



**FLOOD RISK ASSESSMENT & DRAINAGE STRATEGY
FOR
PROPOSED REDEVELOPMENT
GODBAY HOUSE, 380 SEA FRONT, HAYLING ISLAND
ON BEHALF OF
PERBURY (DEVELOPMENTS) LTD**

AUGUST 2017

[ISSUE 2]

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CIVIL ENGINEERING ~ HIGHWAYS ~ TRANSPORTATION ~ FLOOD RISK

BRISTOL & SWINDON

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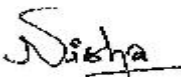
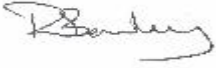
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CONTENTS

SECTION	HEADING	PAGE No.
1.0	INTRODUCTION	1
2.0	THE EXISTING SITE	3
3.0	FLOOD RISK ISSUES	6
4.0	DRAINAGE PROPOSALS	10
5.0	DISCUSSION AND CONCLUSIONS	15

APPENDICES

Appendix 1 - CEC Figures & Plans

CEC Figure 5550/500/Figure 1	Site Location Plan
CEC Figure 5550/500/Figure 2	Flood Zone Map
CEC Plan 5550/500	Existing Site Plan
CEC Plan 5550/501(A)	Proposed Drainage Layout

Appendix 2 - Drawings by Others

Drawing No. 001(B)	Site Survey (by Hampshire County Council)
Drawing No. 16054-P01(A)	Existing Block Plan (by Bright Space Architects)
Drawing No. 16054-P03(B)	Proposed Block Plan (by Bright Space Architects)

Appendix 3 - Sewer Records

Appendix 4 - Geotechnical Data

BGS Data
Site Investigation Data

Appendix 5 - EA Maps

Appendix 6 - Surface Water Drainage Calculations

1.0 INTRODUCTION

- 1.1 This *Flood Risk Assessment & Drainage Strategy (FRA & DS)* has been prepared by Cole Easdon Consultants (CEC) on behalf of Perbury (Developments) Ltd with regards to the redevelopment proposals of the residential foster home at 380 Sea Front Hayling Island with 13 residential units. Refer to CEC Figure 5550/500/Figure 1 [*Site Location Plan*] in Appendix 1.

Development Proposals

- 1.2 The development proposal comprises the demolition of the existing 2 and a half storey residential home and the erection of a new 4 storey residential apartment building accommodating 13 units, together with associated access roads, parking and landscaping. Refer to Drawing Nos. 16054-P01(A) [*Existing Block Plan*] and 16054-P03(B) [*Proposed Block Plan*] (by Bright Space Architects) in Appendix 2.

Need for Study

- 1.3 The report evaluates flood risk and drainage issues associated with the proposed development. The purpose of this assessment is to demonstrate that the proposals can be satisfactorily accommodated without worsening flood risk for the area and without placing the development itself at risk, over its lifetime. The study has been undertaken in accordance with the *National Planning Policy Framework (NPPF)* and its associated *Planning Practice Guidance (PPG)*.
- 1.4 Accordingly, this study has been prepared to:
- i) assess flood risk to the development from fluvial sources and other potential sources, including sewers, groundwater, overland flow and artificial sources;
 - ii) consider sustainable means for surface water disposal from the site; and
 - iii) develop foul water drainage solution for the site.

Scope of Study

- 1.5 In Section 2.0, we describe the characteristics of the proposed development site and surrounding area. In Section 3.0, we assess flood risk issues. In Section 4.0, we discuss surface water and foul water drainage proposals for the site. Finally, conclusions are presented in Section 5.0.
- 1.6 The following publicly available documents have also been reviewed as part of this

assessment:

- *National Planning Policy Framework (March 2012);*
- *Planning Practice Guidance (March 2014);*
- *C753 The SuDS Manual (CIRIA, November 2015);*
- *Partnership for Urban South Hampshire Strategic Flood Risk Assessment (PUSH SFRA) Update - 2016 (Eastern Solent Coastal Partnership, February 2016); and*
- *South Hayling Beach Management Plan, Report Number: ESCP-HBC-SHBMP-001 (East Solent Coastal Partnership, September 2012, Version: 2.1).*

