanket and soakaway is constructed early in the construction project to provide a drainage point for any surface water arising during construction.

4. EFFECTS OF DEVELOPMENT ON OTHER SITES

4.1. The proposed development will discharge all surface water into the ground within the site. This solution follows the hierarchy for surface water disposal and provides an improvement on the existing site which discharged into the public sewer.

4.2. The system has been designed to ensure that there is no risk of flooding during a 1 in 100 year rainfall event plus a 40% allowance for climate change. This will ensure that the risk of flooding to adjacent sites will not be increased.

5. FOUL DRAINAGE STRATEGY

5.1. The Southern Water records are contained in Appendix D, there is a public foul sewers in Brighton Road. The nearest public foul sewer is a 300mm pipe at the junction of Bright Toad and South Street.

5.2. Due to the site level and basement a package pumping station is required within the site before a gravity discharge off site.

5.3. It is proposed to utilise a packaged pumping station with macerator, dual pump and linked alarm. The chamber will be designed to provide storage to accommodate min 24 hours capacity in the event of a failure.

5.4. A copy of the proposed foul drainage layout and pumping chamber location is shown in Appendix F.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1. Following the hierarchy of surface water discharge it is proposed to utilise infiltration for the disposal of surface water within the site.

6.2. For the impermeable area from the proposed development the soakaway has been designed to accommodate rainfall events up to 1 in 100-year event over a range of storm durations with a 40% allowance for climate change. Soakaways will be located min 5m from the building foundations. A copy of the supporting calculations is contained in Appendix E and layout in Appendix F.

6.3. The Access Road, Car Parking and Hardstanding will be drained via a permeable surface before discharging to the soakaway. A copy of the supporting calculations is contained in Appendix E.

6.4. The proposed surface water drainage layout is shown in Appendix F.

6.5. It is proposed to discharge foul drainage from the proposed development into the existing Southern Water foul drainage sewer in Brighton Road/South Street.

6.6. Due to site levels and proposed basement a packaged pumping station will be utilised with macerator, dual pump and linked alarm. The chamber will be designed to provide storage to accommodate min 24 hours capacity in the event of a failure.

6.7. The proposed surface drainage solution should be approved by the local authority prior to commencing any drainage works on site.

APPENDIX I

FOUL AND SURFACE WATER MAINTENANCE MANAGEMENT PLAN

SuDS MAINTENANCE MANAGEMENT PLAN

This document sets out the principles for the long term management and maintenance of the proposed surface water Sustainable Drainage Systems (SuDS) installed at the Care Home development at Mount Herman Care Home, Lancing.

The purpose of this document is to ensure that the adopting operator of the building is entrusted with a robust inspection and maintenance programme, ensuring the optimum operation of the surface water drainage network is continually maintained for the lifetime of the development and to prevent the increased risk of flooding both on and off site.

As a managed care home all SuDS systems will be the responsibility of the company operating/running the care home to maintain.

SUDS are engineered solutions that aim to mimic natural drainage processes. They help to reduce pollution of watercourses and localised flooding, as well as providing amenity benefit and biodiversity.

Key Factors to be considered during maintenance

- Undesirable plants – all efforts should be made to prevent drains becoming blocked and the growth of unintentional vegetation which could be detrimental to the intentional plant regime, biodiversity aims and the building fabric.
- Regular site attendance for litter collection, grass cutting and checking of inlets, outlets and control structures.
- Occasional visits to brush clean inlet gullies and drainage channels, remove silt from source control features.
- Drain heads and outlets – all drainage points must be checked every year and cleared out it if necessary to ensure optimum performance.

The maintenance of all drainage features serving the development will be maintained by the building owner/operator. Ongoing maintenance activities for this infrastructure are detailed below.

All those responsible for the maintenance operations should adhere to the relevant health and safety legislation for the activities listed within this report (including lone working, if relevant). Method statements and risk assessments should always be completed prior to the undertaking of any works.

Cellular Storage Crates – Soakaway

The ongoing maintenance activities for below ground cellular storage crates are detailed below.

