Orchard House
Emsworth

Flood Risk Assessment
and Drainage Statement

McCarthy & Stone

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DELIVERING SUSTAINABLE, TRANSPORT PLANNING AND ENGINEERING SOLUTIONS

RETIREMENT REDEVELOPMENT
ORCHARD HOUSE, WESTERN AVENUE, EMSWORTH

FLOOD RISK ASSESSMENT
AND DRIANAGE STATEMENT

CONTROLLED DOCUMENT

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AND DRIANAGE STATEMENT

1. INTRODUCTION 1
2. EXISTING CONDITIONS 5
3. THE PROPOSALS 7
4. SOURCES OF FLOODING 8
5. DRAINAGE STATEMENT 17
6. SUMMARY AND RECOMMENDATIONS 19

Figures

Figure 1 – Site Location Plan
Figure 2 – Environment Agency Flood Map
Figure 3 – Red Line Boundary
Figure 4 – Groundwater Flood Risk (Extract from Landmark 'Sitecheck' Flood Report)
Figure 5 – Environment Agency Flooding from Reservoirs Map
Figure 6 – Environment Agency Surface Water Flood Map
Figure 7 – Surface Water Flood Risk (Extract from Landmark 'Sitecheck' Flood Report)
Figure 8 – Photo of Southern Water Manhole 0801

Tables

Table 1 – NPPF Guidance – Flood Risk Vulnerability and Flood Zone Compatibility
Table 2 – NPPF Guidance – Flood Risk Vulnerability Classification

Appendices

Appendix A – Topographical Survey of the site
Appendix B – Indicative Site Layout
Appendix C – Landmark Flood Site Check
Appendix D – Environment Agency Consultation responses
Appendix E – Southern Water Sewer Records
Appendix F – Southern Water Capacity Check response
Appendix G – SSP Drainage Layout

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1. INTRODUCTION

1.1 This Flood Risk Assessment (FRA) has been prepared by Paul Basham Associates (PBA) to support a planning application for McCarthy & Stone's proposed retirement redevelopment of Orchard House, Western Avenue, Emsworth. The site is approximately 0.58 Ha. in total area and a location plan of the application site is shown in **Figure 1**.

Figure 1: Location Plan

1.2 The Environment Agency flood mapping has identified that the site falls entirely within Flood Zone 1, an area with a low risk of flooding from rivers or tidal waters in any given year. The extract of the Environment Agency's Flood Map overlaid with the site boundary is provided in **Figure 2**.

1.3 This FRA has been prepared taking into account the National Planning Policy Framework (NPPF) Technical Guidance and the Environment Agency Flood Risk Standing Advice. This report will seek to quantify the flood risk posed to the site and the proposed development and to identify potential mitigation measures. The drainage of foul and surface water run-off generated by the site is also considered to ensure that the re-development proposals would not pose an adverse effect on the flood risk to the surrounding area.

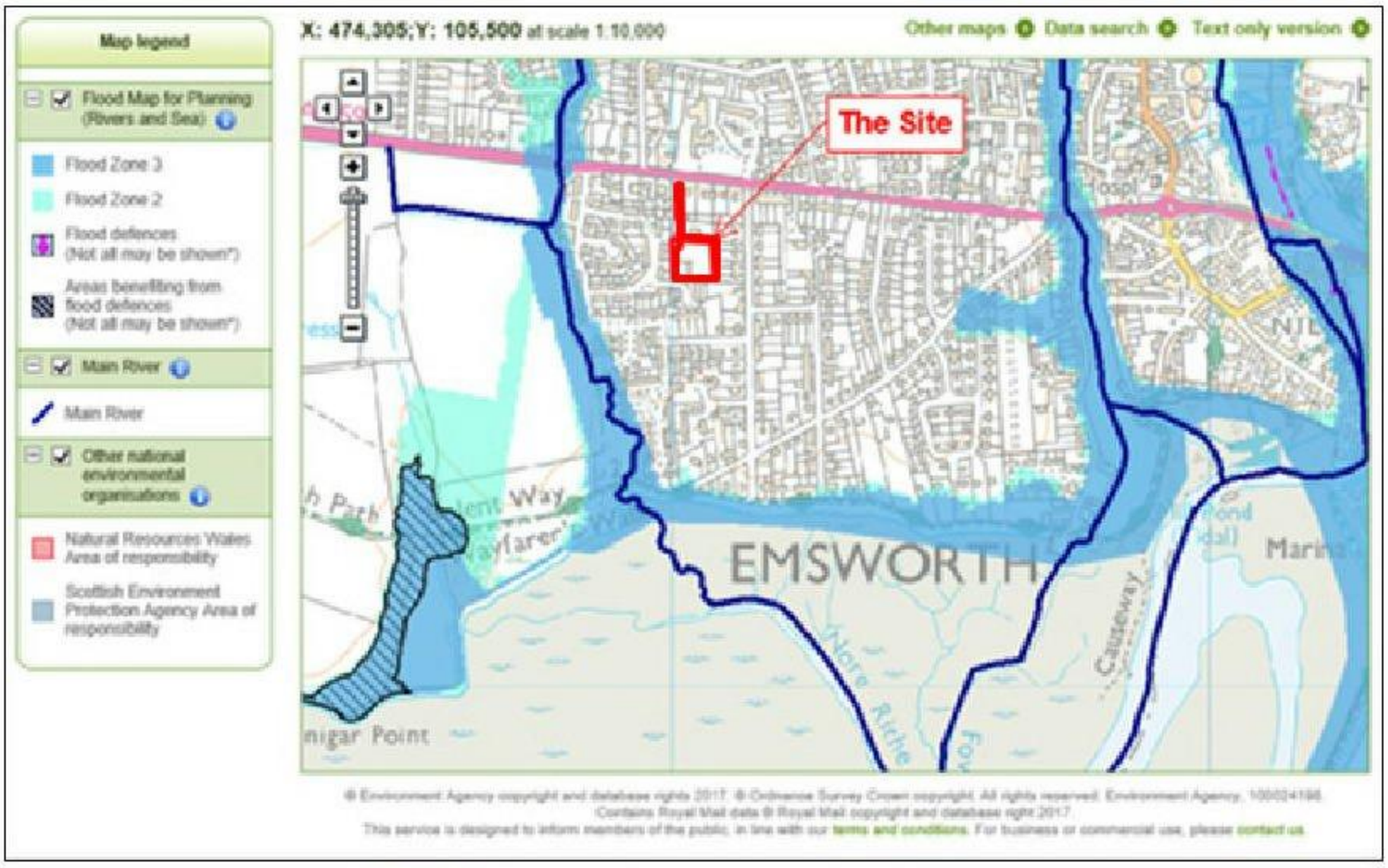

Figure 2: Environment Agency Flood Map

1.4 Table 3 from the NPPF Technical Guidance has been included as **Table 1** below. This gives the classes of development (based on flood risk vulnerability) that are permitted within each of the flood zones.

Flood risk vulnerability classification (see table 2)		Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Flood zone (see table 1)	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test required	✓	✓
	Zone 3a	Exception Test required	✓	×	Exception Test required	✓
	Zone 3b functional floodplain	Exception Test required	✓	×	×	×

Key: ✓ Development is appropriate.
× Development should not be permitted.

Table 1: NPPF Planning Practice Guidance Table 3 – Flood risk vulnerability and flood zone compatibility

1.5 Table 2 from the NPPF Technical Guidance has been included as **Table 2**. This sets out the flood risk vulnerability classifications for various types of development. The proposed development of the site is for 25 retirement dwellings which would be classed as "More Vulnerable" and would therefore be acceptable within its Flood Zone classification (Zone 1). The site is located within Flood Zone 1, therefore there is no need for Sequential or Exception Test. **Table 1** shows that no Exception Test is required.

Essential Infrastructure • Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk. • Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood. • Wind turbines.
Highly Vulnerable • Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding. • Emergency dispersal points. • Basement dwellings. • Caravans, mobile homes and park homes intended for permanent residential use. • Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure').
More Vulnerable • Hospitals • Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels. • Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels. • Non–residential uses for health services, nurseries and educational establishments. • Landfill* and sites used for waste management facilities for hazardous waste. • Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.
Less Vulnerable • Police, ambulance and fire stations which are not required to be operational during flooding. • Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'More Vulnerable' class; and assembly and leisure. • Land and buildings used for agriculture and forestry. • Waste treatment (except landfill* and hazardous waste facilities). • Minerals working and processing (except for sand and gravel working). • Water treatment works which do not need to remain operational during times of flood. • Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.
Water-Compatible Development • Flood control infrastructure. • Water transmission infrastructure and pumping stations. • Sewage transmission infrastructure and pumping stations. • Sand and gravel working. • Docks, marinas and wharves. • Navigation facilities. • Ministry of Defence defence installations. • Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location. • Water-based recreation (excluding sleeping accommodation). • Lifeguard and coastguard stations. • Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms. • Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

Table 2: NPPF Planning Practice Guidance Table 2 – Flood risk vulnerability classification

1.6 Although the site is located in Flood Zone 1 and is less than 1ha in size, McCarthy & Stone have requested that this FRA is undertaken in order to demonstrate the impact on development as well as the impact of development on flood risk elsewhere. Therefore, in-line with NPPF Technical Guidance, this report identifies the risks of flooding from all sources, possible mitigation measures, assesses the development impacts on flood risk to the surrounding areas, and provides recommendations to ensure flood risk is not increased off site.

2. EXISTING CONDITIONS

2.1 The site is currently occupied by a large residential dwelling (Orchard House) in conjunction with two garages, access road (extending southwards from Western Avenue), various sheds and glasshouses, and a large garden. The site is located approximately 100m to the south of the A259 (Havant Road) and is approximately 800m to the west of Emsworth town centre. The red line boundary is approximately 0.58 Ha. and is shown in **Figure 3** below.

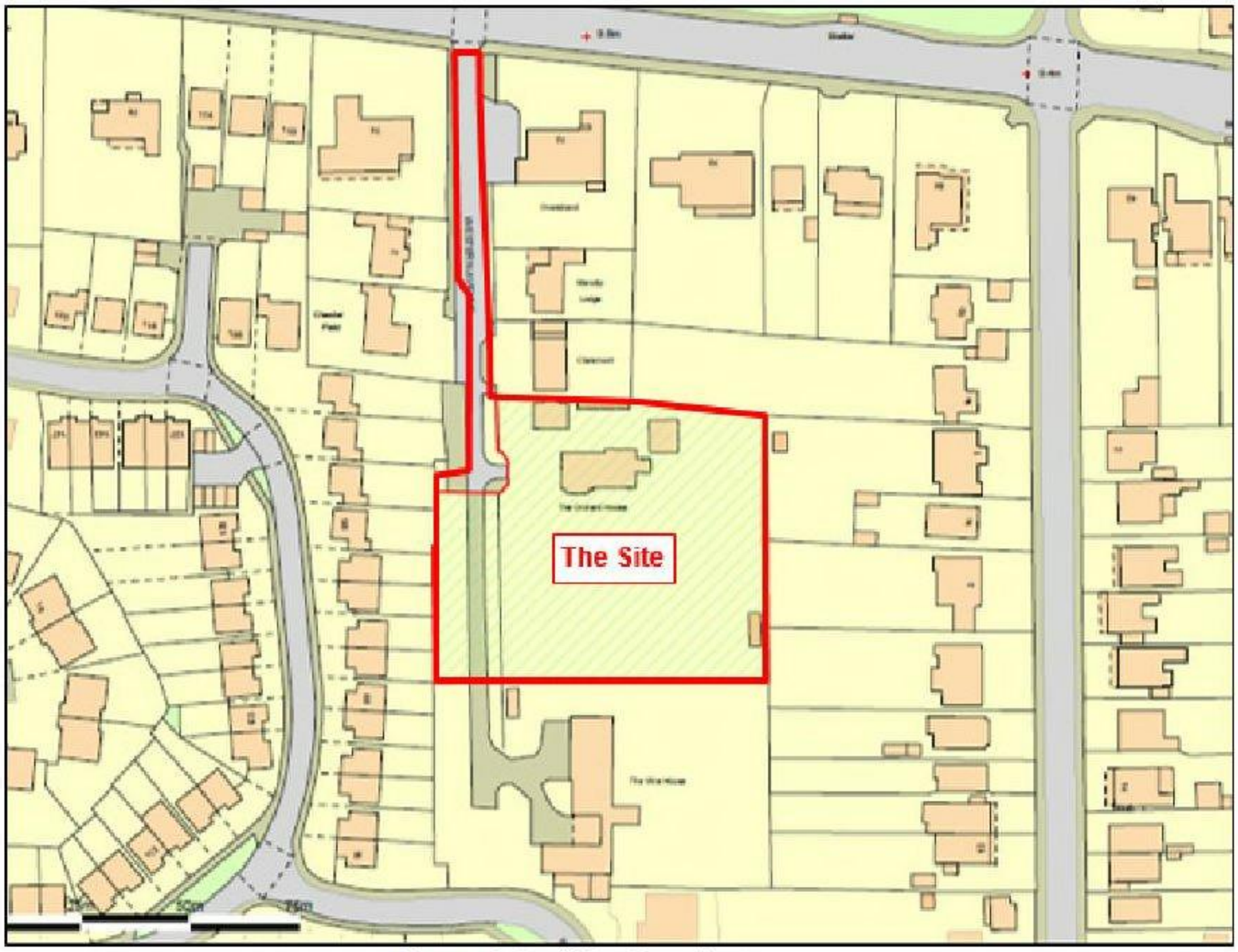

Figure 3: Red Line Boundary

2.2 A topographical survey has been undertaken across the site and is included in **Appendix A**. The survey shows that the site has a gentle slope in a north-west to south-east direction. The high point is located in the north-west corner of the site where levels are in the order of 9.10m AOD. The site slopes down towards a low point of approximately 8.15m AOD located in the south-east corner.

2.3 The survey includes details of a drainage network which serves the northern part of the site and will be discussed further in Section 5 of this FRA report.

2.4 A review of the British Geological Society mapping indicates that the bedrock geology beneath the site is the Lambeth Group, comprising of Sand, Silt and Clay formed approximately 56 to 66 million years ago in an environment previously dominated by swamps, estuaries and deltas. The mapping also shows that the superficial deposits overlying the bedrock at the site are River Terrace Deposits (undifferentiated) comprising of Sand, Silt and Clay and formed up to 3 million years ago in the in an environment previously dominated by rivers.

3. THE PROPOSALS

3.1 A proposed development layout is included in **Appendix B**. However it should be noted that at the time of writing this FRA, the proposed development is in the planning process, and the enclosed Architects layout plan has "planning " status.

3.2 The development proposals would involve the construction of 25 retirement dwellings, reception and lounge areas within a three-story block, associated car parking, open space and landscaping etc. Vehicle access would be provided from Western Avenue via the existing access.

4. SOURCES OF FLOODING

Fluvial/Tidal Flooding

4.1 The Environment Agency's Flood Map (refer to **Figure 2**) shows the site being located within Flood Zone 1, indicating a low risk of flooding, less than 0.1% (1 in 1000) from rivers and tidal sources in any given year.

4.2 A review of the OS Mapping indicates that the closest watercourse to the site is the Nore Farm Stream which is located approximately 250m to the west. The flood risk associated with this watercourse is tidal, however with minimum site levels of 8.15m AOD, the site would be several metres above the 1 in 1000 year flood level.

4.3 It is therefore concluded that the site would be at a low risk of flooding from tidal or fluvial sources.

Groundwater flooding

4.4 Groundwater flooding occurs when groundwater levels increase sufficiently for the water table to intersect the ground surface. Groundwater flooding can occur in a variety of geological settings including valleys, in areas underlain by chalk, and in river valleys with thick deposits of alluvium and river gravels.

4.5 The Landmark 'Sitecheck' Flood Report has been obtained as part of this study and is included in **Appendix C**. The report includes flood risk mapping associated with groundwater which has been generated by ESI Environmental consultants. A copy of this map is included as **Figure 4** and demonstrates that there is a negligible risk for groundwater flooding on the site with a return period of 100 years or more frequent.

4.6 The British Geological Society mapping indicates that the site maybe underlain by River Terrace Deposits, therefore, there could potentially be a risk of groundwater rising through these superficial deposits and breaking ground level. It is recommended that a Ground Investigation is undertaken on the site prior to the detailed design stage to determine groundwater levels beneath the site. This information will also be required for the foundation design.

4.7 In the unlikely event that the site was to incur groundwater flooding, it is considered that flood depths would be minimal and would follow the natural topography, allowing water to flow off the site in a south-easterly direction. Any associated flood risk could be satisfactorily mitigated by ensuring that ground floor slab levels are set at least 250mm above the adjacent external areas. Care should also be taken to ensure that external areas slope away from the new building. It is noted that the development proposals do not include for a basement.

4.8 Based on the Sitecheck report, it is concluded that the flood risk to the site associated with groundwater is low and if any such flooding were to occur, then this could be mitigated through appropriate design of the new development. A request for information has been submitted to both the Environment Agency and Havant Borough Council for the provision of any records that they may hold of flooding in the area associated with groundwater.

4.9 The response from the environment Agency is that they do not hold any records of groundwater flooding at the site. A copy of the consultation responses are included in **Appendix D**.