2.0 THE EXISTING SITE

Site Location and Topography

- 2.1 The application site is located on the south western coast of South Hayling, in the Borough of Havant. The site is located at Sea Front Road, 300m from the coastline (Hayling Bay). The site is located 700m to the west of the A3023, the main road connecting Hayling to the mainland of Havant and beyond, and approximately 7km to the south of its junction with the A27 in Havant. Refer to CEC Figure 5550/500/Figure 1 [*Site Location Plan*] in Appendix 1.
- 2.2 The application site comprises Godbey House, which is a former Hampshire County Council Children's Home. The site measures approx. 0.44hectares (ha). The site currently comprises a 2 and a half storey building, together with a tarmac and gravel surfaced car parking, paved areas, tarmac playcourt, grassed lawn garden and trees/planting. The existing access to the site is from Sea Front to the south. Refer to CEC Plan 5550/500 [*Existing Site Plan*] in Appendix 1.
- 2.3 The area is characterised by residential properties including seafront apartments and detached dwellings. The site is bordered by a substantial residential property to the west, along with several smaller dwellings to the north and east. The property is adjoined by Sea Front Road to the south with extended sea views of the Solent stretching beyond. The Beachlands Golf Course located on the south side of the road.
- 2.4 The topography of the site is typically dipping to the south towards Hayling Bay. Site levels vary between c. 5.4mAOD to 3.50mAOD (Above Ordnance Datum). The site however exists in two broadly level parts, with the front third of the site lying at approximate levels of the adjoining highway whilst the rear two-thirds sit higher than the site frontage by approx. 1.5m; the changes however occur gradually as a shallow grassed bank. The rear site occurs at an average level of 5.10mAOD (Above Ordnance Datum) whilst the average level at the site frontage remain at around 3.60mAOD. Refer to Drawing No. 001(B) [*Site Survey*] (by Hampshire County Council) in Appendix 2 and CEC Plan 5550/500 [*Existing Site Plan*] in Appendix 1.

Nearby Watercourses/Drainage Features

- 2.5 The site is located along the south coast of South Hayling, some 300m from the coastline (Hayling Bay).

Existing Drainage/Sewers

- 2.6 Southern Water (SW) sewer records indicate the presence of a 225mm dia foul water sewer located in Sea Front to the south of the site. This pipe discharges into an adopted pumping station to the south east of the site. Refer to sewer records in Appendix 3.
- 2.7 A 525mm diameter surface water sewer runs through the eastern extent of the site from north to south. SW sewer records show this discharges into a soakaway located to the south of Sea Front. Public storm sewers in the area appear to drain via soakaways. Refer to sewer records in Appendix 3.
- 2.8 SW records indicate that the 525mm surface water sewer runs beneath the existing (and proposed) block. However, the topographical survey of the site indicates that the sewer deviates from the route shown within SW records, and does not lie beneath the location of the new block. The required easement (minimum 3.5m) will be afforded on either side of the sewer. Refer to Drawing No. 001(B) [*Site Survey*] (by Hampshire County Council) in Appendix 2 and CEC Plan 5550/500 [*Existing Site Plan*] in Appendix 1. SW have been contacted to confirm their approval to the surveyed route and the proposed easement. Response from SW is awaited at this stage and will be forwarded to the planning authority when received.
- 2.9 The topographical survey of the site (Drawing No. 001(B) [*Site Survey*] (by Hampshire County Council) in Appendix 2) has identified the existence of a foul water drainage system which connects into the 225mm public foul water sewer in Sea Front. The 100mm diameter foul drain discharges into the public foul water sewer via a running trap (foul air interceptor) within the manhole. No surface water systems were identified. It is likely that the site utilises a combined system with surface water also discharging into the foul water system, or draining via soakaways. Refer to Drawing No. 001(B) [*Site Survey*] (by Hampshire County Council) in Appendix 2.