Cellular Storage Crates - Soakaway	
Regular Maintenance	***Frequency***
Inspection - Record and clean as required	Monthly
Litter and debris removal	Monthly
Occasional Tasks	***Frequency***
CCTV survey is blockages identified, jet clean as required. In line with manufacturers recommendations	As required
Remedial Work	***Frequency***

Jet clean as required. In line with manufacturers recommendations	As required

Package Pumping Station – All Pump solutions (APS)

The ongoing maintenance activities for below ground package pumping station should be in line with manufacturer recommendations. A summary of the typical expected requirements is detailed below.

Packaged Pumping Station	
Regular Maintenance	***Frequency***
Inspection - Record and clean as required	Monthly
Litter and debris removal	Monthly
Occasional Tasks	***Frequency***
Service – in line with manufacturers recommendations including replacement etc as required. Minimum Silver Service & Maintenance to be provided by All Pump solutions by building operator	As required in line with manufacturers recommendations
Remedial Work	***Frequency***
Jet clean as required. In line with manufacturers recommendations	As required in line with manufacturers recommendations
Pump replacement/service as required	As required in line with manufacturers recommendations

Package pumping station to be installed with APS GSM PRO Telemetry unit which provides 24hour alarm monitoring of pumping station. When a fault occurs i.e. pump trip, high level or phase failure the telemetry unit will automatically send a pre-defined text or email to up to 10 recipients. Building owner to assign recipient's including facilities management team, home manager, maintenance manager and others as required. All pump solutions to act as one recipient within Server pump service and maintenance agreement to level Silver. In the event of a failure APS will automatically be notified and will liaise with the facilities management team to undertaken remedial works as required. Remedial works to be completed within 24 hr period.
Pump station to include linked alarm with alarm located in plant room. Full details of pumping station and contact details for APS to be incorporated into O&M manuals.

24 hr storage provided via attenuation unit and storage within subbase which has been designed to accommodate 1:100 year rainfall event over a range of storm durations and 40% allowance for climate change.

Catch Pit

The ongoing maintenance activities for the catch pit is detailed below.

Petrol and Silt interceptor	
Regular Maintenance	***Frequency***
Inspection - Record and empty/clean as required	Monthly

Litter and debris removal	Monthly
Occasional Tasks	***Frequency***
Service	6 monthly
Remedial Work	***Frequency***
Jet clean as required.	As required

Permeable and Porous Surfaces

The ongoing maintenance activities for below Permeable and Porous Surfaces are detailed below.

Permeable and Porous Surfaces	
Regular Maintenance	***Frequency***
Cleaning Brush regularly and remove sweepings from all hard surfaces	Monthly
Occasional Tasks	***Frequency***
Brush and vacuum surface once a year to prevent silt blockage and enhance design life.	As required
Remedial Work	***Frequency***
Re-grit pacing blocks	Annually
Relay block paviours	As required
Monitor effectiveness of permeable pavement and when water does not infiltrate immediately advise Client of possible need for reinstatement of top layers or specialist cleaning. • Recent experience suggests jet washing and suction efficiency. • cleaning will substantially reinstate pavement to 90%	As required

Conventional Surface Water Drainage Features

The maintenance of all drainage features serving the development will be maintained by the building owner/operator. Ongoing maintenance activities for this infrastructure are detailed below.

Maintenance Activity	**Action**	**Frequency**
Check gully pots, linear drainage channels and catchpits	Check, clean and empty gully pots and catchpits as required to remove debris and sediment	Regular - Monthly
Check manholes and inspection chambers	Inspect manholes and inspection chambers for any signs of blockages. Clean, jet and empty as required	Regular - Annually
CCTV survey and jetting of drains	Check the integrity of drains, jet and clean as required. Remove collected debris as required	As necessary Every 5 years

Hydrobrake chambers / Vortex Flow Control – visual inspection	Check and remove any silt build up or blockages in accordance with the Manufacturers recommendations	Typically annually or as required

Records

A service log will be maintained which will include details of all scheduled maintenance required. Logs will be incorporated that record when checks were carried out and whether any actions are deemed necessary. If actions are required, a breakdown of the maintenance measures undertaken or in progress will be logged along with the date when the action was or is to be scheduled.

Records will be maintained by the management company for a minimum period of 5 years.