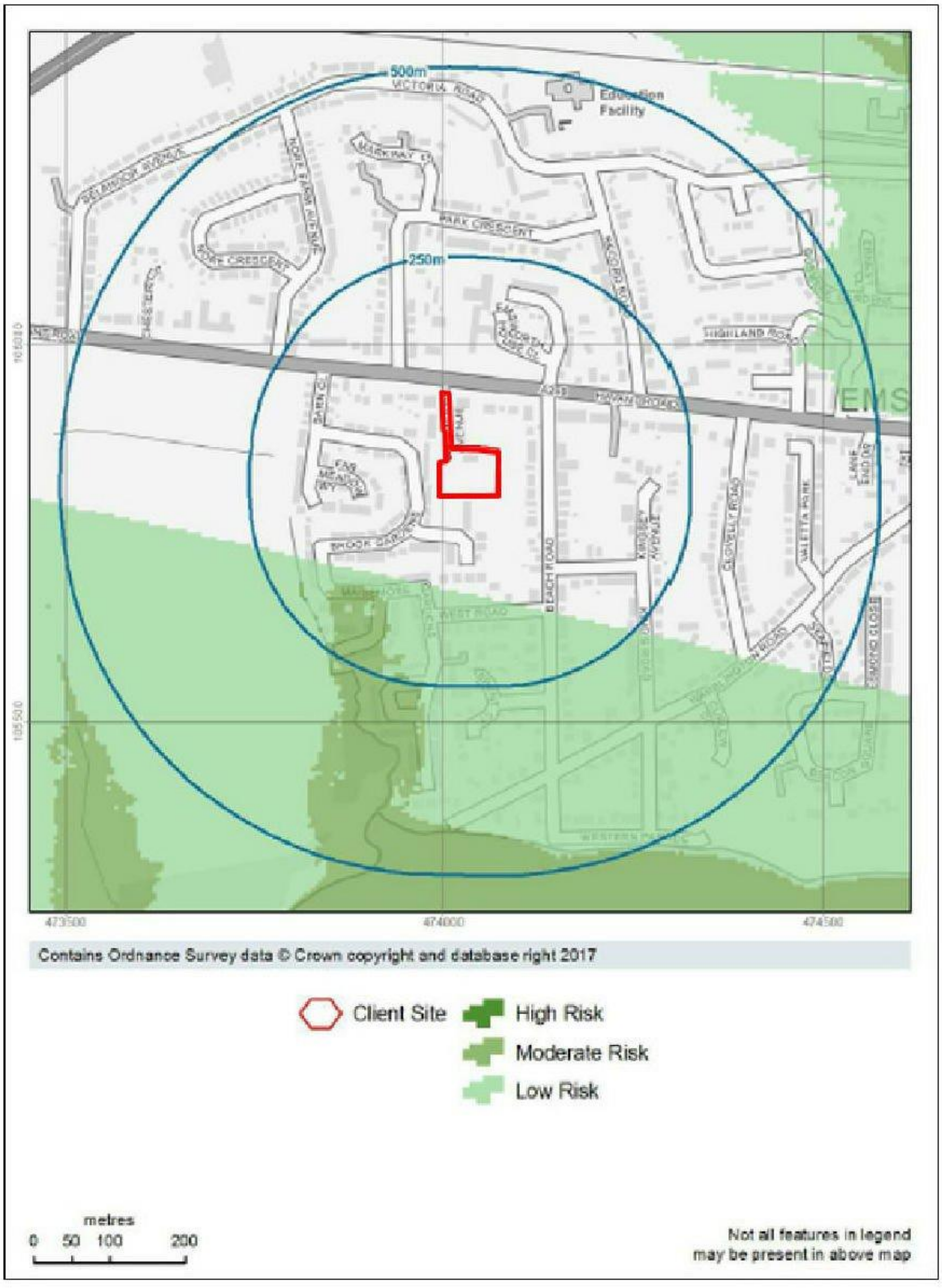

Figure 4: Groundwater Flood Risk (Extract from Landmark 'Sitecheck' Flood Report)

Artificial Sources of Flooding

4.10 There are no artificial water sources (canals, reservoirs, etc.) within vicinity of the site that could potentially be the source of flood risk. The Environment Agency's Flooding from

Reservoirs Map is included as **Figure 5** and confirms that there is no risk to the site associated with flooding from artificial sources.

Figure 5: Environment Agency Flooding from Reservoirs Map

Surface Water Flooding

4.11 Surface water or 'pluvial' flooding results from rainfall running over ground before entering a watercourse or sewer. It is usually associated with high intensity rainfall events but can also occur with lower intensity rainfall or melting snow where the ground is already saturated, frozen, developed (for example in an urban setting) or otherwise has low permeability.

4.12 The Environment Agency's Flooding from Surface Water Map is included as **Figure 6** and indicates that the site is at a very low risk of flooding from surface water. An area of low risk is shown to occur at the southern end of Western Avenue however this would not significantly impact on the site.

4.13 Additional surface water flood mapping is given in the Landmark 'Sitecheck' Flood Report which has been included as **Figure 7**. This flood mapping is based on modelling undertaken by JBA consultants and indicates that there is a negligible risk of surface water flooding on the site during a 1 in 1000 year rainfall event. The E.A. has been contacted and they have no record of flooding to this area.

4.14 It is concluded that the flood risk to the site associated with surface water is low and if any such flooding were to occur, then this could be mitigated through appropriate design of the new development (as stated in Paragraph 4.7), in conjunction with a suitably designed on-site drainage system. A request for information has been submitted to both the

Environment Agency and Havant Borough Council for the provision of any records that they may hold of flooding in the area associated with surface water. A response has yet to be obtained, and when received, the FRA will be updated to reflect any additional information.

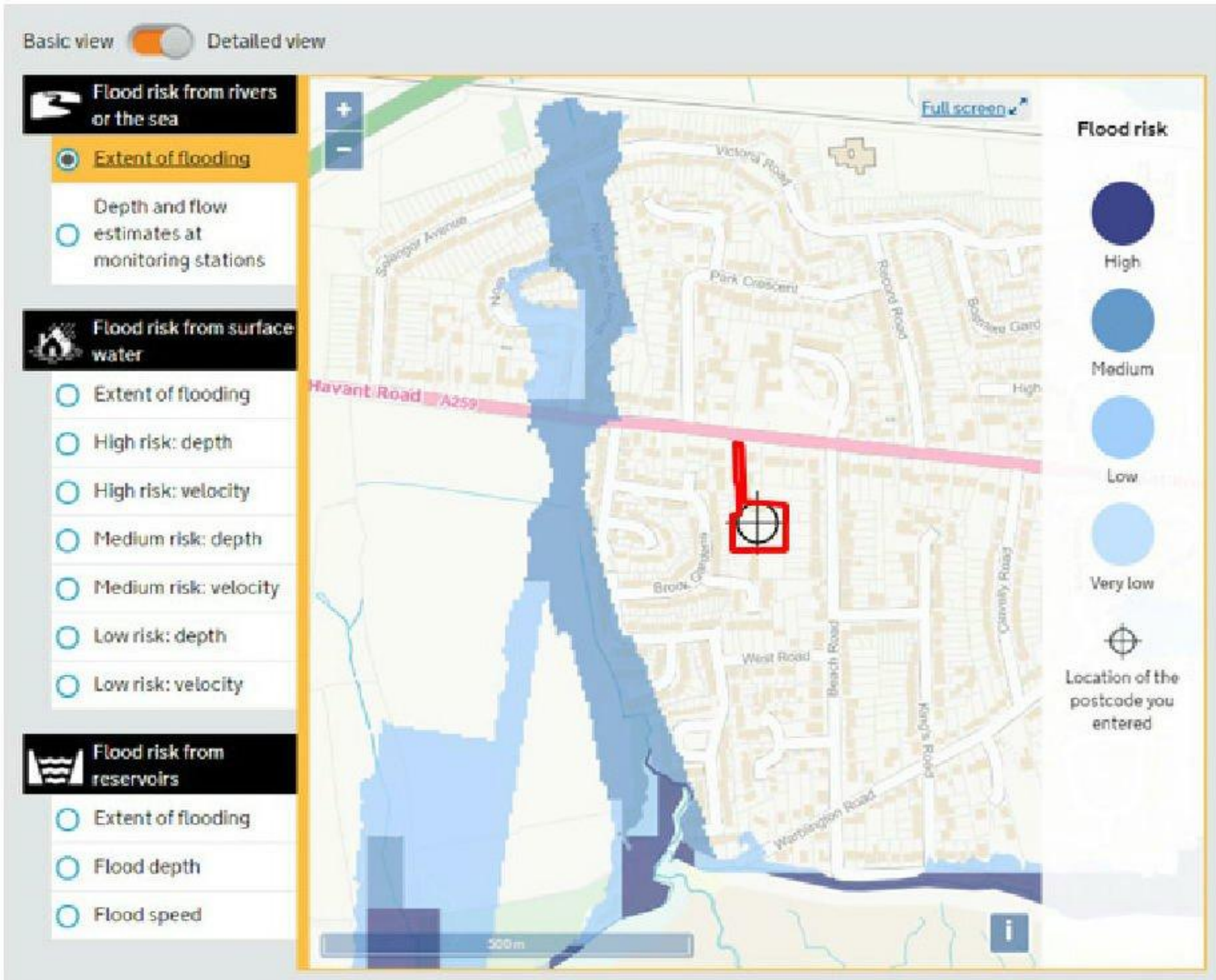

Figure 6: Environment Agency Surface Water Flood Map

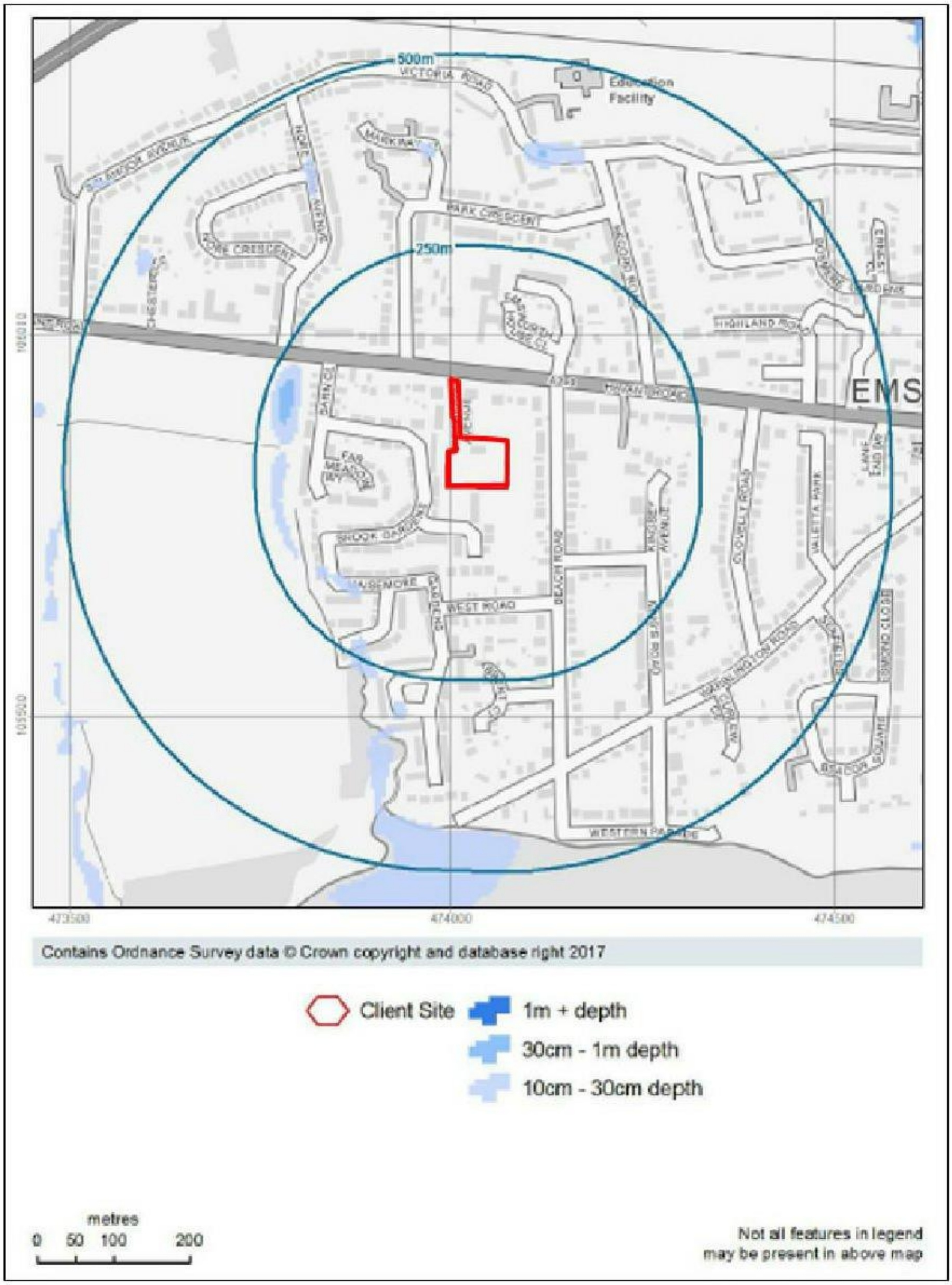

Figure 7: Surface Water Flood Risk (Extract from Landmark 'Sitecheck' Flood Report)

Sewer Flooding

4.15 A copy of the Southern Water sewer records is included in **Appendix E** which shows that there is a 225mm diameter public foul water sewer running through the western part of the site in a south to north direction. This sewer continues along Western Avenue and

discharges into a 225mm diameter public foul water sewer within Havant Road. The topographic survey identifies that the depth to invert of the public sewer within Manhole 0801 adjacent to the site boundary is 3.8m.

4.16 The sewer records indicate that there are no public surface water sewers either within or immediately adjacent to the site. The closest public surface water sewers include a 300mm diameter sewer within Brook Gardens approximately 50m to the west of the site; a 375mm diameter sewer within Havant Road approximately 90m to the north of the site; and a 225mm diameter sewer within Havant Road approximately 90m to the north of the site.

4.17 It is not considered that the aforementioned public surface water sewers would pose any flood risk to the site. Any flooding from the sewer within Brook Gardens would be conveyed southwards along the carriageway due to the falling levels as identified by the cover levels on the sewer records and away from the site.

4.18 The head of runs for the 375mm and 225mm diameter surface water sewers within Havant Road are set back (to the west and east respectively) from the Western Avenue junction. It is also noted that the Western Avenue junction is located at a high point along Havant Road (according to the cover levels given on the sewer records). Therefore any flooding from the 375mm and 225mm diameter surface water sewers would be conveyed along the carriageway of Havant Road in a western and eastern direction respectively, and not towards the site via Western Avenue.

4.19 It is usually the surface water sewers that pose the greatest flood risk to a site, however there is also a potential flood risk associated with the public foul water sewer adjacent to the site. A drainage survey of the site was recently undertaken by Such Salinger Peters Consulting Engineers who identified a level monitoring device was within Manhole 0801 as shown in **Figure 8**.

4.20 It has also been noted from the Sewer Record plans that anti flooding devices (AFD's) have been installed in manholes 0701 and 0702

4.21 From information provided by Southern Water, the AFD's have been installed since the mid-2000's to the foul drainage manholes in Brook Gardens/Western Avenue, to prevent surcharging entering the Brook Gardens system. It is worth noting that none of the residents of Western Avenue has reported any flooding from the public foul water sewer. If this sewer surcharges, which we understand it did in the early 2000's, it is the low point in Brook Gardens that floods. The residents of numbers 68, 70, 72 have reported being affected.

4.22 We understand that there have been no foul water flood incidents since Spring 2013, when an AFD was fitted in the road within Brook Gardens. In the event of a surcharge the AFD's send an alarm signal via a telemetry link and tankers are then dispatched to pump the excess.

Figure 8: Photo of Southern Water Manhole 0801

4.23 The topographic survey suggests that any flooding from Manhole 0801 is likely to be conveyed southwards along the access road (which will become the car park as part of the development) although there is potential for some flooding to spill onto the main part of the site based on existing levels. Finished levels in this area must be set to ensure that they slope away from the main part of the site which would provide containment within the car parking area. Additionally, the finished floor level (FFL) of the building should be set at least 300mm above the cover level Manhole 0801, i.e., a minimum level of 9.28 m AOD.

4.24 The on-site drainage system would be designed and constructed to prevent flooding for rainfall events with a return period of up to 100 years (including climate change). As a result of this, the flows to the foul system will be significantly reduced during all rainfall events.

Historical Flooding

4.25 The Landmark 'Sitecheck' Flood Report includes a section on historical flood events and it is understood that this is based on information that has been collated by the Environment Agency. The report states that there are no recorded incidents of flooding within 500m of the site.

Flood Risk Summary

4.26 It is concluded that flood risk to the site and the proposed development from all flood risk sources is generally low.

4.27 The potential risk from groundwater or surface water flooding could be mitigated against using best practice through the provision of an adequately designed on-site drainage system in conjunction with appropriate threshold levels for buildings above the adjacent ground. A threshold level of 200mm is likely to be adequate and it will also important to ensure that hardstanding areas slope away from buildings.

4.28 The potential flood risk associated with the public foul water sewer adjacent to the site could be mitigated by setting the finished levels in the surrounding area to direct any sewerage spill into the car park area and away from the new development. It is recommended that the FFL of the building to be at least 9.28 m AOD.

4.29 As the site is located within Flood Zone 1, safe access and egress to/from the site does not require any further consideration.

4.30 As the site currently drains surface water into the foul system, and the proposed development will remove this and discharge to the public surface water sewer at greenfield rates, the development will not cause any flooding downstream of the site and will improve the flow characteristics of the foul drainage system

5. DRAINAGE STATEMENT

Introduction

5.1 It is understood that McCarthy & Stone have engaged Such Salinger Peters Consulting Engineers (SSP) as the drainage consultants for the development. As such, they have provided a proposed drainage layout which is included in **Appendix G**. However for completeness of this FRA, a brief description of the existing site drainage in conjunction with the concepts that have been followed by Such Salinger Peters are provided below.

Surface Water Drainage

5.2 From the drainage survey of the existing site undertaken by Such Salinger Peters, the majority of the surface water run-off generated by the existing impermeable areas was found to drain to an existing soakaway within the garden of the property. However approximately half the roof area of the main building was found to discharge to the public foul water sewer.

5.3 The British Geological mapping has indicated that the superficial geology underlying the site is made up of River Deposits. (***1:50 000 scale superficial deposits description:*** *River Terrace Deposits (undifferentiated) - Sand, Silt and Clay. Superficial Deposits formed up to 3 million years ago in the Quaternary Period. Local environment previously dominated by rivers.)* Which may offer the potential to use infiltration techniques to dispose of the surface water run-off generated by the impermeable (roofed and hardstanding) areas created by the new development. This is further supported by the majority of the existing site already discharging to a soakaway.

5.4 It is noted that infiltration is the preferred option in line with the Building Regulations Part H3 which states that surface water shall discharge to one of the following, listed in order of priority:

- · An adequate infiltration system: or, where not reasonably practicable,
- · A watercourse; or, where not reasonably practicable,
- · A sewer.

5.5 A preliminary geotechnical investigation has been carried out by ACS and the following is taken from the summary

> 6.3.1 The borehole infiltration test revealed a permeability of 3.48×10^{-7}m/s indicating the shallow underlying ground conditions may not be suitable for surface water drainage. The shallow soils have been revealed to be variable with both cohesive and granular material. Furthermore shallow groundwater has been recorded across the site which may further negate the potential for soakaways.

5.6 As on-site testing indicates that the ground conditions are not conducive to infiltration techniques, the next preferred option would be to discharge the surface water run-off to a watercourse. However there are no watercourses either within or immediately adjacent to the site that could be utilised.

5.7 The final and least preferred option would be to discharge to the public surface water sewer network, given the aforementioned constraints, the solution selected by Messrs SSP includes an attenuation tank, with a pumped discharge to the public surface water network within Havant Road at Manhole 9951.
This system has been designed to cater for a 1: 100 year rainfall event plus an allowance of 40% for climate change.

Foul Water Drainage

5.8 From the drainage survey of the existing site undertaken by Such Salinger Peters, the foul water generated by the existing dwelling was found to discharge into Southern Water Manhole 0801 via a private 100mm diameter connection.

5.9 Based on the Sewers for Adoption design criteria of 4,000 litres per dwelling per day, the design foul water discharge from the existing site would be 0.05 l/s. For a 25 dwelling development the design foul water discharge would be expected to be 125 l/ per person per day, based on McCarthy and Stone design criteria. Also based on McCarthy and Stone design criteria, it is anticipated that room occupancy rates would be 1.5 persons per 2 bed room and 1.25 per 1 bed room resulting in a daily flow of 5,624 l/day. From the SSP calculations the peak flow from the site will be 0.0651l/s and Southern Water have confirmed that sufficient capacity exists for this predicted flow rate. A copy of the Southern Water response is included in **Appendix F**.