Existing Ground Conditions

- 2.10 BGS mapping available online indicates the area to be underlain by Portsmouth Sand Member and Whitecliff Sand Member River, typically comprising yellow Sand. Superficial deposits in the form of Storm Beach deposits are shown to overlie the solid geology within the southern part of the site whilst River Terrace Deposits exist within the northern region. Storm Beach deposits are typically comprised of silts, sand and gravel with occasional cobbles and boulders. River Terrace deposits are typically comprised of sand and gravel,

locally with lenses of silt, clay or peat. Refer to BGS records in Appendix 4.

- 2.11 A ground investigation undertaken at the site (in November 2015) revealed the site geology to include a layer of made ground (0.10 – 0.40m thick) or top soil over superficial deposits comprising cohesive soft to firm orange brown slightly gravelly sandy clay to a depth of between 0.40m and 0.90m overlying granular medium dense to very dense grey brown to orange brown clayey sandy gravel / gravelly sand to the maximum investigated depth of 2.50m. It is likely that TP4 and TP5 located towards the south of the site, with sandy Gravel and Sand, represented Storm Beach Deposits whereas TP1 – 3 and 6 to the north of the site are representative of River Terrace Deposits. Refer to SI extracts in Appendix 4.
- 2.12 Groundwater ingresses were encountered at between 1.70m (TP4 & TP5) and 2.15m (TP2) below ground level. Refer to Appendix 4.
- 2.13 Three in-situ permeability/soakaway tests undertaken at TP2, TP3 and TP5 determined soil infiltration rates of between 2.23×10^{-6} m/s (within River Terrace Deposits) and 1.83×10^{-4} m/s (within Storm Beach Deposits). Refer to Appendix 4.
- 2.14 Both superficial and solid deposits beneath the area are classified as 'Secondary (A) Aquifers, with permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. The EA's online mapping indicates that the site is not located within any Groundwater Source Protection Zone.

3.0 FLOOD RISK ISSUES

3.1 This section of the study reviews historical flooding events within the local catchment area and presents an assessment of flood risk to the proposed development from various external sources to demonstrate that the development will be safe in flood risk terms over its lifetime.

3.2 Recommended flood risk mitigation measures appropriate to the level of perceived risk are included within this assessment.

Flood History

3.3 The PUSH SFRA indicates that there is no historic flooding in or around the proposed site. Historic flooding has mainly affected area around Eastoke to the east of the island.

Assessment of Flood Risk from Fluvial Sources

3.4 The PUSH SFRA and Environment Agency Flood Maps confirm that the site is located in Flood Zone 1. The NPPF identifies Flood Zone 1 as low flood risk areas with an annual probability of flooding of less than a 1 in 1000 (0.1%) from rivers or sea. Refer to CEC Figure 5550/500/Figure 2 [*Flood Zone Map*] within Appendix 1 and further flood maps in Appendix 5.

3.5 In accordance with *PPG Table 2 Flood Risk Vulnerability Classification* and *Table 3: Flood Risk Vulnerability and Flood Zone Compatibility*, residential use classed as 'more vulnerable' use is acceptable in Flood Zone 1. As such, the flood vulnerability of the proposed site use is compatible with the fluvial flood risks associated with the site.

Fluvial/Tidal Flood Risk Mitigation Measures

3.6 No mitigation measures are required.

Assessment of Flood Risk from Overland Flow (Surface Water)

3.7 The EA's *Surface Water Flood Map* (Appendix 5) indicates that the majority of the site is not vulnerable to surface water flooding. The low lying area to the south and Sea Front Road are shown to be susceptible to surface water flooding, with low to medium flood risk.

3.8 Ponding will likely result from surface water runoff generated within the site, as no flood flow routes are shown through the site from the area beyond. Surface water runoff

generated from hard areas within the site will be disposed of via onsite drainage measures, which once overwhelmed will mostly direct towards the low lying area located within the southern extent of the site. Such flood flow routes are indicated in CEC Plan 5550/500 [*Existing Site Plan*] in Appendix 1.

Overland Flow Flood Risk Mitigation Measures

- 3.9 The proposed accommodation block is located within higher part of the site, sufficiently above and away from the flood risk area, with the more vulnerable area allocated for parking and landscaping.
- 3.10 Further, it is advised that the finished floor level within the new block is set as high as possible, and not lower than the existing floor level of 5.65mAOD. This sets the new block some 450mm above the general site level and some 2.0m above the lower part of the site. Such measure will afford adequate protection to the new property from surface water flooding.
- 3.11 No land raising will be carried out within the surface water floodplain, thereby ensuring no loss of the existing surface water floodplain storage or surface water flood risk to the adjoining area.

