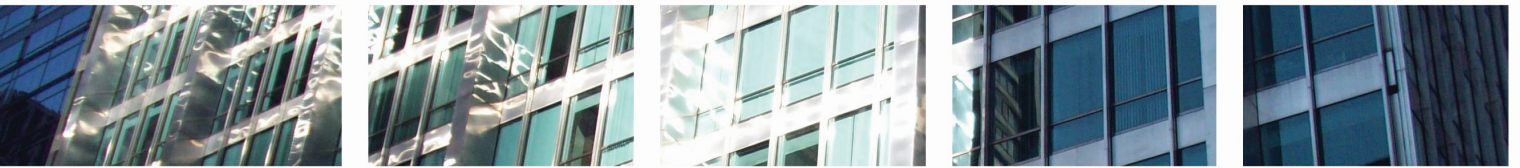


CONSULTING CIVIL STRUCTURAL AND ENVIRONMENTAL ENGINEERS



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DRAINAGE STRATEGY REPORT

FOR

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CALCINOTTO PROJECT REFERENCE:

JB-3216

PROJECT TITLE

Elm Grove, Hayling Island

REPORT TITLE:

Drainage Strategy Report

NOTES:

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1 Introduction

- 1.1 Calcinotto Ltd have been appointed to provide Preliminary design advice for the above the site in respect of drainage for the proposed development.
- 1.2 Calcinotto Ltd have been provided with, Southern Water Record Drawing (Plan Only), Topographic Survey and Concept Architectural Plans. Full Sewer records have now been obtained and are included in Appendix A.
- 1.3 The site is currently occupied by a Public House with large areas of parking hardstanding which discharges to various gullies within the car park.
- 1.4 The site is bounded on its Western side by St Mary's Road & its Eastern Side by Elm Grove, with residential properties and public surface car park.
- 1.5 The site benefits from vehicular access to both roads as the Car Park is severed by a line of bollards.
- 1.6 The total site area for the development is 3200m² and is a mixture of roof, hard paving and soft landscaping. The existing building and hard paved area is approximately 2430m², the proposed development consists of a total impermeable area of approximately 1937m² (Roof Area 1425m² & Car Parking 512m²).

2 Proposed Development.

The architects plan shown in Appendix A is for the construction of 15no 1 bedroom apartments and 18 2 bedroom apartments for Retirement Living. The development is spread over 3 floors set within mature established planting.

3 Existing Drainage Systems

- 3.1 From the Southern Water records and discussions with Havant Building Control it has been understood that there are no combined sewers serving Hayling Island and that all Surface Water is either disposed of to Soakaway or Public Surface Water System. A CCTV survey was commissioned in April 2016 of the existing on site main lines and connections into the public system(s). The existing pipework on site is 'pitchfibre' and was commonly used in the 1980's, unfortunately this material has been found to deform over time. The site has been found to have existing connections for the surface water and foul drainage for the site into the Public Sewers in Elm Grove.
- 3.2 The surface water system has been found to have two existing connections from the site, one is into an existing 150mm diameter pipe in St Mary's Road within the footway, and this is likely to a Highway Drain as it isn't shown on the Southern Water Sewer Records. The second Connection is into Elm Grove, Southern Water were contacted for a capacity check and they have advised that there is

capacity within the Surface Water Sewers in Elm Grove for this development site and the discharge rate is 21l/s, as identified in Southern Waters letter in Appendix C. This section of pipe was surveyed into the sewer and has started to deform.

- 3.3 The site has one connection into the foul sewer in Elm Grove towards the Northern Boundary of the site. This section of pipe is badly deformed and the survey wasn't able to be completed into the main. A capacity check has been undertaken for the development and the foul sewers have capacity for this development.
- 3.4 We have produced a plan using the topographic survey, utility detection survey & Southern Water records and we have superimposed the preliminary findings of the CCTV survey. This can be found in Appendix A. This has identified that existing pipework on site and connecting to the public sewer is pitchfibre and that these offsite connections are starting to deform.
- 3.5 From a review of the Topographic Survey and Radar detection survey the site is predominately level with an average level of 7.0m AOD with localised low spots for gullies. There are no sewers identified crossing the site.
- 3.6 A Flood Risk Statement has been produced and is covered under a separate report by Calcinotto Ltd. The site is located within Flood Zone 1.
- 3.7 We have had preliminary discussions with the Local Authority Building Control Surveyor who have suggested that soakaways do work in the area but they are not very effective and that new ones should be constructed from modular/cellular soakaway systems. This is due to the probable presence of a high water table, which is not unusual in the area due to the commonly encountered raised beach features.