6. SUMMARY AND RECOMMENDATIONS

6.1 This Flood Risk Assessment has been prepared by Paul Basham Associates to support a planning application for McCarthy & Stone's proposed retirement redevelopment of Orchard House, Western Avenue, Emsworth. The site is approximately 0.58 Ha. in total area and is currently occupied by a large residential dwelling (Orchard House) in conjunction with garages and other out-buildings, along with a large garden.

6.2 The development proposals would involve the construction of 25 retirement dwellings, reception and lounge areas within a multi-story block, associated car parking, open space and landscaping etc. Vehicle access would be provided from Western Avenue via the existing access.

6.3 It has been identified that the site falls wholly within Flood Zone 1, an area with a low risk of flooding from rivers or tidal waters. As a result of the site being located in Flood Zone 1, no Sequential or Exception Testing is required.

6.4 The site has also been assessed for other potential sources of flood risk such as groundwater, canals, reservoirs, surface water (pluvial flooding), and sewers. It was concluded based on the Environment agency data, that flood risk to the site and the proposed development is low and that any potential risk from groundwater or surface water flooding could be mitigated using best practice through the provision of an adequately designed on-site drainage system in conjunction with appropriate threshold levels for buildings above the adjacent ground. A threshold level of 200mm is likely to be adequate and it will also be important to ensure that hardstanding areas slope away from buildings.

6.5 The potential flood risk associated with the public foul water sewer adjacent to the site could be mitigated by setting the finished levels in the surrounding area to direct any sewerage spill into the car park area and away from the new development. It is recommended that the FFL of the building to be at least 9.28 m AOD.

6.6 The surface water run-off generated by the majority of the existing impermeable areas on the site currently drain to an existing soakaway within the garden of the property. However it is noted that approximately half the roof area of the main building discharges to the public foul water sewer.

6.7 The British Geological mapping has indicated that the superficial geology underlying the site is made up of River Deposits which may offer the potential to use infiltration techniques to dispose of the surface water run-off generated by the impermeable (roofed and hardstanding) areas created by the new development. However as noted in the preliminary geotechnical investigation, initial testing, indicates that the ground conditions are not conducive to infiltration techniques

6.8 The surface water drainage solution selected by Messrs SSP includes an attenuation tank, with a pumped discharge to the public surface water network within Havant Road at Manhole 9951. This system has been designed to cater for a 1: 100 year rainfall event plus an allowance of 40% for climate change.

6.9 It is proposed that the foul water discharge generated by the new development would utilise the existing private 100mm diameter connection to Southern Water Manhole 0801. However it is noted that there would be a marginal increase in the design discharge as a result of the proposed 25 units, however this will be mitigated by the significant reduction in surface water flows which currently drain into the foul water system.

6.10 From the SSP calculations the peak flow from the site will be 0.0651l/s and Southern Water have confirmed that sufficient capacity exists for this predicted flow rate.

6.11 SSP, have produced a detailed surface water drainage layout for the development and a copy of this is included in **Appendix G**.

6.12 Overall it is concluded that the flood risk posed to the new development including the section of Western Avenue would be low and that any issues associated with the public foul water sewer adjacent to the site could be mitigated. The surface water run-off generated by the new development would be managed in a sustainable manner and would not increase the flood risk to the surrounding area.

Appendix B

Appendix A

Notes

1. The survey grid is a local grid, coincident with Ordnance Survey National Grid at 75TN.
2. Surveyed boundary features are not necessarily legal boundaries.
3. Dimensions should not be scaled. All dimensions should be checked on site before any fabrication / construction.
4. Copyright of all data produced by Technics Group shall remain with Technics Group unless otherwise specifically agreed.
5. Information provided should not be altered or modified in any way. It should not be used for any purpose other than for which it was intended and should not be issued to other parties without prior agreement of Technics Group.
6. Technics Group cannot accept responsibility for any damage to computer systems which may result from viruses which may be contained in the data provided.
7. If the AutoCAD drawing is being read by any system other than AutoCAD it should be checked against a hard copy. Technics Group cannot accept liability for omissions.
8. All utilities have been identified to the best of the surveyors knowledge. The correct identification of the utility types can not be 100% guaranteed, therefore these should be independently verified prior to use in any design and building works.
   All pipe diameters and levels are assumed to be correct, however due to non entry to inspection chambers, these should be verified before any works commence.
   All drainage connections shown are sounded only. They have not been water tested. Services may be obscured by parked cars, leaf litter or building materials etc.
9. External eaves levels are surveyed to lowest tile position.

Level Datum

ALL LEVELS ARE ORTHOMETRIC HEIGHTS RELATED TO OSGM02 GPS DATUM, COMPUTED USING LEICA SMARTNET RTK NETWORK.

Topo Key

STREET FURNITURE
BB Bedline Beacon
BL Basement Light
Bin Litter Bin
BO Bollard
CB Catch Basin
CPO Concrete Post
EC Electric Cupboard
EP Electric Pole
FB Flower Bed
FHM Fire Hydrant Marker
FL Flood Light
FP Fence Post
FPO Fence Post
JB Junction Box
GB Grit Box
GMK Gas Marker Post
GV Gas Valve
BIO Illuminating Bollard
LH Lamp Hole
LP Lamp Post
LPO Lockable Post
MB Mail Box
MPO Metal Post
NP Name Plate
PB Post Box
PM Parking Meter
PO Parking Bay Post
RS Road Sign
SI Sign
STN Survey Station
Tap Water Tap
TCB Telephone Call Box
TL Traffic Light
TLCB Traffic Light Control Box
TP Telegraph Post
TPO Timber Post

PIPES & CABLES
DBC Directly Buried Cable
DP Down Pipe
FWP Foul Water Pipe
GP Gas Pipe
RWP Rain Water Pipe
SP Stand Pipe
SVP Soil Vent Pipe
UTT Unable to Trace
VP Vent Pipe
WP Waste Pipe

LEVELS & DEPTHS
A Approximate
BD Back Drop Depth
BDL Back Drop Level
CD Chamber Depth
CL Chamber Level
DSL Door Sill Level
DPC Damp Proof Course
EL Eaves Level
FFL Finished Floor Level
FRL Flat Roof Level
CL Cover Level
IL Invert Level
L Invert Level
OD Outlet Depth
OL Outlet Level
PWL Parapet Wall Level
SD Sump Depth
SL Sump Depth
SFD Soffit Depth
SFL Soffit Level
SIL Sill Level
SL Sump Level
SSL Structural Slab Level
TFL Top of Fence Level
THL Threshold Level
TTL Top of Tree Level
UD Underside Depth
USL Underside Level
WL Water Level
WHL Window Head Level
WSL Window Sill Level

FENCES & WALLS
BW Block Wall
BPP Brick Pier
BRTW Brick Retaining Wall
BRW Brick Wall
BWF Barbed Wire Fence
CBF Close Boarded Fence
CIF Corrugated Iron Fence
CLF Chain Link Fence
CPF Chestnut Paling Fence
CRW Concrete Retaining Wall
CWF Concrete Wall
CWF Chicken Wire Fence
DF Dilapidated
HR Handrail
IWF Interwoven Fence
LF Lattice Fence
MF Metal/Wooden Fence
MRF Metal Railing Fence
OBF Open Board Fence
PCF Post & Chain Fence
PaF Panel Fence
PrF Post & Rail Fence
RRF Ranch Rail Fence
RTW Retaining Wall
STW Stone Wall
SRTW Stone Retaining Wall
WMF Wire Mesh Fence

INSPECTION CHAMBERS
AC Access Cover
BH Borehole
CDC Concrete Drainage Channel
EIC Electric Inspection Cover
FC Field Drain
FH Fire Hydrant
FWIC Foul Water Inspection Cover
GIC Gas Inspection Cover
GM Gas Meter
GV Gas Valve
G Gully
IC Inspection Cover
KI Kerb Inlet
LHP London Hydraulic Power
MDC Metal Drainage Channel
MW Monitoring Well
PO Petrol Pump Location
RE Rodding Eye
SDIC Service Duct Inspection Cover
SV Stop Valve
SWCP Storm Water Catch Pit
TCIC Traffic Control Inspection Cover
TCC Traffic Control Inspection Cover
TIC Telecom Inspection Cover
UIC Unidentified Inspectional Cover
UTR Unable to Raise
WIC Water Inspection Cover
WM Water Meter
WWO Water Wash Out
WSV Water Stop Valve

SURFACES
BPav Brick Paving
Conc Concrete
CPav Crazy Paving
CPS Concrete Paving Slabs
FB Flower/Shrub Border
PBS Paved Block Sleepers
SPS Stone Paving Slabs
T Tiles
Tmac Tarmac
TPav Tactile Paving
TS Trench Scar

MEASUREMENTS
d Depth(m)
Ø Diameter (mm)
Ext. Ø External Diameter (mm)
h Object Height (m)

Symbology

- Single Gate
- Double Gate
- Banking
- Step Up
- Diameter shown in mm
- Survey Station

Linetypes

- Telecom Overhead
- Power Overhead
- Foul Water
- Storm Water
- Combined Water
- Unknown Services
- Change of Surface
- Drop Kerb
- Edge
- Wall
- Kerb
- Building Face
- Overhead Feature
- Trench Scar
- Tree Canopy
- Bushes/Hedge/Overgrowth
- Tree Canopy Extents

Trees

SPECIES ABBREVIATION

AL	Alder	HL	Hemlock	RH	Rhododendron
BE	Beech	HO	Holly	RO	Rowan
CE	Cedar	HZ	Hazel	SAP	Sapling
CH	Cherry	LA	Larch	SB	Silver Birch
CON	Coniferous	LB	Laburnum	SCN	Sweet Chestnut
CY	Cypress	LM	Lime	SHR	Shrub
DE	Dead	LO	Locust	ST	Stump
DEC	Deciduous	LU	Laurel	SY	Sycamore
ED	Elder	MA	Maple	WB	Whitebeam
EU	Eucalyptus	MG	Magnolia	WG	Wellingtonia
FR	Fruit	NS	Norway Spruce	WI	Willow
HA	Hawthorn	PI	Pine	WN	Walnut
HB	Hornbeam	PO	Poplar		
HC	Horse Chestnut	PL	Plane		

NOTES:
1.The tree species have been identified to the best of the surveyors knowledge. They have not been verified by an arborist and are not guaranteed. If they are important they should be verified.
2.Tree heights are estimated.
3.A CAD layer exists with the full tree canopies intact which is turned off.
4.Trees with bole diameters below the specified minimum size may not have been surveyed.
5.Multibole sizes are indicative.

Revision

Rev	Date	Notes	By
Rev	Date	Notes	By

SURVEY STATIONS

Name	Easting	Northing	Height
2STN	474318.021	105851.598	8.924
3STN	474043.932	105860.354	8.915
4STN	474053.207	105857.143	8.876
5STN	474063.201	105848.788	8.876
6STN	474053.117	105826.765	8.574
7STN	474045.284	105807.634	8.540
8STN	474020.254	105808.713	8.492
9STN	474007.088	105818.559	8.682
10STN	474008.520	105835.897	9.120
11STN	474021.914	105827.577	8.798
61STN	474006.836	105889.054	8.658
74STN	473998.418	105873.354	9.355
75STN	474065.967	105813.089	8.353
94STN	473998.345	105833.196	9.227
108STN	474000.446	105867.446	9.252

CLIENT
McCarthy & Stone

SITE
The Orchard House,
Western Avenue, Emsworth,
Hampshire, PO10 7LP

DRAWING TITLE
Topographical Survey

PROJECT NUMBER	DRAWING NUMBER	DATE
SP16467	SD16467-01	Jun 2016
SURVEYED BY	DRAWN BY	CHECKED BY
CJ, RMF	CJ, RMF	AJH
SCALE	SHEET SIZE	SHEET
1:200	A0	1 OF 1

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Appendix B

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rev.	issue name	date	changes description	status	modified by	checked by
P39	Pink File Issue - Boundary Amended 2	5/11/2017	Planning boundary amended	S1	KM	NA
P38	Pink File Issue - Boundary Amended	5/10/2017	Planning boundary amended	S1	KM	NA
P37	Pink File Issue - Amendments	5/8/2017	Co-ordinated with the landscape	S1	KM	NA
P36	Pink File Issue	4/28/2017	Layout changed to T-shape	S1	KM	NA
P35	Green File Issue	12/15/2016	General amendments			
P34	Green File Issue	12/9/2016	Layout changed			
P33	Green File Issue	12/2/2016	General amendments			
P32	Second Issue	11/29/2016	General amendments			
P31	First Issue	11/25/2016				

Key:

- 2 Bed Apartments
- Ancillary accomodation
- Comunal areas
- Circulation
- Planning boundary

RE–FORM AT

www.re-format.co.uk mail@re-format.co.uk +44 (0)1730 778773

project title
Retirement Living
The Orchard, Western Avenue, Emsworth

document title
Site Plan

N

Date	drawn by	checked by	approved by
April 2017	KM	NA	NA

0 1 5 10 15M
scale 1:200

Scale at A1
1:200

region	project no.	stage no.	discipline	number	
SO -	2379 -	03 -	AC -	0001	Site Plan

status	suitability description	revision
S1	Suitable for co-ordination	P39

Appendix C

Landmark INFORMATION GROUP

Sitecheck Flood

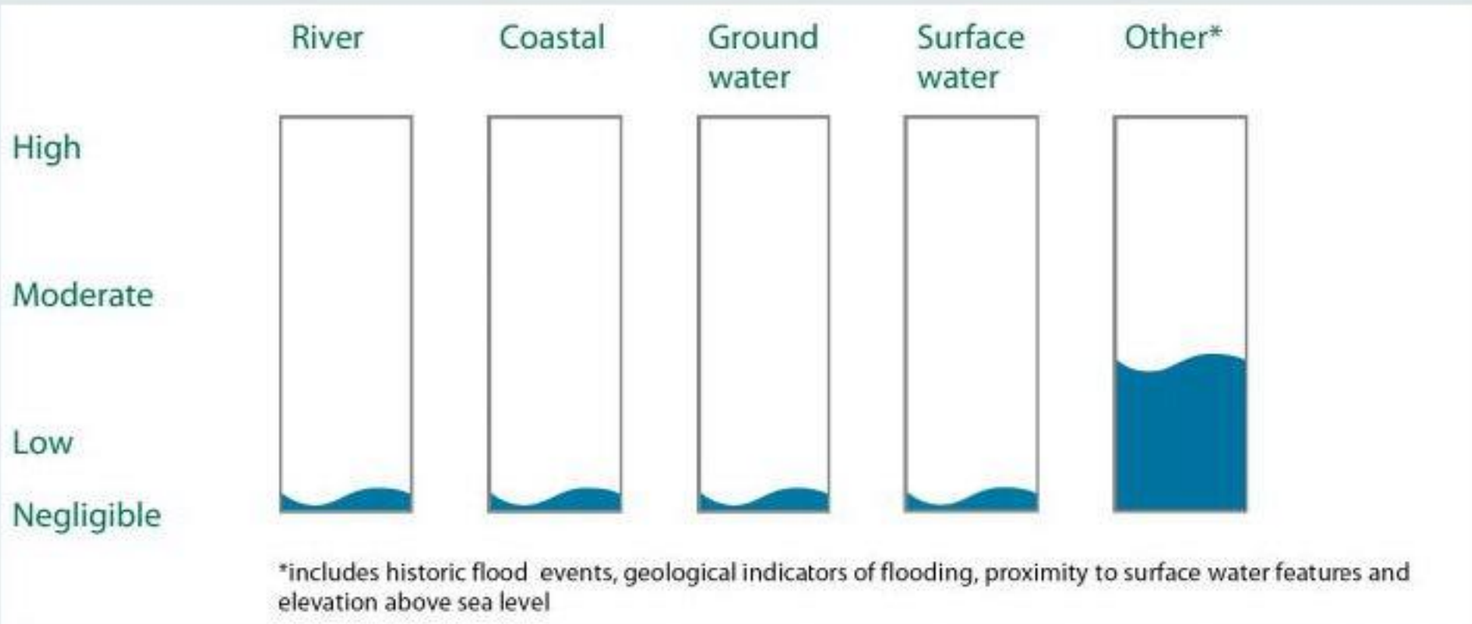
Overall Opinion — Passed

The site is not considered to be at significant risk of flooding. No further action is considered necessary. However, it would be prudent to consider the measures outlined in the Recommendations section.

Flood Risks

Undefended Flood Risk What is the overall risk of flooding, assuming defences fail or are absent or over-topped?	Low to Moderate
Flood Defences Are there existing flood defences that might benefit the site?	Yes
Effect What is the risk of flooding when these defences are operational?	Low to Moderate
Development Risk If development is proposed would a detailed Flood Risk Assessment be required?	No

Flood Risk Gauges



*includes historic flood events, geological indicators of flooding, proximity to surface water features and elevation above sea level

Insurance

The flood risk identified is unlikely to affect obtaining buildings and contents insurance.

This report is issued for the site described as:

The Orchard House, Western Avenue, EMSWORTH, PO10 7LP

Report Reference
117707662_1

Customer Reference
Orchard house_Emsworth_SCF

Report produced on
14 March 2017

CONTACT DETAILS

If you require assistance please contact our customer services team on:

0844 844 9966

or by email at:
helpdesk@landmark.co.uk

argyll ENVIRONMENTAL
COPSO ASSOCIATE MEMBER
searchcode
The Property Ombudsman Consumer Redress

Understanding this report

This is a flood risk screening report. It is designed to help property professionals assess the risk of flooding at commercial sites. It examines three areas: How flood risk affects the availability of insurance for a site; how flood risk affects the potential to redevelop a site; and the overall risk of flooding at a site.

A summary of flood risks is provided on the front page. It is split into:

Overall Opinion

The overall flood risk rating is an assessment of all the data within this report. This opinion is followed by a number of flood risk considerations

Undefended Flood Risk and Flood Defences

The first answer is a worst case scenario and assumes that no defences are present or that they have failed or been over-topped.

The next question informs if there are any flood defences present that could protect the site (data provided by The Environment Agency to a distance of 500m). If defences are present a third question indicates what the flood risk is when they work.

A residual risk of flooding may be present if such defences failed. Flood defences do not generally protect the site against groundwater and surface water flooding.

Insurance

Landmark provides an indication of whether the level of flood risk at the site is likely to affect your ability to obtain insurance or if premiums could be high. Details of how we make this assessment can be found in the Methodology section at the back of the report.

Since April 2016 insurers of commercial property are all free to decide whether to offer insurance against flooding, at what price, and on what terms. They will have different attitudes to risk. This means there is no set of universal guidelines on whether insurance will be available against flood risk or not. This is why we may have recommended you consult your proposed insurer prior to exchange of contracts, to establish the terms on which flood insurance would be offered.