Assessment of Flood Risk from Existing Sewers/Drains

- 3.12 A 525mm public storm sewer runs through the eastern extent of the site. The sewer avoids the location of the existing (and proposed) block based on the topographical survey and proposed site plan. Refer to CEC Plans 5550/500 [*Existing Site Plan*] and 5550/501(A) [*Proposed Drainage Layout*] in Appendix 1. As stated above in Para. 2.8, approval from SW is awaited at this stage on the surveyed route.
- 3.13 Should the existing sewer flood, floodwater should flow in a southerly route along the landscape margin and access road/parking. The development layout will maintain this flood flow corridor / route. Refer to CEC Plan 5550/501(A) [*Proposed Drainage Layout*] in Appendix 1.
- 3.14 Given that finished floor level within the new property will be set adequately higher than the adjoining ground level and therefore the location of the sewer, and the new property will adequately set back from the existing sewer, flooding from the sewer should not affect the new property.

Sewer Flood Risk Mitigation Measures

- 3.15 Setting finished floor level as sufficiently higher than the location of the sewer will prevent the new property from sewer flooding. The development will maintain an easement of 3.5m easement on either side of the existing storm sewer (as stipulated by Southern Water) to allow for future access for maintenance. No development or new tree planting will be located within the provided easement. This should ensure that the existing system is adequately protected.

Assessment of Flood Risk from Groundwater

- 3.16 The site geology includes moderately to highly permeable sandy Clay and sandy gravel / gravelly sand deposits. Groundwater levels were recorded at depths between 1.7 – 2.15mbgl. As such, the site is susceptible to groundwater flooding within lower southern parts whilst the higher northern part is less susceptible to groundwater flooding.
- 3.17 On 3rd November 2015, at the time of site investigation works the 1pm high tide was 4.79m above Chart Datum, i.e. 2.06mAOD (Ordnance Datum being 2.73m above Chart Datum at the location of the site). This is c. 1.6m below the lowest site level (3.60mAOD) and matches the ground water level (1.7mbgl) recorded at the site at the time. Spring tides appear to reach a maximum height of 5.0m above Chart Datum (i.e. 2.27mAOD). Under such circumstances, the high tidal level will remain c. 1.3m lower than the lowest site level which will mean reduced available (unsaturated) zone beneath the surface. Nevertheless, groundwater will not emerge on the surface.
- 3.18 Under the exceptional circumstances should groundwater emerge to the surface, this will pond within the low lying southern extent of the site, and will not affect the location of the new build located some 1.5m above the low lying southern region. The area will be utilised for parking and landscaping within the new development, which will continue to function as flood storage area under such events.

Groundwater Flood Risk Mitigation Measures

- 3.19 Preventive measure will include setting the finished floor level within the new block as high as possible, and not lower than the existing floor level of 5.65mAOD. This sets the new block at 2.7m above the groundwater level observed at the location.

Table 3.1: Assessment of Flood Risk to the Development Site Arising from External Sources

Source of Potential Flooding to the Development Site	Flood Risk	Mitigation/Comments
▪ Fluvial/Tidal	Low	▪ The site is located in Flood Zone 1 with low risk of fluvial and tidal flooding.
▪ Sewers / Drains	Low	▪ Finished floor level will be set adequately higher, and not lower than the existing floor level of 5.65m.
▪ Overland Flow	Low - Medium	▪ Southern region susceptible to surface water flooding ▪ Precautionary measures include: - Locating new block within higher ground; - Raised floor level; - No land raising within flood risk area; - Maintaining flood flow routes / flood storage area.
▪ Groundwater	Low - Medium	▪ The site is underlain by low to reasonably permeable superficial deposits; groundwater levels were recorded at depths between 1.70 – 2.15mbgl. ▪ Precautionary measure includes raised floor level.