4 Proposed Drainage

- 4.1 The drainage for the site has been designed with assumed connections for the RWP's and FWO's and will need to be finalised as part of the detailed design.

Foul Drainage – There are foul sewers located in St Mary's Road and Elm Grove the CCTV survey has identified the existing connection off site into Elm Grove. As this connection is pitch fibre and showing deformation this would have been required to be repaired or replaced as part of the development. Southern Water will require a manhole connection onto the public sewer(s) for this development. The new foul connection has been shown in Elm Grove to the East of the site. The drainage runs shown on the proposed drainage plan try to avoid the identified Root Protection Areas (RPA's) however some excavation will be required at the edges / close to the RPA's, these will need to be undertaken under the supervision of the project Arboriculturalist.

- 4.2 Surface Water – The surface water has been designed to accommodate the 1:100yr+30% climate change with no flooding above ground. The development has been checked for the 1:100yr+40% climate change and only minor flooding occurs in the car park. The surface water has been designed for a restricted discharge of 21l/s as advised by Southern Water and attenuation will be required.

Due to the restricted discharge rate attenuation will be required this is proposed to be provided using modular crate system, approximately 19cum will be required.

The flow control will be provided using a pump return system with twin pumps (Ex Type – Explosion proof due to the possible presence of hydrocarbons from the parking areas). One of the existing surface water connections appears to outfall into a 150mm diameter Highway Drain this has been ignored as part of the preliminary design. The site has been given a higher discharge flow rate into a larger sewer (675mm dia) within Elm Grove, the benefit of this higher discharge rate is that the attenuation tank has been reduced in size.

Both these connections (Foul & Surface Water) have been located within close proximity of each other to enable both the manholes to be constructed within Elm Grove utilising the same Traffic Management, and minimising disruption to the road users.

A copy of the Preliminary Drainage scheme for the site to serve the new development is included in Appendix B.

- 4.3 This attenuation required could be constructed using modular crate attenuation systems, tubosider or using GRP Tanks. Modular crate attenuation tanks have been identified so as to reduce the depth of excavation. However during the detailed design the final method of attenuation could differ.
- 4.4 An Site Investigation has not been undertaken at the moment so the use of soakaways has been discounted based on a review of the BGS website and the preliminary discussions with the local Building Control and the presence of a positive surface water drainage system for the site.
- 4.5 The use of permeable parking construction could be considered to reduce the amount of attenuation required, however the benefit of this to assess without additional information (Infiltration Rates).
- 4.6 In Appendix B we have enclosed some typical construction details for attenuation tanks, soakaways, drainage and external works construction details that are likely to be required.

5 Additional Investigations Required

- 5.1 An Intrusive Site Investigation and Interpretative Report to include infiltration testing to BRE365 undertaken by a Site Investigation Contractor.

6 Conclusions

- 6.1 If the pub is demolished prior to discussions being undertaken with Southern Water it is essential that the points of connection from the site are maintained so that the right to connect to the public system isn't lost. Southern Water have confirmed a discharge rate of 21l/s should be used for the design of the surface water system into the public sewer in Elm Grove.
- 6.2 To reduce the size of the attenuation tank consideration could be given to using permeable paving either infiltrating or tanked, if infiltration is proved to practical then permeable paving would also reduce the size of the main infiltration structure(s).
- 6.3 The foul drainage from the site can be accommodated within the public foul sewer network.
- 6.4 An intrusive site investigation should be commissioned to determine if infiltration is viable so as to reduce the offsite discharge into the public surface water sewer.
- 6.5 When the layout of the SVP's & RWP's is finalised the layout of the drainage can be finalised and the location and numbers of manholes around the development can be agreed.
- 6.6 The principle of rehabilitating the existing pipes by reshaping and relining the pitch fibre pipes has been discounted as to reshape the pipes access is required to both ends to pull the 'bullet' through to reshape. It would also be required by the Water Company that the new development has new manholes constructed at the point of connection.
- 6.7 Any crane bases required for the construction of the development will require co-ordination with the drainage design.

From the information contained in the report there is no reason why Planning should be refused on the basis of drainage reasons to serve the site.