For some sites, it is possible to reduce the risk of flooding by installing flood protection measures (either flood resistance or flood resilience measures). If these measures are appropriate to the site, and have been installed properly, then an insurer may offer better terms (lower premium, lower excess or fewer conditions to cover).

Development Risk

The report comments on whether a detailed Flood Risk Assessment (FRA) would be required if redevelopment was proposed in accordance with National Planning Policy Framework (NPPF). The answer to this question is indicative only and is based on the size of the site and the flood data in this report.

A Drainage Impact Assessment may be required to demonstrate that development of the site will not adversely affect flood risk elsewhere.

Flood Risk Gauges

The flood risk gauges provide a more detailed analysis of the risk from each of the four main types of flooding – river, coastal, groundwater, and surface water. A fifth gauge provides an analysis of other factors (i.e. historical flood events, geological deposits, proximity to surface water features and elevation above sea level).

For surface water flooding, only the risk rating generated from the 1:200 year rainfall event data is included in the overall risk assessment. The data on 1:75 year and 1:1000 year rainfall events is provided for information only.

The gauges take into account any existing flood defences and assumes they work as designed. The analysis also takes into account the other information contained in those data sections of the report which are relevant to that particular type of flooding. The assessment of the risk as shown in the flood gauge should therefore take priority over the information in the individual data sections of the report.

Sitecheck Flood Report

Aerial Photograph

This photograph enables you to check the location used for this report

Overall Opinion

Recommendations

We recommend these next steps

1. You should speak to the seller to confirm whether the property or the surrounding area has flooded before. If it has, please contact us for advice.

2. Prior to exchanging contracts, establish the terms of buildings and contents insurance for the property.

Overall Opinion

Additional Considerations

You may wish to consider the following potential liabilities that fall outside the scope of our flood risk screening methodology.

Riparian Ownership

Riparian ownership applies when someone owns a site with a watercourse inside or next to it.

A riparian owner has rights and responsibilities under common law relating to the stretch of watercourse. Their primary responsibility is to keep it free of obstructions that could hinder normal water flow. Failure to carry out these responsibilities could result in civil action.

A riparian owner should check before carrying out any works near to the edge of a river, as such works may be subject to byelaws. If infringed, this could lead to enforcement action by The Environment Agency.

There is a presumption that the boundary between properties abutting a watercourse is the centre line of that watercourse. A solicitor should check the deeds or the Index Map to confirm whether this is the case.

The Environment Agency published a useful guide called "Living on the Edge" for owners of land or property alongside a watercourse.

Sometimes, The Environment Agency or other organisations managing flood risk have statutory rights of access to properties. This is for maintaining, repairing, or rebuilding parts of a watercourse. Or for accessing, or repairing monitoring equipment.

Development Control

A redevelopment site which is close to, but not adjoining, a watercourse may be subject to planning controls. The Environment Agency are normally consulted regarding any development within 20m of a main river and internal drainage boards should be contacted about developments close to drainage channels. Navigation authorities are normally consulted regarding any development within 250m of a canal, although this varies on a site by site basis.

The Environment Agency should be contacted with regards to development (other than minor development) in Flood Zones 2 and 3.

Sewer Flooding

In times of extreme rainfall events sewers can overflow and cause local flooding. Ofwat's 'DG5 - At Risk Registers' record properties that have flooded from sewers and are at risk of flooding again, with separate registers for internal and external flooding. The At Risk Registers are maintained by each of the ten water and sewerage companies in England and Wales and details of properties subject to sewer flooding are normally kept for between two and five years. These registers are not necessarily complete as not all episodes of past flooding may be recorded. The relevant water and sewerage provider can answer specific enquiries. The response provided is based on the information held. Sometimes, the water and sewerage provider is unable to confirm whether the site has flooded, but provides a response based on all properties connected to a local sewer network (normally up to ten houses). This is due to the way in which the data is collected.

Risk Management Options

Simple, practical steps to prepare for the event of flooding

Flooding can often be managed by the installation of flood protection measures either on/within the building(s) or across the site. Flood protection measures can be divided into two categories; flood resistance and flood resilience.

Both flood resistance and flood resilience solutions can be integrated with design proposals for new build properties or retro-fitted to existing properties. Specific flood protection packages can often include both resistance and resilience measures. What is suitable will depend on a number of factors including flood source, likely flood depths, property design and age.

Research conducted by CLG Sustainable Buildings Division and The Environment Agency revealed that installing flood resistance measures may be inappropriate where likely flooding will be deep. Certain types of building construction are unable to resist the pressure load placed on the exterior skin of the building by retained flood waters. Generally a flood depth between 0.6m and 1.0m above ground level is used as a benchmark to decide whether to consider flood resilience measures rather than rely on flood resistance measures. This is dependent on the age and construction of the property.

The costs below are for indicative budget purposes only. They are based on installing components of a standard design and colour. If the site requires bespoke products, these are likely to cost more (for example, if the site is in a conservation area, different colours may be required).

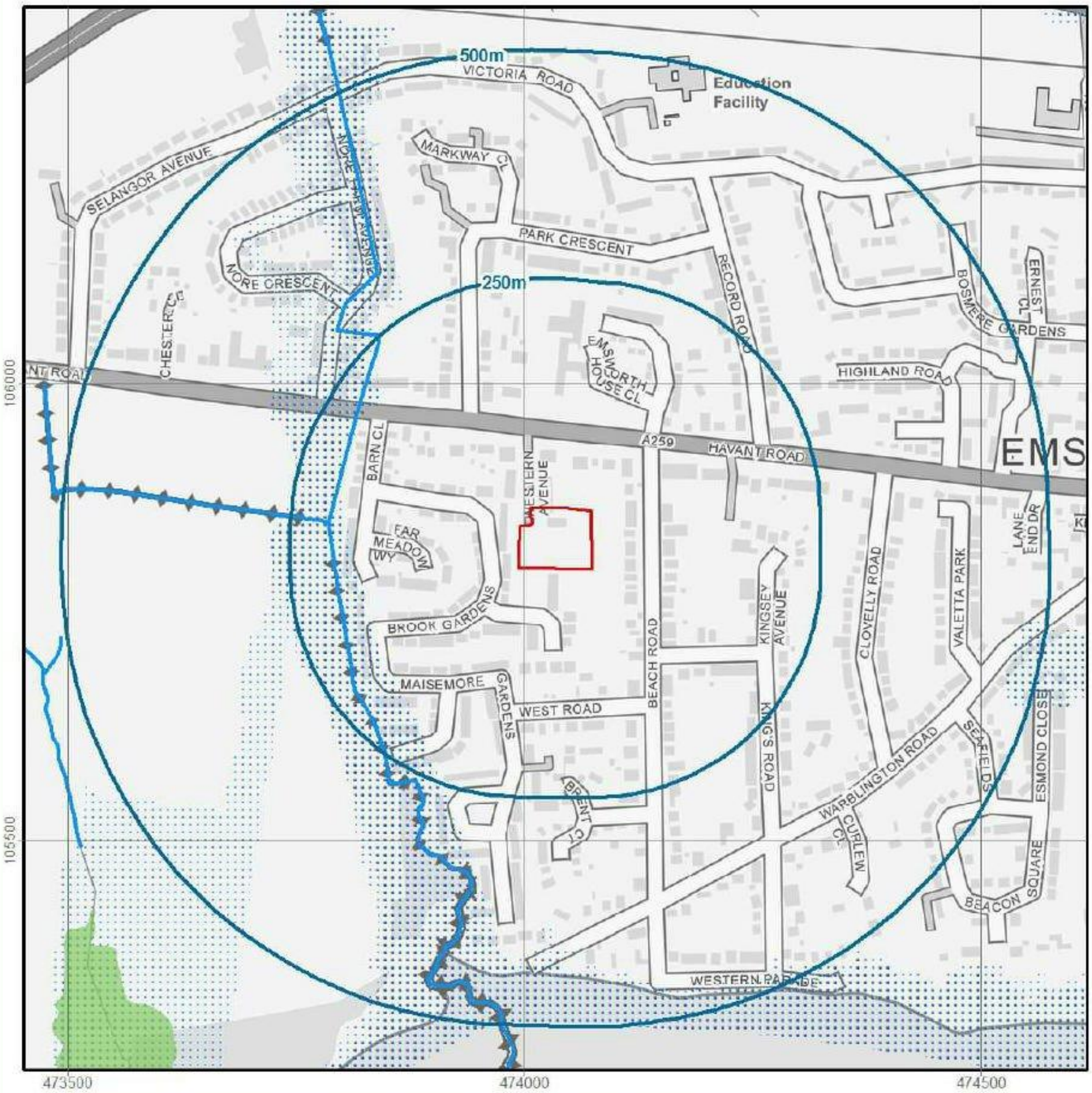
Guideline Costs for Resistance Measures

Building feature	Cost estimate
Standard 900mm single door	£750 + vat
Standard 1800mm double entrance door	£950 + vat
Large roller shutter door up to 2745mm span	£1420 + vat including channel
Standard garage door	£1400 - £1575
Standard window up to 1240mm span	£750
Large window 1240mm to 2150mm span	£550 - £700
Single air brick	£60 - £90
Double air brick	£80 - £230
Tanking of basement, walls, or floors	£25 - £50 per metre^2
Simple non-return valve	£35 - £170
Sophisticated non-return valve	£670 - £900

River and Coastal Flooding

Flood Zones and Defences

This map shows The Environment Agency's model of flood zones and physical defences



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Client Site
Main/Minor River
Flood Storage
Flood Defences
Flood Zone 3
Defended Areas
Flood Zone 2

metres
0 50 100 200

Not all features in legend may be present in above map

River and Coastal Flooding

Flood Zones

Question / Details	Response
Are there any flood plains (Flood Zone 2) within 500m?	Yes
Type: Fluvial Models, Source: The Environment Agency, Boundary Accuracy: As Supplied.	169.1m W
Are there any flood plains in the event of an extreme flood (Flood Zone 3) within 500m?	Yes
Type: Fluvial Models, Source: The Environment Agency, Boundary Accuracy: As Supplied.	169.1m W

What is it?

The Environment Agency model for river or sea flooding. This model does not take flood defences into account and is therefore an indicator of the worst case scenario where flood defences fail.

River flooding mainly happens when the river catchment (that is the area of land that feeds water into the river and the streams that flow into the main river) receives greater than usual amounts of water (for example through rainfall or melting of snow). The amount of run-off depends on the soil type, catchment steepness, drainage characteristics, agriculture and urbanisation as well as the saturation of the catchment. The extra water causes the level of the water in the river to rise above its banks or retaining structures.

Coastal flooding is the inundation of land areas along the coast caused by sea water rising above normal tidal conditions. Coastal flooding can arise from a combination of high tides, wind induced tidal surge, storm surge created by low pressure and wave action.

The Environment Agency split the country into 'flood zones':

Flood Zone 1 - The area where flooding from rivers or sea is very unlikely. There is less than 0.1% (1 in 1000) chance of flooding occurring each year.

Flood Zone 2 - The area of medium probability of flooding – a flood with an annual chance of occurring of between 1% (1 in 100) to 0.1% (1 in 1000) for river flooding and 0.5% (1 in 200) to 1% (1 in 1000) for coastal flooding.

Flood Zone 3a - The area of high probability of flooding – a flood with an annual chance of occurring of 1% (1 in 100) or greater for river flooding and 0.5% (1 in 200) or greater for coastal flooding.

Flood Zone 3b - The boundary between 3a and 3b is a planning decision made by the Local Authority. This information is usually in the strategic flood risk assessment. This area is a functional floodplain. It is an area which is designed to flood – a flood return period of 1 in 20 or less.

A full Flood Risk Assessment (FRA) is a bespoke report required under the National Planning Policy Framework for any development site within Flood Zones 2 or 3 and/or any development site larger than 1 hectare. These reports are generally prepared following liaison with the Local Planning Authority and the application of the sequential test.

What could be the impact on the site?

The site is at a low risk of flooding from rivers or the sea, as defined by the regulatory body's Flood Map. If the site area is greater than one hectare, any planning application for development would need to be accompanied by a Flood Risk Assessment in accordance with NPPF.

Flood defences

Question	Response
Are there any flood defences within 500m?	Yes

River and Coastal Flooding

What is it?

The Environment Agency provides data to show flood defences built in the last five years. The defences shown protect against river floods with a 1 percent (1 in 100) chance of happening each year, or floods from the sea with a 0.5 percent (1 in 200) chance of happening each year. These are shown together with some, but not all, older defences and defences which protect against smaller floods. Flood defences that are not yet shown and the areas that benefit from them will gradually be added.

For information on flood defences which are not yet shown on the map contact your local The Environment Agency Office.

What could be the impact on the site?

There are flood defences within 250m of the site. There may therefore be a residual risk of flooding should the protection standard of those defences be exceeded (and the defences overtopped) or should the defences fail. Further investigations could be undertaken into the standard of these defences. Please contact us for further information.

Areas Protected by Flood Defences

Question	Response
Does the site or any area within 500m benefit from flood defences?	No

What is it?

The Environment Agency provides data to show the areas of land that benefit from the flood defences shown, in the event of a river flood with a 1 per cent (1 in 100) chance of happening each year, or a flood from the sea with a 0.5 per cent (1 in 200) chance of happening each year. If the defences were not there, these areas would be flooded.

Flood defences do not completely remove the chance of flooding, however, and can be overtopped or fail in extreme weather conditions.

What could be the impact on the site?

The site is over 500m from an Area Benefiting from a Flood Defence, as defined by the regulatory body. The residual risk that the site may flood if the protection standard of any flood defences is exceeded, or if the defences fail, is insignificant.

Flood Storage Areas

Question	Response
Are there any flood storage areas within 500m?	No

What is it?

A flood storage area is a reservoir or field intended to fill with water in the event of a flood. It is designed as a flood resistance measure but their presence indicates that flooding could occur.

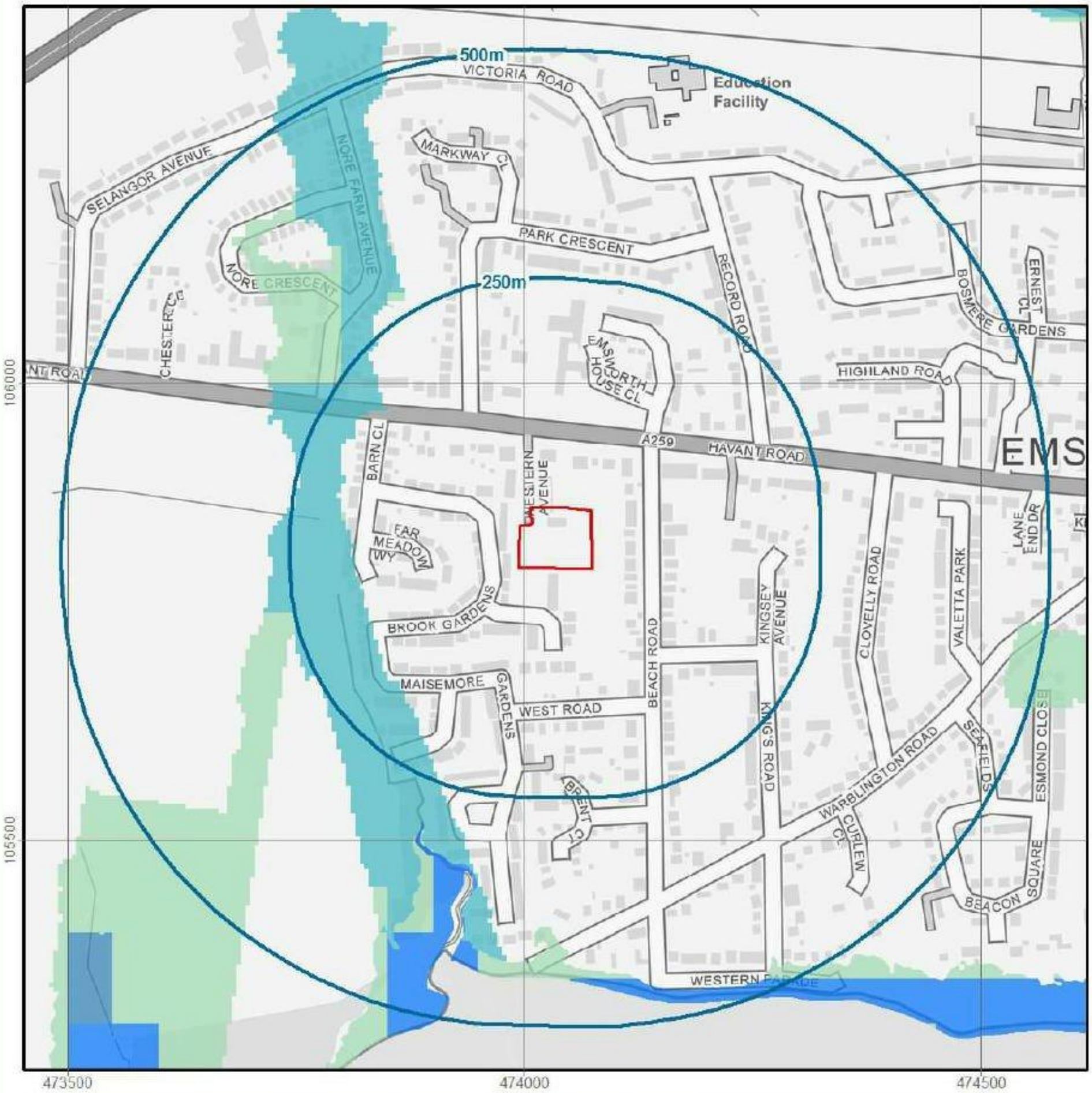
What could be the impact on the site?

The site is over 500m from a Flood Storage Area as defined by the regulatory body. These areas store flood water during flood events. It is unlikely that any FSA presents any associated flood risk to the site.

River and Coastal Flooding

Risk of Flooding From Rivers and Sea

This map shows The Environment Agency's model of flooding taking defences into account



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- Client Site
- High Risk
- Medium High Risk
- Medium Risk
- Low Risk
- Very Low Risk

metres
0 50 100 200

Not all features in legend may be present in above map

River and Coastal Flooding

Risk of River and Coastal Flooding

Question	Response
What is the flood likelihood category for the site?	Negligible

What is it?

The data in the Risk of Flooding from Rivers and Sea Property Flood Likelihood Database is sourced from The Environment Agency's National Receptor Dataset. The information provided includes the flood likelihood category low, moderate, or significant according to the flood likelihood analysis. Some areas may be classified as having no result. This occurs where there is no output data from the analysis, but the area falls within the extreme flood outline (with a 0.1% or 1 in 1000 chance of flooding in any year).

What could be the impact on the site?

Some areas may be classified as having no result. This occurs where there is no output data from the regulatory body's risk assessment, but the area falls within the extreme flood outline (with a 0.1% or 1 in 1000 chance of flooding in any year).

Groundwater Flooding

Groundwater Flood Risk

This map shows a model of the risk of flooding from groundwater from data provided by GeoSmart Information Ltd

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Client Site
High Risk
Moderate Risk
Low Risk

metres
0 50 100 200

Not all features in legend may be present in above map

Groundwater Flooding

Groundwater Flood Risk

Question	Response
What is the risk of groundwater flooding at the site?	Negligible

What is it?