4.0 DRAINAGE PROPOSALS

- 4.1 This section details how surface water runoff and foul water arising from the development site will be managed in line with related policies and requirements in the *NPPF* and *PPG*.

Existing Site Drainage

- 4.2 The existing site, with Godbey House and hardstanding, comprises 960mm² (0.96ha) of impermeable area. Site survey works determined foul drainage system serving the site whilst no separate surface water drainage system was identified, which led to the presumption that the site either utilises a combined system and drains into the nearest public sewer via a 100mm drain, or drains via soakaways (location unconfirmed). Based on sewer records, public storm sewers in the area appear to drain via soakaways.

Surface Water Drainage Proposal

- 4.3 The development site, with the new accommodation block, parking area and access will comprise 1,460m² (0.146ha) of impermeable area, an increase in 50% over the existing site impermeable area. Notwithstanding, it is the intention to dispose of surface water runoff within the site via infiltration. As such, the site will not generate any off-site runoff (up to the design period event).
- 4.4 Further, a 10% allowance has been added to the impermeable areas to allow for 'urban creep' as required in HCC's consultation response (dated 11 August 2017), making the resulting impermeable area of c. 1,600m². However, the urban creep requirement seems inappropriate in relation to this development given that as block of flats, it will not have authority for random addition/extension under 'Permitted Development Rights'; any future developments will be subject to a planning permission where necessary conditions will deal with surface water runoff relating to the new proposal. Nonetheless at this stage, the surface water drainage proposal for the site will include 10% factor for urban creep.
- 4.5 The existing and proposed runoff rates from the site are shown in Table 4.1 below as calculated using the Modified Rational Method, 40% climate change allowance included for the post developed scenario. Runoff volume shown is calculated for the 100yr 6 hour storm based on 63mm rainfall. Refer to Appendix 6 for calculations. However, it is presumed that the existing site drains via infiltration, generating no runoff towards offsite land. Similarly, the development site will drain via infiltration, and will not generate runoff towards offsite land.

Table 4.1: Runoff Calculations

Site	Imperm- eable Area (m ²)	100 year runoff		Runoff leaving the site	Comments
		Runoff Rate (l/s)	Runoff Volume generated (m ³) 100yr 6hr		
Existing Site	960	27	60	0	Existing site presumed to drain via infiltration
Proposed Site	1460	41 (57 including 40%CC)	92 (129)	0	Developed site will drain via infiltration
	1600 (including 10% Urban Creep)	45 (62 including 40%CC)	101 (142)	0	Developed site will drain via infiltration

- 4.6 In accordance with NPPF requirements and the principles of SuDS, infiltration based drainage techniques should be considered when ground conditions are suitable. Disposal of post development runoff at source via infiltration removes the need for discharge to a watercourse or sewer, and hence minimises flood risk to the site and the locality.
- 4.7 Infiltration tests undertaken at the site exhibited favourable condition for the use of infiltration drainage. Tests determined soil infiltration rates of between 2.23×10^{-6} m/s (within River Terrace Deposits) and 1.83×10^{-4} m/s (within Storm Beach Deposits). Based on sewer records, public storm sewers in the area also drain via soakaways.
- 4.8 Infiltration SuDS for the site may comprise of soakaways and / or permeable paving to drain roof and access/parking areas. Refer to CEC Plan 5550/501(A) [*Proposed Drainage Layout*] in Appendix 1 for possible drainage arrangement. Given the presence of groundwater at shallow depths (at 1.70 – 2.15mbgl), infiltration devices should be kept as shallow as possible. The proposed use of local soakaways and permeable paving will help to keep the depth shallow. Refer to calculations enclosed. As discussed in paragraph 3.17 above, the effect of tidal influences on groundwater levels has been established. It is unlikely for any fluctuation (increase) in groundwater levels to be significantly greater than few hundred millimetres above high tides; hence use of shallow infiltration devices, such as permeable paving will still be feasible whilst maintaining the adequate buffer above groundwater table.
- 4.9 Infiltration SuDS will be designed for the 1 in 100 year plus 40% climate change event, in accordance with NPPF/EA requirements. Refer to calculations in Appendix 3 for design calculations. Permeable paving design has been carried out based on the average

infiltration rates at TP3 and TP5. An allowance of 10% has been added to impermeable areas for the urban creep.