Groundwater flooding occurs when groundwater levels increase sufficiently for the water table to intersect the ground surface. Groundwater flooding can occur in a variety of geological settings including valleys and in areas underlain by chalk, and in river valleys with thick deposits of alluvium and river gravels.

GeoSmart Information Ltd provides data to Landmark in relation to groundwater flooding. Through research and development, building on their expertise in addressing groundwater flooding issues for The Environment Agency and other clients in the UK, GeoSmart Information Ltd has developed algorithms and calibrated predictions of the risk of groundwater flooding occurring in England and Wales. This differs from other suppliers of data regarding groundwater flooding which only report on the susceptibility of groundwater flooding. Susceptibility merely has to be identified, whereas risk must be quantified. The resulting map is a 5x5m classification of groundwater flooding risk into four categories (Negligible, Low, Moderate and High). GeoSmart Information Ltd's classifications are based on the level of risk, combining severity and uncertainty that a site will suffer groundwater flooding within a return period of about 100 years.

The map is a general purpose indicative screening tool, and is intended to provide a useful initial view for a wide variety of applications. However, it does not provide an alternative to a site specific assessment, and a detailed risk assessment should be used for any site where the impact of groundwater flooding would have significant adverse consequences.

What could be the impact on the site?

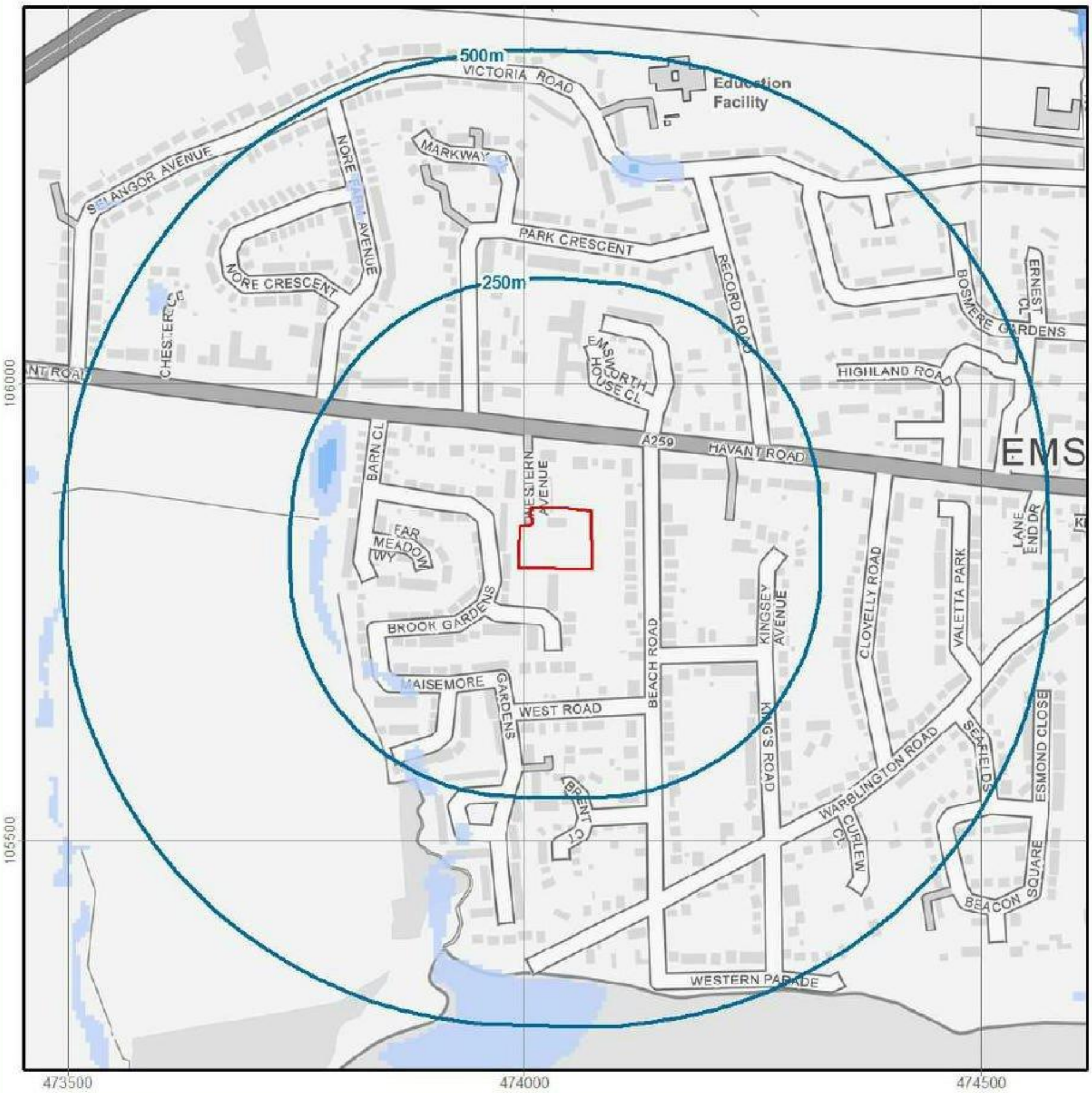
Information from GeoSmart Information Ltd indicates that there is a negligible risk of groundwater flooding in this area and any groundwater flooding incidence will be less frequent than 1 in 100 years return period.

No further investigation of risk is deemed necessary unless the proposed site use is unusually sensitive. However, data may be lacking in some areas, so assessment as 'negligible risk' on the basis of the map does not rule out local flooding due to features not currently represented in the national datasets used to generate this version of the map.

Surface Water Flooding

Surface Water Flood Risk

This map shows the JBA model of potential surface water flood depths of a 1 in 200 year flood event



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Client Site

1m + depth

30cm - 1m depth

10cm - 30cm depth

metres

0 50 100 200

Not all features in legend may be present in above map

Surface Water Flooding

Surface Water Flood Risk from JBA

Question	Response
What is the risk of surface water flooding at the site following a 1 in 75 year rainfall event?	Negligible
What is the risk of surface water flooding at the site following a 1 in 200 year rainfall event?	Negligible
What is the risk of surface water flooding at the site following a 1 in 1000 year rainfall event?	Negligible

What is it?

Surface water or 'pluvial' flooding results from rainfall running over ground before entering a watercourse or sewer. It is usually associated with high intensity rainfall events (typically greater than 3cm per hour) but can also occur with lower intensity rainfall or melting snow where the ground is already saturated, frozen, developed (for example in an urban setting) or otherwise has low permeability.

Information regarding the risk of natural surface water or pluvial flooding is provided by JBA Risk Management Ltd. The risk is classified by JBA into four categories, low (equal to 10cm), low to medium (more than 10cm), medium (more than 30cm) and high (more than 1m) which reflect varying depths of potential surface water flooding during a range of rainfall events including 1:75 year, 1:200 year, and 1:1000 year.

Return periods are a measure of how likely flooding is to occur. They are commonly expressed as a ratio (for example 1 in 75 or 1:75). This means that this level of flooding is expected once in every 75 years.

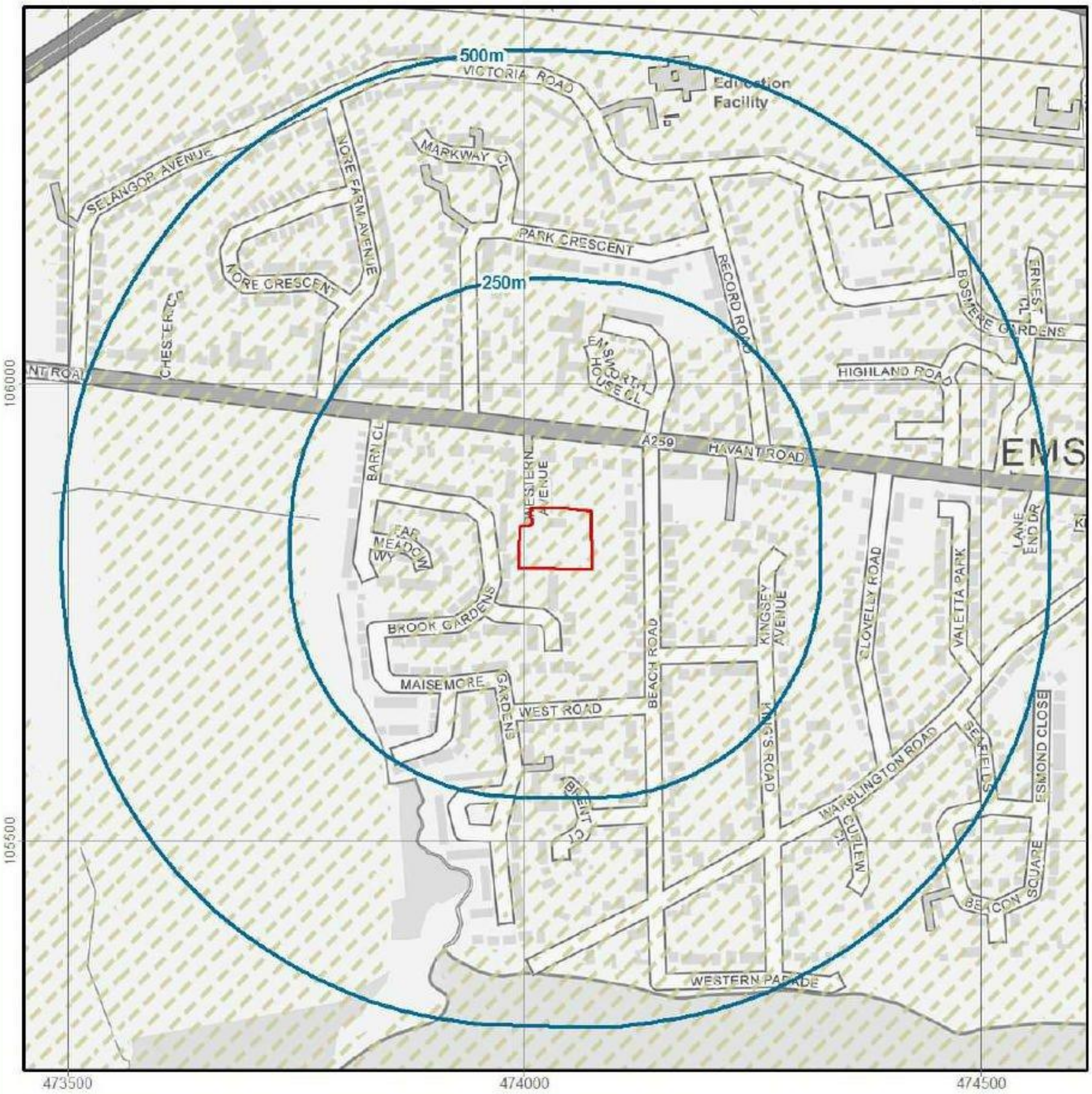
What could be the impact on the site?

Information from JBA Risk Management indicates that there is not a significant risk of surface water (pluvial) flooding at the site. Any surface water flooding incidence is modelled as being less frequent than anticipated during a 1 in 200 year return period. No further investigation of risk is deemed necessary unless the proposed site use is unusually sensitive, or where development is proposed that may increase the risk of flooding to neighbouring areas. In areas where there are smaller local water courses or drains a risk may still exist due to blockages or poor maintenance which could cause reduced flow.

Historical Flooding

Historical Flooding

This map shows flood events and geological indications of floods from the past



Contains Ordnance Survey data © Crown copyright and database right 2017

Client Site
Historical Floods
Geo Indicators

metres
0 50 100 200

Not all features in legend may be present in above map

Historical Flooding

Historical Flood Events

Question	Response
Has a flood event occurred in the past at or within 500m of the site?	No

What is it?

The Environment Agency has collated extensive records (including outlines) of flooding from rivers, the sea or groundwater which have occurred in England and Wales since c.1950. This information comes from various sources including maps, aerial photographs and private records. It is not necessarily comprehensive.

What could be the impact on the site?

The regulatory body's records have no indication of past flooding within 500m of the site. As these records are not comprehensive, it may still be prudent to ask the relevant authorities and the site owner whether they are aware of any previous flooding at the site or in the surrounding area.

Geological Indicators of Flooding

Question	Response
Are there any geological deposits on or near to the site that show that it may have flooded in the past?	Yes

What is it?

The Geological Indicators of Flooding data set is based on the British Geological Survey's Digital Geological Map of Great Britain at the 1:50,000 scale (DiGMapGB-50). It was produced by characterising superficial 'drift' deposits on DiGMapGB-50 in terms of their likely vulnerability to flooding, either from coastal or inland water flow and reflects areas which may have flooded in the recent geological past.

What could be the impact on the site?

Data from the British Geological Survey indicates that the type of deposits in the locality of the site are of the type normally associated with floodplains. However, this data should only be considered as complementary to the regulatory body's Flood Map. This BGS data does not indicate the likelihood of flooding. Refer to the other assessments in this report for an overall assessment of flood risk.

Contacts

Landmark Customer Services
Landmark Information Group
Imperium
Imperial Way
Reading
RG2 0TD
0844 844 9966
helpdesk@landmark.co.uk

For help with this report
or to purchase a follow-on report

GeoSmart Information Ltd
New Zealand House
160 Abbey Foregate
Shrewsbury
SY2 6FD
www.geosmartinfo.co.uk
01179 229 931

For advice on groundwater flooding

Environment Agency
National Customer Contact Centre
PO Box 544
Rotherham
S60 1BY
03708 506 506
enquiries@environment-agency.gov.uk
www.gov.uk/government/organisations/environment-agency

For advice on regulatory information

British Geological Survey
Kingsley Dunham Centre
Keyworth
Nottingham
NG12 5GG
0115 936 3143
www.bgs.ac.uk

For advice on geological causes of groundwater flooding

British Insurance Brokers' Association
8th Floor
John Stow House
8 Bevis Marks
London
EC3A 7JB
0870 950 1790

For advice on flood insurance

JBA Risk Management
South Barn
Broughton Hall
Skipton
North Yorkshire
BD23 3AE
01756 799 919
info@jbarisk.com

For advice on JBA flood risk data

Contacts

Havant Borough Council
Civic Offices
Civic Centre Road
Havant
PO9 2AX
02392 474174

For local planning information

Useful Information

Data Sources

Data Source	Dataset
The Environment Agency	• Flooding from Rivers or Sea • Flooding from Rivers or Sea in an Extreme Flood • Areas Benefiting from Flood Defences • Flood Storage Areas • Flood Defences • Risk of Flooding from Rivers and Sea • Historical Flood Events • Detailed River Network © Environment Agency and database right 2017
JBA	• Surface Water Flooding 1:75 year rainfall event • Surface Water Flooding 1:200 year rainfall event • Surface Water Flooding 1:1000 year rainfall event © Copyright JBA Risk Management Limited 2008-2017
GeoSmart Information Ltd	• Groundwater Food Risk © GeoSmart Information Limited 2016
British Geological Survey	• Geological Indicators of Flooding Disclaimer: "Some of the responses contained in this section are based on data and information provided by the Natural Environment Research Council (NERC) or its component bodies the British Geological Survey (BGS). Your use of any information contained in this report which is derived from or based upon such data and information is at your own risk. Neither NERC, BGS nor Public Health England where applicable, gives any warranty, condition or representation as to the quality, accuracy or completeness of such information and all liability (including liability for negligence) arising from its use is excluded to the fullest extent permitted by law."
Ordnance Survey	• Height of Site Above Sea Level • Vector Map District

Overall Opinion

In this section on the front page, we provide an opinion based on the flood risks that have been identified. The following table describes the possible outcomes of the report:

Useful Information

Assessment	Risk Rating and Meaning
PASSED	Low and Low to Moderate - The site is not considered to be at significant risk of flooding. No further action is considered necessary.
PASSED	Moderate - Data suggest that there are features which may present a flood risk to the site and its occupants during an extreme flood event. However, buildings and contents insurance should easily be available in most cases.
FURTHER ACTION	Moderate to High and High - This report reveals significant flood risk issues which should be addressed. Further assessment is recommended in order to clarify the risk of flooding at the site and to determine appropriate flood protection measures.

Flood Risk Ratings

We provide an overall flood risk rating based on an assessment of the data provided within this report. It does so by asking the following questions:

1. What is the overall risk of flooding, assuming flood defences fail or are absent or overtopped?

The answer to this question provides a worst case scenario assuming there are either no defences in the area, that any defences in the area could fail, primarily as a result of river or coastal flooding, or are overtopped by excessive flood volumes.

2. Are there existing flood defences which might benefit the site?

This is based on the presence of any flood defences in the dataset provided by The Environment Agency within 500m of the site. It should be noted that a residual risk of flooding may be present if such defences failed. Flood defences do not generally protect the site against groundwater and surface water flooding.

If defences are present within 500m, a further question is asked:

3. What is the risk of flooding when these defences are operational?

This assesses the risk from flooding, assuming these defences work as intended and neither fail nor are overtopped.

Questions 1 and 3 are answered by one of six standard responses:

Response	Meaning
Negligible	The overall flood risk rating for the site is assessed to be 'Negligible'. Existing datasets do not indicate any risk at the site itself, or any feature within the locality of the site, which would be expected to pose a threat of flooding. It is not considered that any further investigations are necessary in regard to flood risk.
Low	The overall flood risk rating for the site is assessed to be 'Low'. It is not considered necessary to undertake any other further investigations into the flood risk to the site. Sites over 1 hectare would require a Drainage Impact Assessment to accompany any planning application.
Low to Moderate	The overall flood risk rating for the site is assessed to be 'Low to Moderate'. The presence of such features as flood defences, flood storage areas and watercourses within the locality of the site suggests that there may be a risk of flooding to the site itself. Further investigations could be undertaken to further assess this risk.
Moderate	The overall flood risk rating for the site is assessed to be 'Moderate'. Information from existing datasets suggests that there are certain features which may present a risk to the site and its occupants. Further assessment would normally be suggested as a prudent measure to clarify the risk of flooding at the site.
Moderate to High	The overall flood risk rating for the site is assessed to be 'Moderate to High'. Information from existing datasets suggests that there are certain features which may present a significant risk to the site and its occupants. Further assessment is usually recommended in order to clarify the risk of flooding at the site.

Useful Information

High	The overall flood risk rating for the site is assessed to be 'High', with a consequent risk to life and property. This means that existing datasets reveal significant flood risk issues which need to be addressed. Further assessment is usually recommended in order to clarify the risk of flooding at the site.

Development Risk

We comment on whether a full or partial Flood Risk Assessment (FRA) would be required in accordance with National Planning Policy Framework (NPPF). This is indicative only and is based on the size of the site (as supplied by the client) and the information in the data section of this report.

The NPPF sets out Government policy on development and flood risk. Its aims are to ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas of highest risk. Where new development is exceptionally necessary, NPPF aims to make it safe, without increasing flood risk elsewhere, and, where possible, reducing flood risk overall.

A separate Drainage Impact Assessment may be required in addition to an FRA to demonstrate that development of the site will not adversely affect flood risk elsewhere.

Response	Meaning
Yes (full)	If the site is to be redeveloped, a full Flood Risk Assessment is likely to be required which should include a Drainage Impact Assessment.
Yes (Drainage)	If the site is to be redeveloped, a full Flood Risk Assessment may not be required. However, given the size of the site, a Drainage Impact Assessment may be necessary.
No	If the site is to be redeveloped, no further flood assessment is likely to be required.

Flood Risk Gauges

The flood risk gauges provide a more detailed analysis of the risk from each of the four main types of flooding – river, coastal, groundwater and surface water. In addition, a fifth gauge provides an analysis of other factors (i.e. historical flood events, geological deposits which are indicative of past flooding, proximity to surface water features and elevation above sea level) that may affect the overall flood risk. For surface water flooding, only the risk rating generated from the 1:200 year rainfall event data is included in the overall risk assessment. The data on 1:75 year and 1:1000 year rainfall events is provided for information only.

This analysis takes into account any existing flood defences that are intended to protect the site and assumes that these work as designed. The analysis also takes into account the other information contained in those data sections of the report which are relevant to that particular type of flooding. The assessment of the risk as shown in the flood gauge should therefore take priority over the information in the individual data sections of the report.

Insurance

Landmark provides an indication of whether the level of flood risk at the site is likely to affect your ability to obtain insurance or if premiums could be high.

This assessment is is Landmark's opinion, based on:

(a) the assumption that the site is used for commercial purposes (not residential)

(b) consideration of the following datasets and information only:

- Risk of Flooding from Rivers and the Sea supplied by the Environment Agency
- Surface water flooding data supplied by JBA Consulting

Our opinion does not take into account any historic episodes of flooding or previous insurance claims arising from flooding at the site.

Since April 2016 insurers of commercial property are all free to decide whether to offer insurance against flooding, at what price, and on what terms. They will have different attitudes to risk. This means there is no set of universal guidelines to whether insurance will be available against flood risk or not. This is why

we may have recommended you consult your proposed insurer prior to exchange of contracts, to establish the terms on which flood insurance would be offered.

The Flood Re scheme, which came into operation from April 2016, does not cover commercial property or mixed use property. So it will not assist the buyer or tenant of such sites, who is seeking cheaper or less restricted flood insurance.

For some sites, it is possible to reduce the risk of flooding by installing flood protection measures (either flood resistance or flood resilience measures). If these measures are appropriate to the site, and have been installed properly, then an insurer may offer better terms (lower premium, lower excess or fewer conditions to cover).

Limitations of the Report

The Sitecheck Flood report has been designed to satisfy basic flood-related environmental due-diligence enquiries for commercial properties. It is a desktop review of information provided by the client and from selected private and public databases. It does not include a site investigation, nor are specific information requests made of the regulatory authorities for any relevant information. Therefore, Landmark cannot guarantee that all issues of concern will be identified by this report, or that the data and information supplied to it by third parties is accurate and complete.

This report includes an assessment of surface water flooding which examines the risk of the general drainage network overflowing during periods of extreme rainfall. This report does not make a detailed site-specific assessment of the suitability of the existing drainage on the site. If this is required, then a site survey should be considered. The assessment of pluvial flooding does not take into account particular local or temporary factors that may cause surface water flooding. These could include blockage or failure of structures on or within watercourses, drains, foul sewers, water mains, canals and other water infrastructure; and any history of drains flooding at the site or in the locality. Surface water flooding can occur before surface water reaches the general drainage network, for example on hills and inclines.

The Risk of Flooding from Rivers and Sea dataset provided by The Environment Agency does take account of failure of flood defences but does not take into account particular local or temporary factors such as blockage. Data from The Environment Agency does not include flood risk from very small catchments as models of such small scale catchments are not considered to be reliable for UK-wide flood risk assessments. The potential impact of climate change on flood risk to the site would require further study.

When answering any questions within this report, current applicable legislation is taken into account.

The data used in this report may have inherent limitations and qualifications.

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www.landmarkinfo.co.uk/Terms/Show/515

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The Property Ombudsman
Consumer Redress

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- sets out minimum standards which firms compiling and selling search reports have to meet
- promotes the best practice and quality standards within the industry for the benefit of consumers and property professionals
- enables consumers and property professionals to have confidence in firms which subscribe to the code, their products and services.

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- act with integrity and carry out work with due skill, care and diligence
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- conduct business in an honest, fair and professional manner
- handle complaints speedily and fairly
- ensure that products and services comply with industry registration rules and standards and relevant laws
- monitor their compliance with the Code

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If you have a query or complaint about your search, you should raise it directly with the search firm, and if appropriate ask for any complaint to be considered under their formal internal complaints procedure. If you remain dissatisfied with the firm's final response, after your complaint has been formally considered, or if the firm has exceeded the response timescales, you may refer your complaint for consideration under The Property Ombudsman scheme (TPOs). The Ombudsman can award up to £5,000 to you if the Ombudsman finds that you have suffered actual financial loss and/or aggravation, distress or inconvenience as a result of your search provider failing to keep to the Code.

Please note that all queries or complaints regarding your search should be directed to your search provider in the first instance, not to TPOs or to the PCCB.

TPOs Contact Details:

The Property Ombudsman scheme
Milford House
43-55 Milford Street
Salisbury
Wiltshire SP1 2BP
Tel: 01722 333306
Fax: 01722 332296
Web site: www.tpos.co.uk
Email: admin@tpos.co.uk

You can get more information about the PCCB from www.propertycodes.org.uk

PLEASE ASK YOUR SEARCH PROVIDER IF YOU WOULD LIKE A COPY OF THE SEARCH CODE

Complaints procedure

If you want to make a complaint, we will:

- Acknowledge it within 5 working days of receipt
- Normally deal with it fully and provide a final response, in writing, within 20 working days of receipt
- Keep you informed by letter, telephone or e-mail, as you prefer, if we need more time
- Provide a final response, in writing, at the latest within 40 working days of receipt
- Liaise, at your request, with anyone acting formally on your behalf

Complaints should be sent to:

Head of Customer Relations
Landmark Information Group Ltd
Landmark UK Property
Imperium
Imperial Way
Reading
RG2 0TD

Telephone: 0844 844 9966
Email: helpdesk@landmark.co.uk
Fax: 0844 844 9980

If you are not satisfied with our final response, or if we exceed the response timescales, you may refer the complaint to The Property Ombudsman scheme (TPOs):
Tel: 01722 333306,
Email: admin@tpos.co.uk

We will co-operate fully with the Ombudsman during an investigation and comply with his final decision.

Appendix D

170511 SSD42788: Orchard House, Western Avenue, Emsworth, Hampshire – Flood Risk Enquiry

SSD Enquiries <SSDEnquiries@environment-agency.gov.uk>

Thu 11/05/2017 16:05

To [redacted]

1 attachments (2 MB)

16093_TPlan_Option.pdf;

Dear Aaron,

Thank you for clarifying the nature and extent of the proposed development at Orchard House, I would like to apologise for my delay in providing you with a response. If you have not done so already, we recommend that you contact Southern Water to ensure that the proposed connection to the Southern Water foul sewer is possible.

If you do decide to use soakaways as you have proposed, you will need to ensure that percolation tests are carried out by a suitable drainage consultant.

Please get in touch if you have any further queries or contact us within two months if you would like us to review the information we have sent.

We are committed to providing a professional customer service. Please help us understand more about what is important to you by completing our two minute survey.

Kind regards,

Tom Baker

Customers & Engagement | Solent and South Downs Area | Environment Planning and Engagement Environment Agency | Guildbourne House | Chatsworth Road | Worthing| West Sussex | BN11 1LD
Tel: +44 20302 57046 Int: 57046 or contact our National Contact Call Centre 03708 506506
email: ssdenquiries@environment-agency.gov.uk

www.gov.uk/floodsdestroy

From: Aaron McLean [redacted]
Sent: 28 April 2017 11:54
To: SSD Enquiries <SSDEnquiries@environment-agency.gov.uk>
Subject: 170428 (2) SSD42788: Orchard House, Western Avenue, Emsworth, Hampshire – Flood Risk Enquiry

Hi Tom

Thanks for your email. A copy of the proposed development drawing is attached. The development proposals would involve the construction of 24 retirement residential dwellings, reception and lounge areas within a multi-story block, associated car parking, open space and landscaping etc. Vehicle access would be provided from Western Avenue via the existing access. The red line boundary is 4550m^2.

It is proposed that the foul water generated by the development would be discharged into a Southern Water foul sewer which runs through the western part of the site. The existing site connection point would be utilised.

With regards to surface water run-off, the preferred option would be to use soakaways, however the feasibility of this has yet to be confirmed by infiltration testing. If the results of the testing show unfavourable ground conditions, then the development would need to discharge to the Southern Water surface water sewer in Havant Road. It is proposed that any surface water discharge to the Southern Water network would be restricted to 5 l/s.

Hopefully this information clarifies, however if you require any additional information then please don't hesitate to get back to me.

Kind regards
Aaron

From: SSD Enquiries <SSDEnquiries@environment-agency.gov.uk>
Sent: 28 April 2017 09:06:28
To: Aaron McLean
Subject: 170428 SSD42788: Orchard House, Western Avenue, Emsworth, Hampshire – Flood Risk Enquiry

Dear Aaron,

Thank you for your request for information relating to the site occupied by Orchard House, Western Avenue, Emsworth, Hampshire, which we received on 3 April 2017.

With regards to your third question, we do not hold any records of groundwater levels within 1 km of the site in question. We also do not hold any records of groundwater flooding at the site in question.

In order to ensure that we provide you with the correct information regarding your fourth question, could you please clarify the size and nature of the development in question? Could you please also clarify for us whether it is your intention to connect to foul or install a sewage treatment plant and then discharge to ground via an infiltration system? Please could you also clarify what the proposed discharge rate of 5l/s relates to?

We are committed to providing a professional customer service. Please help us understand more about what is important to you by completing our two minute survey.

Kind regards,

Tom Baker

Customers & Engagement | Solent and South Downs Area | Environment Planning and Engagement Environment Agency | Guildbourne House | Chatsworth Road | Worthing| West Sussex | BN11 1LD
Tel: +44 20302 57046 Int: 57046 or contact our National Contact Call Centre 03708 506506
email: ssdenquiries@environment-agency.gov.uk

www.gov.uk/floodsdestroy

From: Aaron McLean [redacted]
Sent: 03 April 2017 01:48
To: SSD Enquiries <SSDEnquiries@environment-agency.gov.uk>
Subject: Orchard House, Western Avenue, Emsworth, Hampshire – Flood Risk Enquiry

Dear Sir/Madam,

Orchard House, Western Avenue, Emsworth, Hampshire – Flood Risk Enquiry

We are writing regarding the proposed development of a parcel of land currently occupied by Orchard House, Western Avenue, Emsworth, Hampshire. The Site is located at the approximate postcode PO10 7LP, please find attached a location plan for your information.

The Site is located within Flood Zone 1, however we have been commissioned to investigate the risk of flooding to the site from other sources of flood risk. I would be grateful if you could provide your Product 4 dataset and information relating to the following:

1. Our initial investigations into flood risk indicate that the Site lies within Flood Zone 1, based on the current information indicated on the Environment Agency website. Please could you confirm this and provide a more detailed Flood Zone map if one exists.

2. Please provide us with details of any historic flooding affecting, or in the vicinity of the Site, including dates, the extent and cause of flooding, if known. Please could you confirm any details of flooding attributed to fluvial, overland flow, lack of sewer capacity, or alternatively confirm that you hold no records of such events.

3. Please could you provide us with further information on likely groundwater levels in the vicinity of the Site (within 1km) as well as any records of groundwater flooding incidents.

4. Please advise if you have any requirements on surface water and foul drainage at this stage, relating to the Site. It is currently envisioned that, surface water runoff would be discharged to ground by infiltration. However if ground conditions were unconducive to infiltration techniques then a discharge would be made to a Southern Water surface water sewer. The proposed discharge rate would be a design rate of 5 l/s. Please could you confirm that this would be acceptable.

We are also writing to Southern Water and Havant Borough Council requesting details of flooding records. If you are aware of any other parties that may have useful information then please provide their details.

If you require any further information to enable you to process our request for information then please feel free to contact me.

Kind regards
Aaron McLean

Engineer

Paul Basham Associates

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t +44 (0) 1489 668134

p Lancaster Court, 8 Barnes Wallis Road, Fareham, Hampshire, PO15 5TU

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t +44 (0) 1865 552855

p Cranbrook House, 287-291 Banbury Road, Oxford, OX2 7JQ

w www.paulbashamassociates.com

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Flood Risk Information for Western Avenue - Ref: SSD/42788

Partnership and Strategic Overview team, HIOW <psohiow@environment-agency.gov.uk>

Wed 03/05/2017 10:47

To:Aaron McLean [redacted]

Cc:SSD Enquiries <SSDEnquiries@environment-agency.gov.uk>;

7 attachments (9 MB)

Flood Map for Planning (Rivers and Sea).pdf; Risk of Flooding from Surface Water.pdf; Open Government Licence.pdf; uFMfSW Fact Sheet.pdf; Charging for Planning Advice from the Environment Agency leaflet.pdf; Detailed Advice Request Form.docx; Pre-app advice note.pdf;

Dear Aaron,

Provision of Flood Risk Information for The Orchard House, Western Avenue, Emsworth, PO10 7LP

Thank you for your request to use Environment Agency data, in the development of The Orchard House, Western Avenue, Emsworth, PO10 7LP. The information is attached.

Further details about the Environment Agency information supplied can be found on the GOV.UK website:

https://www.gov.uk/browse/environment-countryside/flooding-extreme-weather

If you have requested this information to help inform a development proposal, then you should note the information on GOV.UK on the use of Environment Agency Information for Flood Risk Assessments

https://www.gov.uk/planning-applications-assessing-flood-risk
https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion

We can confirm that the above site is located in Flood Zone 1 - an area where the chance of flooding from both rivers and the sea has been assessed as less than 0.1% in any year (1 chance in 1,000 in any year).

The Environment Agency has no record of flooding to this area, but not all flooding events are reported to us and further information may be available from Havant Borough Council.

Surface Water Flooding – Please see the attached map and information.

This information is provided subject to the enclosed *notice*, which you should read.

I hope that we have correctly interpreted your request. Please see the attached Standard Notice or licence for details of permitted use.

We respond to requests for recorded information that we hold under the Freedom of Information Act 2000 (FOIA) and the associated Environmental Information Regulations 2004 (EIR).

If you are not satisfied with our response to your request for information you can contact us within 2 calendar months to ask for our decision to be reviewed.
If you have any queries or would like to discuss the content of this letter further please call us on 08708 506506.

If you have any queries or would like to discuss the content of this letter further please contact the Partnership and Strategic Overview Team at the Environment Agency.

Yours faithfully

Aimee Cox
Partnership and Strategic Overview team, Hampshire and Isle of Wight
Environment Agency

Direct dial 020 8474 5815
Email psohiow@environment-agency.gov.uk
Part Time Tuesday, Wednesday, Thursday and Friday

protect invest improve Planning for the future of water FLOODS DESTROY BE PREPARED

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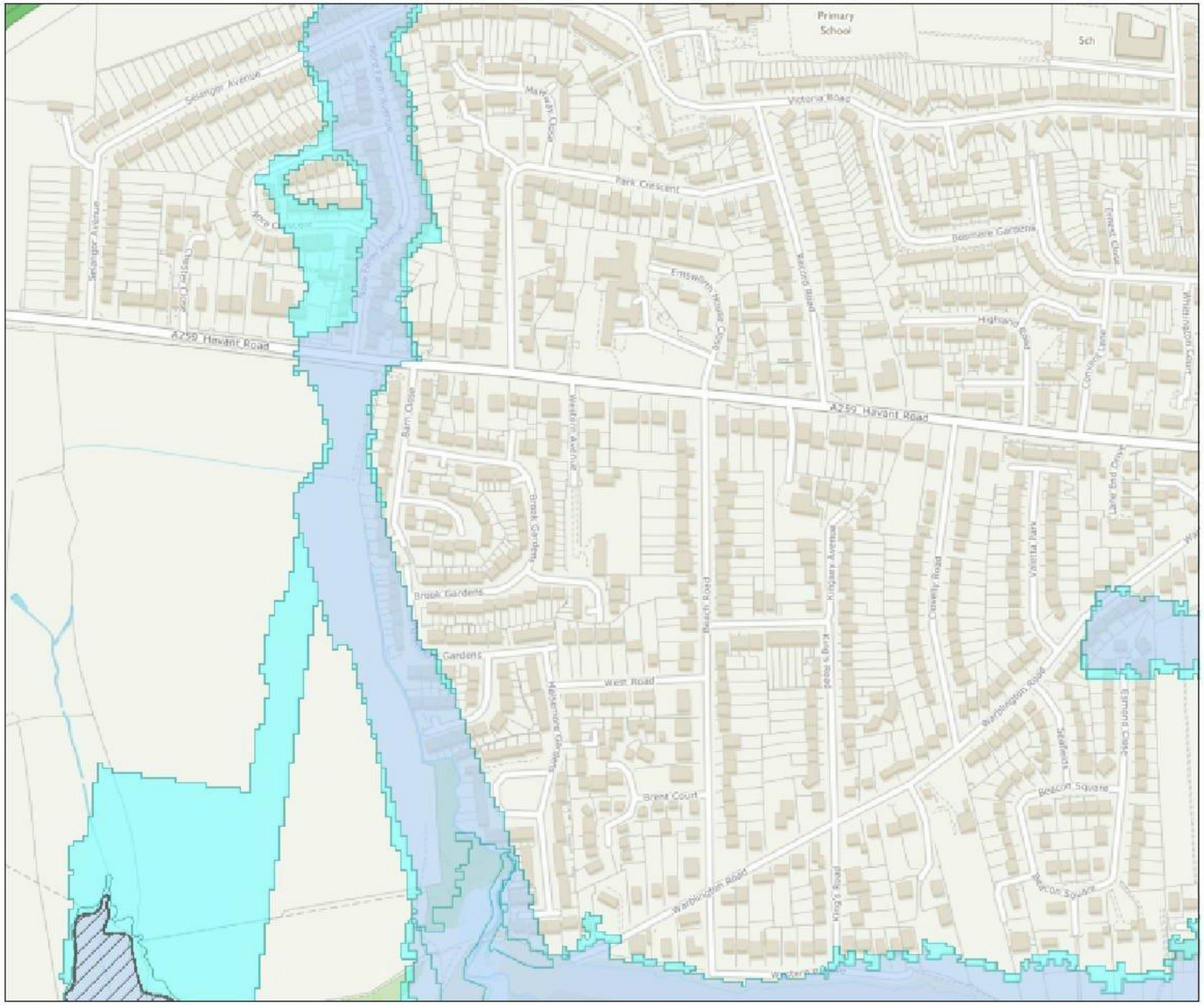
Flood Map for Planning (Rivers and Sea) Centred on Western Avenue - Created 2 May 2017