Residual Flood Risk

- 4.10 Blockage, failure or design exceedance under extreme conditions may cause the proposed drainage/SuDS system to surcharge and flood. Should these flood, floodwaters would be directed towards the low lying parking / landscaped area located to the south. Such flood flow routes are indicated within CEC Plan 5550/501(A) [*Proposed Drainage Layout*] in Appendix 1.

Water Quality

- 4.11 Runoff from roof areas is relatively uncontaminated whilst runoff from lightly trafficked domestic roads and driveways is considered low risk for contamination. SuDS devices such as permeable paving and soakaways remove pollutants via slow infiltration through the permeable media and geotextile membranes, as recognised within the *CIRIA C753 The SuDS Manual*. Runoff will pass through pre-treatment devices, such as silt chambers prior to entering the soakaways and permeable paving.
- 4.12 Consequently, the development will not increase surface water runoff or flood risk in the locality, or will not adversely affect water quality of the receiving water environment.

SuDS Adoption and Maintenance Plan

- 4.13 All on site drainage components (including gutters, pipes, manholes, catchpits and gullies) and SuDS devices (soakaways, permeable paving) will be maintained by a Private Management Company as appointed by the developer. It may be possible to combine responsibility of SuDS as part of the management of the open/landscaped area by the same Service Management Company. Evidence will be provided to the local planning authority by the developer on the suitability and experience of the Management Company once one has been appointed.
- 4.14 Householders and premises occupiers will pay for the maintenance of the drainage components as stated above as part of the annual service charge. Future buyers will have to enter into an agreement with the Management Company which will set legal obligation for the buyers to make payments towards the annual maintenance fee and for the latter to maintain the drainage components and SuDS to the desired standard.

- 4.15 The regular maintenance of SuDS devices should be carried out in line with the C753 *The SuDS Manual* or as per manufacturer's specification, and are outlined in Tables 4.2 and 4.3 below.

Table 4.2: Soakaway Operation and Maintenance Requirements

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect for sediment and debris in pre-treatment devices and floor of inspection tube or chamber and inside of concrete manhole rings	Annually
	Cleaning of gutters and any filters and downpipes	Annually (or as required based on inspection)
	Trimming any roots that may be causing blockages	Annually (or as required)
Occasional Maintenance	Remove sediment and debris from pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings	As required based on inspection
Remedial Actions	Reconstruct soakaways and/or replace or clean void fill, if performance deteriorates or failure occurs	As required
	Replacement of clogged geotextile	As required
Monitoring	Inspect silt traps and note sediment accumulation rate	Monthly in the first year and then annually
	Check soakaways to ensure emptying is occurring	Annually

Table 4.3: Permeable Pavements Operation and Maintenance Requirements

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations
Occasional Maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosphate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)

Maintenance Schedule	Required Action	Typical Frequency
Visual Inspection	Initial inspections	Prior to handover and monthly for 3 months after handover
	Inspect for evidence of poor operation and/or weed growth. If required, take remedial action	Every 3 months and 48 hours after large storms
	Inspect silt accumulation rates and establish appropriate brushing frequencies.	Annually
	Monitor inspection chambers	Every six months

Foul Water Drainage Proposal

- 4.16 The development proposal with 13 residential units will generate minimal foul discharge of 0.60l/s based on *Sewers for Adoption* guidance document.
- 4.17 It is proposed to connect the foul flows from the new development into 225mm public foul water sewer in Sea Front utilising the existing system. The existing foul system present within the site will be retained and utilised as much as possible, although it may be preferable to remove foul drainage located within the permeable pavement in view of future maintenance. It is recommended that a CCTV drainage survey be carried out to confirm the condition of the existing system before the new drainage is connected into it. Refer to CEC Plan 5550/501(A) [*Proposed Drainage Layout*] in Appendix 1.
- 4.18 Agreement will be sought with Southern Water to allow the proposed connection into the public sewer (via the existing outfall). Given the proposed rate is minimal, it should not raise capacity concerns. This will further be confirmed with SW in due course.