Environment Agency

Scale 1: 6,250

N W E S

Flood Map for Planning (Rivers & Sea)

- Local Authority
- Defences
- Flood Storage Areas
- Areas benefiting from flood defences
- Flood Zone 3
- Flood Zone 2

Flood Map Areas (assuming no defences)

Flood Zone 3 shows the area that could be affected by flooding:

- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

Flood Zone 2 shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occuring each year

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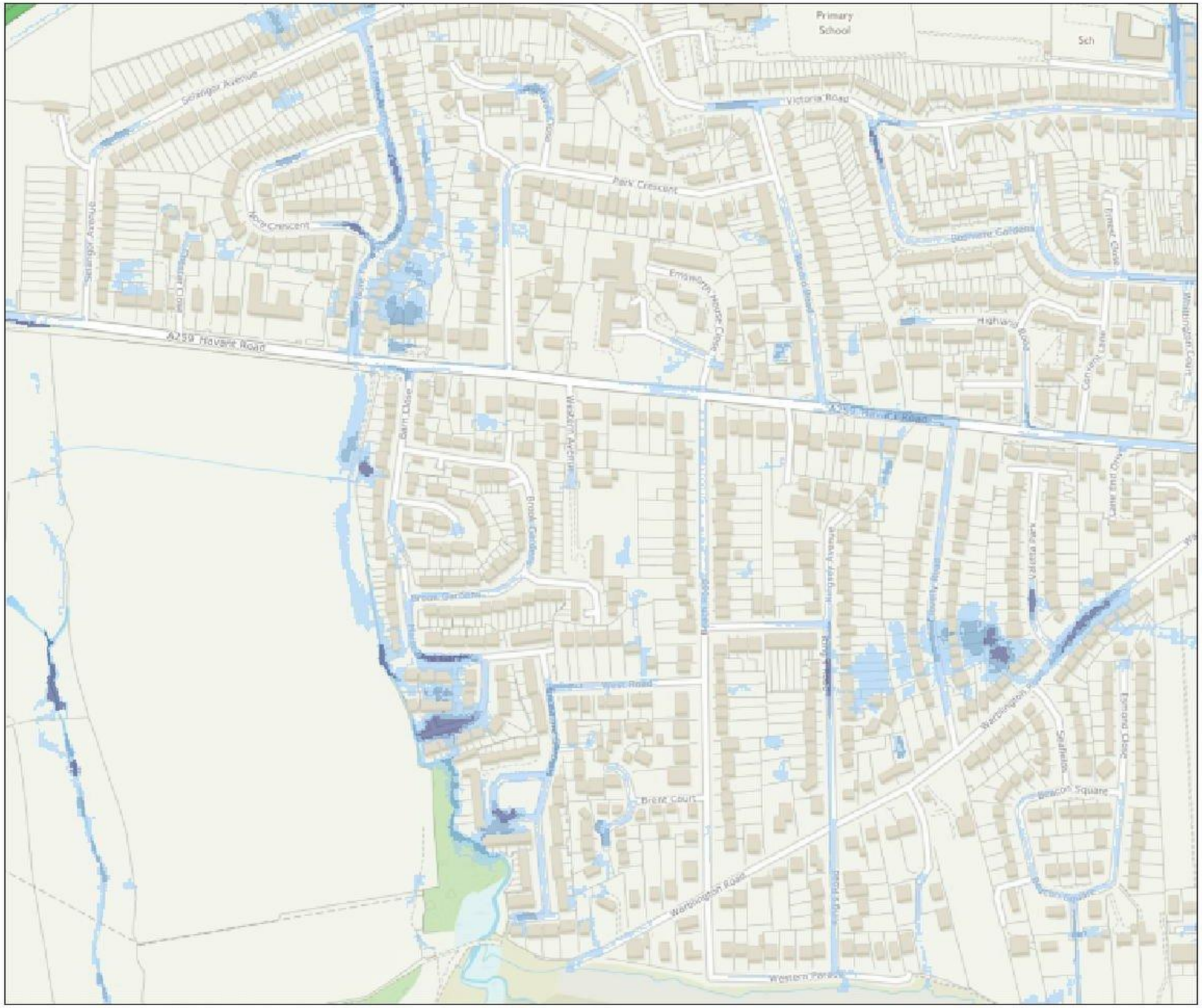
Risk of flooding from Surface Water Centred on Western Avenue - Created 2 May 2017



Environment Agency

Scale 1:6,250

N W E S

Likelihood of flooding from Surface Water

- Local Authority
- High (>= 3.3%)
- Medium (3.3% - 1%)
- Low (1% - 0.1%)
- Very Low

Likelihood of flooding from Surface Water

High:	Greater than or equal to 3.3% (1 in 30) chance in any given year
Medium:	Less than 3.3% (1 in 30) but greater than or equal to 1% (1 in 100) chance in any given year
Low:	Less than 1% (1 in 100) but greater than or equal to 0.1% (1 in 1,000) chance in any given year
Very Low:	Less than 0.1% (1 in 1,000) chance in any given year

This information is shown on the Risk of Flooding from Surface Water map on our website.

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Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). E-mail: enquires@environment-agency.gov.uk

Your query for Havant Borough Council

Havant Borough Council <customer.services@havant.gov.uk>

Mon 03/04/2017 01:42

To: [redacted]

Thank you for completing the online form. We will get in touch with you using the contact details you supplied if a response is required.

Your reference number for this form is 329/31787

You submitted the form on Monday, 3 April, 2017 - 00:42

The details you gave us are:

--Your contact details--
Your Name: Aaron McLean
Your last name:
House number/name:
Road name:
Town/village:
Post code:
Preferred contact method: Email
Your email address: [redacted]
Secondary contact method:
Do you require responses to be in a certain format? No

--Which team would you like to contact?--
Service: Flooding

--Your reason for contacting us--
Your query or comment:
Dear Sir/Madam,

Orchard House, Western Avenue, Emsworth, Hampshire – Flood Risk Enquiry

We are writing regarding the proposed development of a parcel of land currently occupied by Orchard House, Western Avenue, Emsworth, Hampshire. The Site is located at the approximate postcode PO10 7LP.

The Site is located within Flood Zone 1, however we have been commissioned to investigate the risk to the site from other sources of flood risk whilst ensuring that the proposed development would not increase the existing level of risk to third parties. We would be grateful if you could provide information relating to the following:

1. Details of any historic flooding affecting, or in the vicinity of the Site, including dates, the extent and cause of flooding, if known. Please could you confirm any details of flooding attributed to fluvial, overland flow, lack of sewer capacity, or alternatively confirm that you hold no records of such events.

2. Please could you provide us with further information on likely groundwater levels in the vicinity of the Site (within 1km) as well as any records of groundwater flooding incidents.

3. Please advise if you have any requirements on surface water and foul drainage at this stage, relating to the Site. It is currently envisioned that, surface water runoff would be discharged to ground by infiltration. However if ground conditions were unconducive to infiltration techniques then a discharge would be made to a Southern Water surface water sewer. The proposed discharge rate would be 5 l/s (subject to Southern Water approval). Please could you confirm that this would be acceptable.

We are also writing to Southern Water and the Environment Agency requesting details of flooding records. If you are aware of any other parties that may have useful information then please provide their details.

If you require any further information to enable you to process our request for information then please feel free to contact me.

Kind regards
Aaron McLean
Engineer
Paul Basham Associates

Southampton Office
□□t +44 (0) 1489 668134
□□p Lancaster Court, 8 Barnes Wallis Road, Fareham, Hampshire, PO15 5TU
□□w www.paulbashamassociates.com

RE: Orchard House, Western Avenue, Emsworth, Hampshire - Flood Risk Enquiry

Developer Services <Developer.Services@southernwater.co.uk>

Mon 03/04/2017 10:15

To: [redacted]

Dear Mr McLean,

Thank you for your email below.

Unfortunately, we do not hold any flood risk data for this area and are unable to answer the queries you have raised. You may be able to obtain further information from the Environmental Agency.

Copies of Southern Water's sewer plans can be obtained from our Land Search department. They can be contacted on 0330 303 0276 or by email at searches@southernwater.co.uk

If you want to know about capacity for a development then you should request a capacity check. The appropriate application forms and guidance notes can be downloaded from Southern Water's website at https://www.southernwater.co.uk/property-and-developers

Southern Water do not adopt SUDs systems. Any sewer systems that are to be adopted have to comply with Sewers for Adoption 6th or 7th Edition standards.

Yours sincerely,

Developer Services
Southern Water
0330 303 0119, option 5
www.southernwater.co.uk

From: Aaron McLean [redacted]
Sent: 03 April 2017 01:32
To: Developer Services
Subject: Orchard House, Western Avenue, Emsworth, Hampshire – Flood Risk Enquiry

Dear Sir/Madam

Orchard House, Western Avenue, Emsworth, Hampshire – Flood Risk Enquiry

We are writing regarding the proposed development of a parcel of land currently occupied by Orchard House, Western Avenue, Emsworth, Hampshire. The Site is located at the approximate postcode PO10 7LP, please find attached a location plan for your information.

We have been commissioned to investigate the risk of flooding to the proposed development and produce a Flood Risk Assessment report. We would be grateful if you could provide information relating to the following:

1. Details of any historic flooding affecting or in the vicinity of the site, including dates, the extent and cause of flooding, if known. Please also inform us of any other known sources of flooding in the area, including lack of

sewer capacity.

2. A drainage survey has recently been undertaken and it was identified that there is level monitoring equipment in Manhole 0801 (see below). We assume that this equipment was installed due to previous flood incidents associated with this foul sewer. Could you please provide further details as this may pose a risk to the site.

We are also writing to the Environment Agency and Havant Borough Council requesting details of flooding records. If you are aware of any other parties that may have useful information please could you advise.

If you require any further information to enable you to process our request for information then please feel free to contact me.

Kind regards
Aaron McLean

Engineer

Paul Basham Associates

Southampton Office

☎ t +44 (0) 1489 668134

p Lancaster Court, 8 Barnes Wallis Road, Fareham, Hampshire, PO15 5TU

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w www.paulbashamassociates.com

Paul Basham Associates Ltd is committed to product quality and operates an ISO 9001:2008 compliant Quality Management System. Our services include: Access Scoping Reports I Feasibility Assessments I Transport Planning I Highway and Drainage Design I Transport Assessments I Public Inquiries I Travel Plans & Travel Plan Coordination I S106 Negotiations

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An e-mail reply to this address may be subject to monitoring for operational reasons or lawful business practices

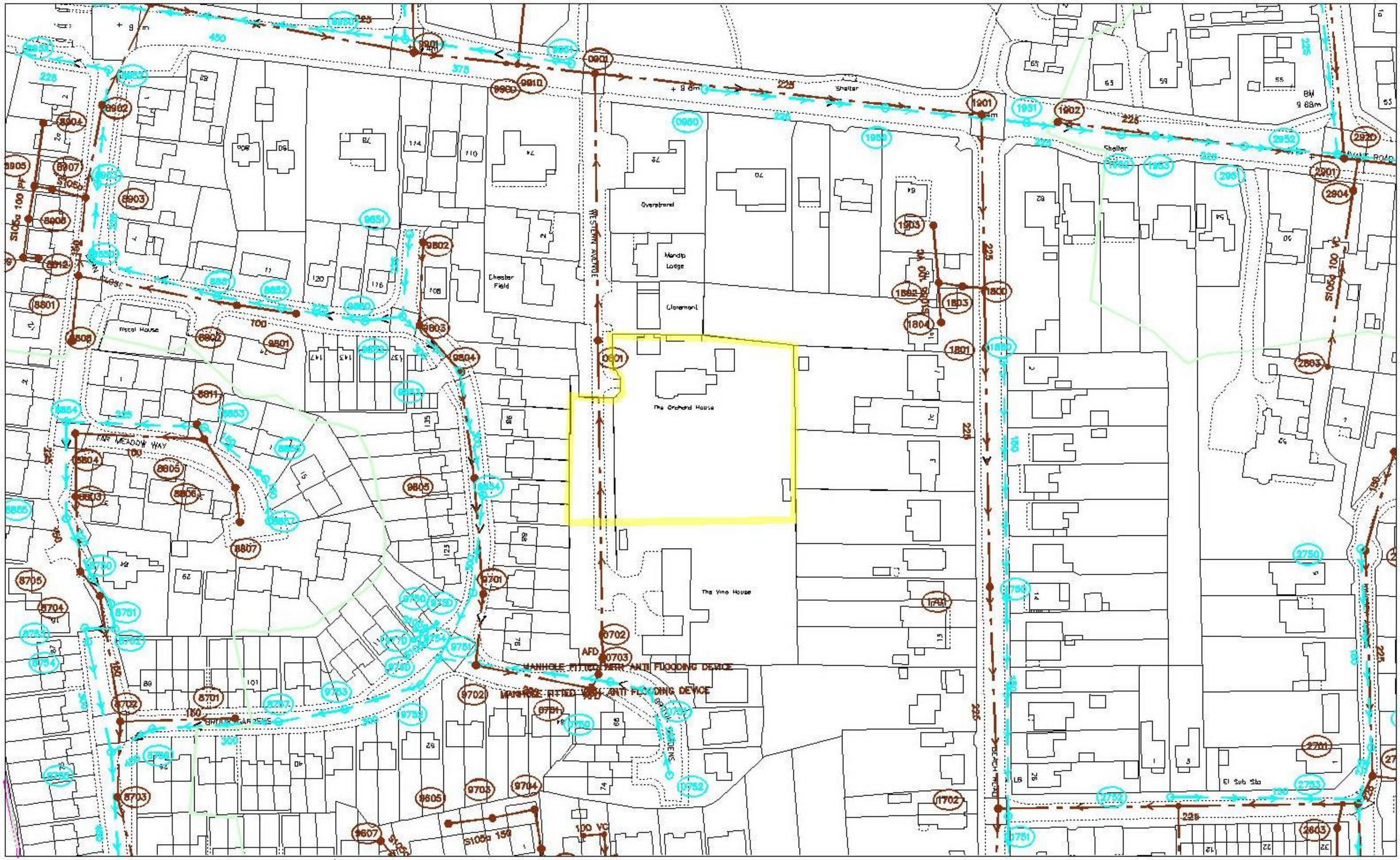
This e-mail is issued by Southern Water Services Limited, company number 2366670, registered in England and having its registered office at Southern House, Yeoman Road, Worthing, BN13 3NX, England.

In sending this e-mail the sender cannot be deemed to have specified authority and the contents of the e-mail will have no contractual effect unless (in either case) it is otherwise agreed between Southern Water Services Limited and the recipient.

Appendix E

SEWER RECORDS PAGE 1 OF 2

105976



105688

473805

474277

O.S. REF. SU7405NW	Drawn by: kumarla	The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determined on site.
	Scale: 1:1250	WARNING: BAC pipes are constructed of Bonded Asbestos Cement. WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement
Title: 217087_The Orchard Houe, Weste	Date: 10/06/2016	Based upon Ordnance Survey Digital Data with the permission of the controller of H.M.S.O. Crown Copyright Reserved Licence No. WU 298530.

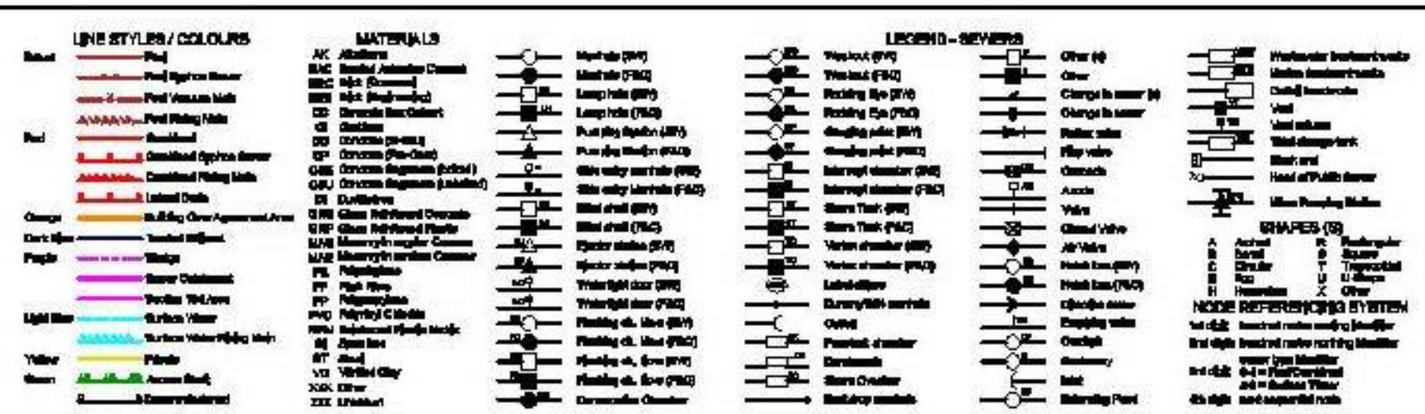
N

Southern Water

SEWER RECORDS PAGE 2 OF 2

Node	Cover	Invert	Size	Material	Shape
060DX			100	VC	CIRC
061DX			100	VC	CIRC
0701X	8.22	6.07	UNK	UNK	CIRC
0702X			UNK	UNK	CIRC
0703X			UNK	UNK	CIRC
0750X	8.209	6.159	UNK	UNK	CIRC
0751X	8.149	6.219	225	UNK	CIRC
0752X	7.842	6.382	225	UNK	CIRC
0901X			UNK	UNK	CIRC
0901X	9.726		225	UNK	CIRC
0950X	9.615	8.945	225	UNK	CIRC
1701X	8.169	3.944	225	UNK	CIRC
1702X	7.46		225	UNK	CIRC
1750X	8.128	7.228	150	UNK	CIRC
1751X	7.432	6.292	225	UNK	CIRC
1801X	9.007	4.16	225	UNK	CIRC
1802X			100	VC	CIRC
1803X			100	VC	CIRC
1804X			100	VC	CIRC
1900X			225	UNK	CIRC
1950X	8.968	7.718	150	UNK	CIRC
1901X	9.571	4.377	225	UNK	CIRC
1902X	9.522	7.397	225	UNK	CIRC
1903X			100	VC	CIRC
1950X	9.554	8.944	225	UNK	CIRC
1951X	9.586	8.806	225	UNK	CIRC
1952X	9.541	8.721	UNK	UNK	CIRC
1953X	9.496	8.696	225	UNK	CIRC
2603X			150	VC	CIRC
2701Y	6.571	4.596	225	UNK	CIRC
2702X	6.958		225	UNK	CIRC
2703X	7.666	6.306	225	UNK	CIRC
270DX			225	UNK	CIRC
271DX			225	UNK	CIRC
2750X	7.631	6.983	150	UNK	CIRC
2751X	6.936	6.288	225	UNK	CIRC
2752X	7.156	5.676	150	UNK	CIRC
2753X	6.541	5.301	225	UNK	CIRC
2901X	7.658	6.791	150	UNK	CIRC
2803X			100	VC	CIRC
2901X	9.135		225	UNK	CIRC
2904X			UNK	UNK	CIRC
292DX			225	UNK	CIRC
2951X	9.404	8.594	UNK	UNK	CIRC
2952X	9.212		225	UNK	CIRC
8701X			150	UNK	CIRC
8702X			UNK	UNK	CIRC
8703X			UNK	UNK	CIRC
8704X	7.87	5.23	150	UNK	CIRC
8705X	7.71	5.39	UNK	UNK	CIRC
8750X	7.728	5.97	225	UNK	CIRC
8751X	7.646	5.615	225	UNK	CIRC
8752X	7.428	5.45	225	UNK	CIRC
8753X	7.379	5.139	UNK	UNK	CIRC
8754X	7.203	5.033	300	UNK	CIRC
8755X	6.276	4.656	450	UNK	CIRC
8756X	6.886	4.636	450	UNK	CIRC
8757X	7.205	5.365	300	UNK	CIRC
8801X	8.79	7.67	150	UNK	CIRC
8802X	9.296	7.946	UNK	UNK	CIRC
8803X	7.832	5.59	150	UNK	CIRC
8804X	8.008	5.86	225	UNK	CIRC
8805X	8.356	6.295	150	UNK	CIRC
8806X	8.364	6.36	UNK	UNK	CIRC
8807X	8.111	6.5	UNK	UNK	CIRC

Node	Cover	Invert	Size	Material	Shape
8808X	8.79	7.59	UNK	UNK	CIRC
8809X			100	PF	CIRC
8811X			100	VC	CIRC
8812X			UNK	UNK	CIRC
8850X	9.021	7.831	225	UNK	CIRC
8851X	9.169	8.059	225	UNK	CIRC
8852X	9.511		225	UNK	CIRC
8853X	8.323	6.56	225	UNK	CIRC
8854X	7.853	6.19	225	UNK	CIRC
8855X	7.797	6.04	225	UNK	CIRC
8856X	8.33	6.65	150	UNK	CIRC
8857X	8.109	6.925	150	UNK	CIRC
8901X	9.136		225	UNK	CIRC
8902X	8.971	6.811	UNK	UNK	CIRC
8903X	9.084	7.094	UNK	UNK	CIRC
8904X			100	PF	CIRC
8905X			UNK	UNK	CIRC
8906X			100	PF	CIRC
8907X			UNK	UNK	CIRC
8952X	8.631	7.481	225	UNK	CIRC
8953X	9.178	7.578	225	UNK	CIRC
895XX	8.833	7.263	525	UNK	CIRC
9605X			150	UNK	CIRC
9606X			150	UNK	CIRC
9701X	8.36	6.64	UNK	UNK	CIRC
9702X	8.28	6.68	225	UNK	CIRC
9703X			150	UNK	CIRC
9704X			150	UNK	CIRC
9750X	8.469	6.259	300	UNK	CIRC
9751X	8.314		300	UNK	CIRC
9752X	7.948	5.808	300	UNK	CIRC
9753X	7.515	5.485	300	UNK	CIRC
9754X			UNK	UNK	CIRC
976DX			UNK	UNK	CIRC
977DX			UNK	UNK	CIRC
9801X	9.479	8.079	100	UNK	CIRC
9802X	9.17	7.95	UNK	UNK	CIRC
9803X	9.29	7.58	UNK	UNK	CIRC
9805X	8.64		UNK	UNK	CIRC
9850X	9.902	7.262	225	UNK	CIRC *
9850Y	9.902		225	UNK	CIRC *
9851X	9.294	7.509	225	UNK	CIRC
9852X	9.998	7.078	300	UNK	CIRC
9853Y	9.131		300	UNK	CIRC *
9853X	9.131	6.911	UNK	UNK	CIRC *
9854X	8.73	6.46	300	UNK	CIRC
9901X	9.461	4.937	UNK	UNK	CIRC
990DX			UNK	UNK	CIRC
991DX			UNK	UNK	CIRC
9950X	9.466		450	UNK	CIRC
9951X	9.589	5.759	375	UNK	CIRC



Drawn by:	kumarla
Title:	217087_The Orchard Houe, Waste
Date:	10/06/2016

Southern Water

Appendix F

Southern Water

Department of Planning and
Development
Havant Borough Council
Public Service Plaza
Civic Centre Road
Havant
Hampshire
PO9 2AX

Developer Services
Southern Water
Sparrowgrove House
Sparrowgrove
Otterbourne
Hampshire
SO21 2SW

Tel: 0330 303 0119
Email: developerservices@southernwater.co.uk

Your Ref
APP/17/00633
Our Ref
PLAN-019283
Date
26/07/2017

Dear Sirs,

Proposal: Demolition of existing dwelling and erection of 25no. retirement living apartments with communal facilities, car parking and landscaping to include the removal of some onsite protected trees (subject to an Area Tree Protection Order 2068/2017) and provision of replacement tree planting
Site: The Orchard House, Western Avenue, Emsworth, PO10 7LP.
APP/17/00633

Thank you for your letter of 25/07/2017.

Further to our previous correspondence regarding the above planning application consultation and discussions with the developer regarding the proposed foul flow rates to be discharged in to the system: Southern Water can provide foul sewage disposal for a discharge rate of 0.0651 l/s to service the proposed development. Southern Water requires a formal application for a connection to the public sewer to be made by the applicant or developer.

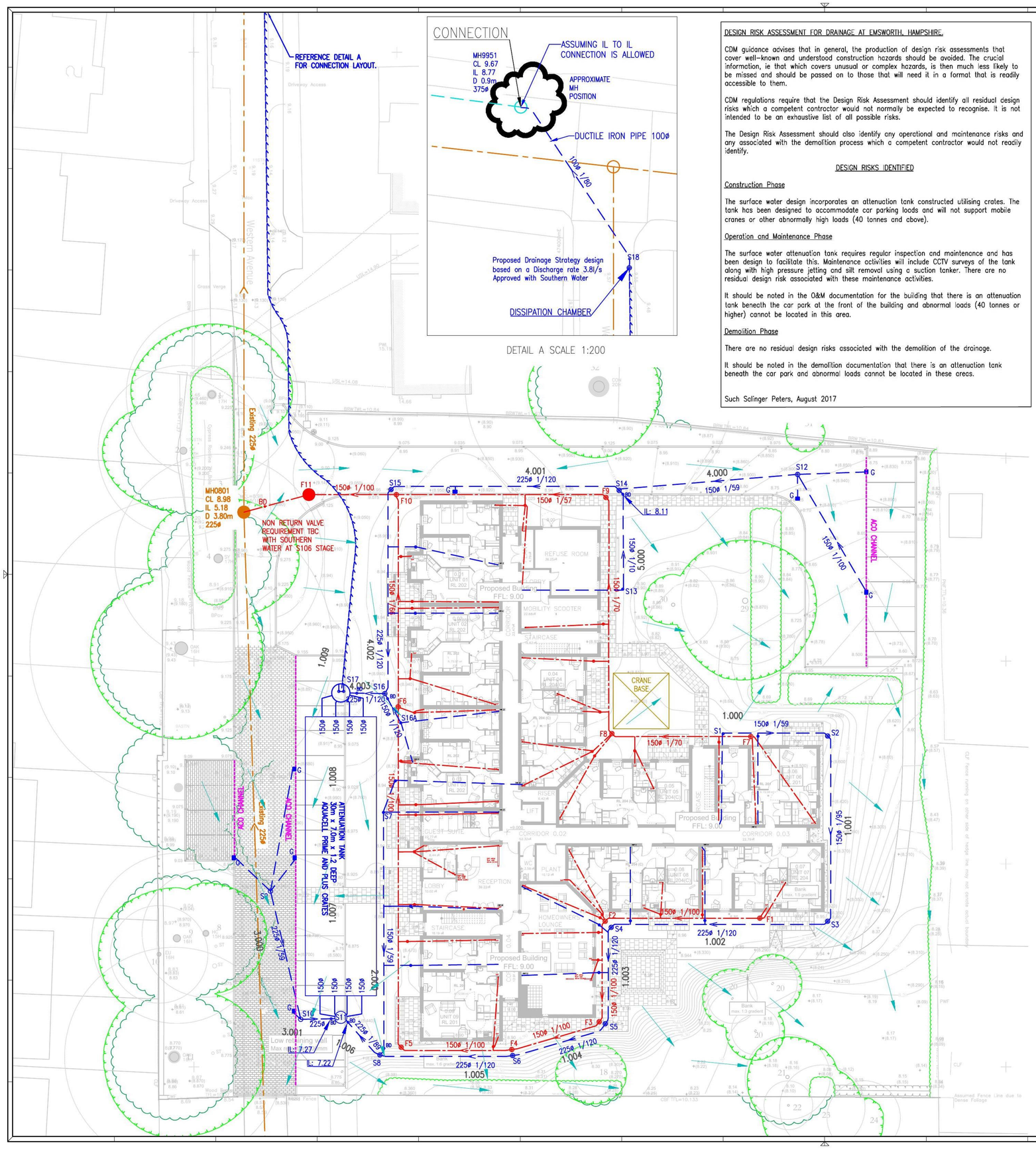
We request that should this application receive planning approval, the following informative is attached to the consent:
"A formal application for connection to the public sewerage system is required in order to service this development, Please contact Southern Water, Sparrowgrove House, Sparrowgrove, Otterbourne, Hampshire SO21 2SW (Tel: 0330 303 0119) or www.southernwater.co.uk".

All other comments in our previous response dated 05/07/2017 remain unchanged and valid.

Yours sincerely

[redacted]
Developer Services

Appendix G



DETAIL A SCALE 1:200

DESIGN RISK ASSESSMENT FOR DRAINAGE AT EMSWORTH, HAMPSHIRE.

CDM guidance advises that in general, the production of design risk assessments that cover well-known and understood construction hazards should be avoided. The crucial information, ie that which covers unusual or complex hazards, is then much less likely to be missed and should be passed on to those that will need it in a format that is readily accessible to them.

CDM regulations require that the Design Risk Assessment should identify all residual design risks which a competent contractor would not normally be expected to recognise. It is not intended to be an exhaustive list of all possible risks.

The Design Risk Assessment should also identify any operational and maintenance risks and any associated with the demolition process which a competent contractor would not readily identify.

DESIGN RISKS IDENTIFIED

Construction Phase

The surface water design incorporates an attenuation tank constructed utilising crates. The tank has been designed to accommodate car parking loads and will not support mobile cranes or other abnormally high loads (40 tonnes and above).

Operation and Maintenance Phase

The surface water attenuation tank requires regular inspection and maintenance and has been design to facilitate this. Maintenance activities will include CCTV surveys of the tank along with high pressure jetting and silt removal using a suction tanker. There are no residual design risk associated with these maintenance activities.

It should be noted in the O&M documentation for the building that there is an attenuation tank beneath the car park at the front of the building and abnormal loads (40 tonnes or higher) cannot be located in this area.

Demolition Phase

There are no residual design risks associated with the demolition of the drainage.

It should be noted in the demolition documentation that there is an attenuation tank beneath the car park and abnormal loads cannot be located in these areas.

Such Salinger Peters, August 2017

KEY

- TYPE 4 INSPECTION CHAMBER – 250 DIA.
- TYPE 3 INSPECTION CHAMBER – 450 DIA.
- TYPE 2 P.C. MANHOLE – MIN 1200ø < 3m DEEP
- TYPE 1 P.C. MANHOLE – MIN 1200ø 3m–6m DEEP
- FOUL WATER SEWER
- SURFACE WATER SEWER
- EXISTING FOUL WATER SEWER
- EXISTING SURFACE WATER SEWER
- SURFACE WATER RISING MAIN
- BOUNDARY
- ACO DRAINAGE CHANNEL
- SURFACE WATER FLOWS

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED.
2. ALL LEVELS IN METRES ABOVE ORDNANCE DATUM.
3. SURFACE WATER DESIGN BASED ON A 1 IN 100 YEAR RAINFALL EVENT (PLUS 40% CLIMATE CHANGE) REMAINING BELOW GROUND WITH NO RISK OF SURFACE FLOODING ON OR OFF THE SITE.
4. MANHOLE TYPES ON THE SCHEDULES RELATE TO TYPES AS USED IN SEWERS FOR ADOPTION 7TH EDITION. REFER TO CONSTRUCTION DRAWINGS IN THE SERIES FOR STANDARD DETAILS.
5. WHERE A SPECIFIC DIAMETER IS SHOWN IN THE MANHOLE SCHEDULE (EG. 2100), THE MANHOLE SHOULD BE CONSTRUCTED TO THE STANDARDS FOR EITHER A TYPE 1 OR TYPE 2 MANHOLE IN SEWERS FOR ADOPTION 7TH EDITION.
6. MANHOLES NOT SCHEDULED ARE TYPE 4 INSPECTION CHAMBERS.
7. ALL RWP AND SVP CONNECTING PIPEWORK TO BE 100ø UNLESS NOTED OTHERWISE.
8. 100ø FOUL PIPEWORK TO BE LAID NO FLATTER THAN 1 IN 40 INTERNALLY AND 1 IN 70 EXTERNALLY.
9. MINIMUM DEPTH AT HEAD OF INTERNAL SURFACE WATER TO BE 450MM AND FOUL WATER RUNS TO BE 750MM BELOW FINISHED FLOOR LEVEL UNLESS OTHERWISE STATED.
10. FOUNDATIONS TO BE LOCALLY STEPPED WHERE NECESSARY AS PER STRUCTURAL ENGINEERS DETAILS. WHERE STUB STACKS ARE USED, SPECIAL DETAILS WILL BE PROVIDED.
11. PUBLIC MANHOLE DETAILS FROM PUBLIC SEWER RECORDS.
12. AREA CONTRIBUTING TO THE SW SYSTEM TAKEN AS 2350 m2.
13. THIS DRAWING IS FOR STRATEGY PURPOSES ONLY AND MUST NOT BE USED FOR CONSTRUCTION.
14. FORMAL APPLICATION AND APPROVAL FOR CONNECTIONS INTO PUBLIC SYSTEM MUST BE OBTAINED BEFORE WORKS.
15. SOIL INVESTIGATION LOOKING @ 500mm INFILTRATION TESTS AFTER PLANNING FOR POSSIBLE PERMEABLE PAVING OPTION.

FOUL MANHOLE SCHEDULE

MH No.	COVER	INVERT LEVEL		DEPTH	MAX PIPE	MH	COVER TYPE
		IN	OUT				
F1	8.95	7.84	7.84	1.11	150	3	A15
F2	8.85	7.69	7.69	1.16	150	3	A15
F3	8.80	7.59	7.59	1.21	150	3*	A15
F4	8.80	7.50	7.50	1.30	150	3*	A15
F5	8.85	7.39	7.39	1.46	150	3*	A15
F6	9.00	7.06	7.06	1.94	150	3*	A15
F7	8.90	7.69	7.69	1.21	150	3	A15
F8	8.80	7.50	7.50	1.30	150	3*	A15
F9	9.07	7.17	7.17	1.90	150	3*	A15
F10	9.05	6.75	6.75	2.30	150	3*	A15
F11	9.02	6.65	6.65	2.37	150	2	D400

ALL LEVELS TBC BEFORE WORKS AND REPORTED BACK TO ENGINEER.
ALL PIPEWORK TO BE 100 ø AT MIN. 1/70 UNLESS STATED OTHERWISE.
* RESTTRICTED ACCESS.

SURFACE WATER MANHOLE SCHEDULE

MH No.	COVER	INVERT LEVEL		DEPTH	MAX PIPE	MH	COVER TYPE
		IN	OUT				
S1	8.95	–	8.30	0.65	150	4	A15
S2	8.95	8.03	8.03	0.92	150	3	A15
S3	8.80	7.85	7.85	0.95	150	3	A15
S4	8.85	7.63	7.56	1.29	225	3*	A15
S5	8.82	7.46	7.46	1.36	225	3*	A15
S6	8.70	7.38	7.38	1.32	225	3*	A15
S7	8.94	–	8.30	0.64	150	4	A15
S8	8.75	7.27	7.27	1.48	225	3*	A15
S9	8.80	–	7.55	1.25	225	3*	D400
S10	8.70	7.33	7.33	1.37	225	3*	D400
S11	8.70	7.21	6.45	2.25	225	1200	D400
S12	8.78	–	7.55	1.23	150	3*	D400
S13	8.95	–	8.30	0.65	100	4	A15
S14	9.00	7.25	7.25	1.75	150	3*	D400
S15	8.97	7.02	6.95	2.02	225	3*	D400
S16A	9.02	–	8.30	0.72	150	4	A15
S16	9.05	6.70	6.70	2.35	225	3*	A15
S17	9.00	6.74	6.35	2.65	225	2100	D400
S18	9.56	9.01	9.01	0.55	150	3	D400
9951	9.67	8.77	8.77	0.90	375	Ex	Ex

ALL LEVELS TBC BEFORE WORKS AND REPORTED BACK TO ENGINEER.
ALL PIPEWORK TO BE 100 ø AT MIN. 1/80 UNLESS STATED OTHERWISE.
* RESTRICTED ACCESS.
S14 TO HOUSE PUMPING STATION WITH 2 PUMPS WORKING; ONE DUTY AND ANOTHER STANDBY AT 3.8L/s.
S8 AND S14 TO HAVE ADDITIONAL 500mm DEEP SILT TRAP

ATTENUATION TANK SCHEDULE

PLAN DIMENSIONS	EFFECTIVE DEPTH	TOP OF TANK	BASE OF TANK	LOWEST COVER LEVEL	LOWEST IL IN	MAX. CONSTRUCTION DEPTH
30 x 7m	1.2	7.65–7.55	6.45–6.35	8.85	6.45	2.50

PRELIMINARY ONLY

MK	REVISIONS	DRN	CHK	APP	DATE
G					
F	New RWP locations added into layout. Indicative directional flow of runoff added.	DL	KD	KD	03.08.2017
E	Updated drawing with proposed levels. Updated cover levels on manholes.	DL	KD	KD	02.08.2017
D	Added the CDM note onto the drawing.	DL	KD	KD	24.07.2017
C	Rising main route amended	DL	PP	KD	06.06.2017
B	Rising Main route amended	KD	PP	KD	25.05.2017
A	Rising main and attenuation tank moved as requested. F11 moved back and RP'Ss added.	KD	DL	KD	25.05.2017
–	FIRST ISSUE	DL	KD	KD	19.05.2017

Such·Salinger·Peters
CONSULTING ENGINEERS
Fourth Floor
Dean Park House
10 Dean Park Crescent
Bournemouth, Dorset, BH1 1HL
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CLIENT: MCCARTHY AND STONE SOUTHERN REGION

PROJECT: THE ORCHARD HOUSE EMSWORTH

DRAWING TITLE: 'T' BUILDING DRAINAGE LAYOUT

SCALE	DATE		
1:200	03/08/2017		
	DRAWN	CHECKED	APPROVED
	DL	KD	KD

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DRAWING No. 64007–03

REVISION F