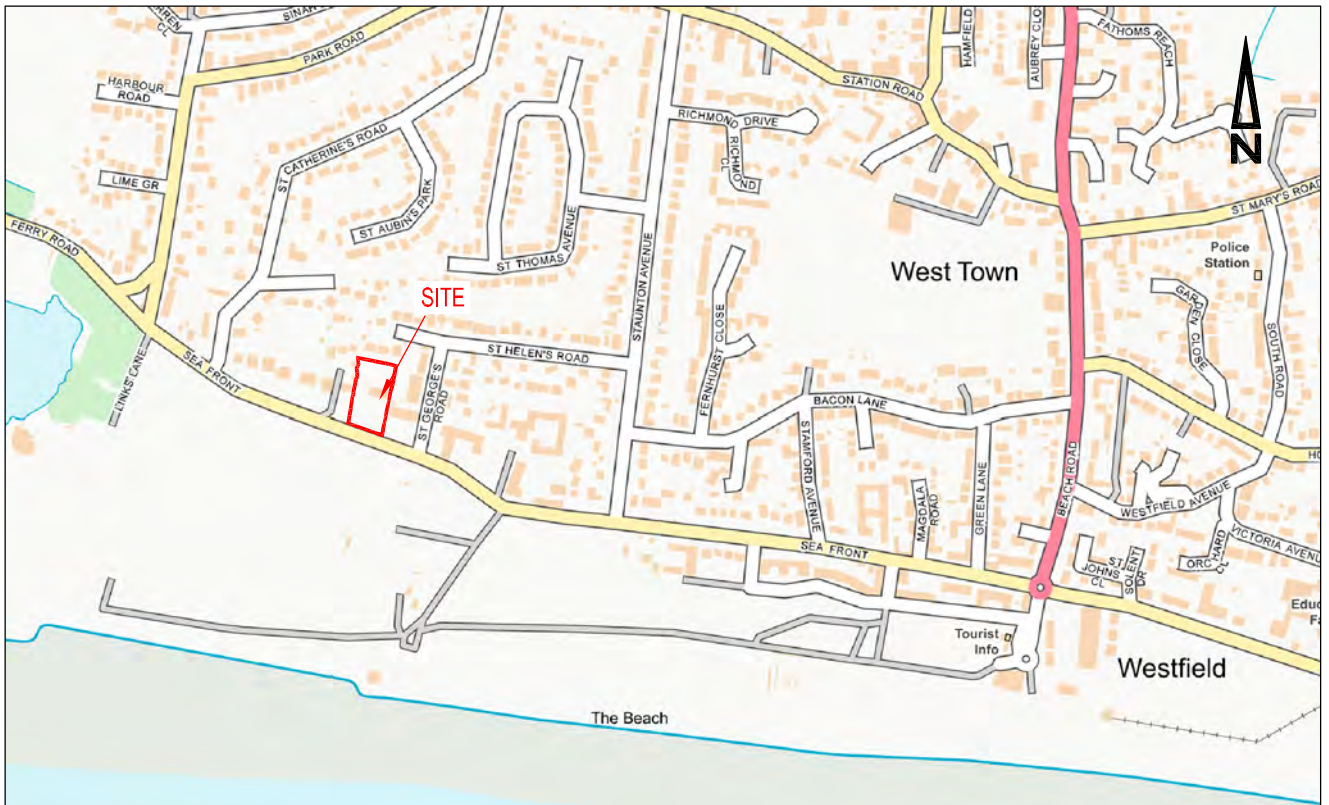
5.0 DISCUSSION AND CONCLUSIONS

- 5.1 This report discusses flood risk and drainage issues associated with the proposed residential redevelopment works of Godbey House, 380 Sea Front, Hayling Island. The study considers the requirements of the LPA, EA and guidance contained within the *NPPF* and *PPG*.
- 5.2 The site is located within Flood Zone 1, and is as such at low risk of flooding from rivers and sea. The *NPPF* states that all types of development are appropriate in Flood Zone 1.
- 5.3 The site is subjected to flood risk associated with surface water ponding within the low lying southern extent and flooding from the public surface water sewer located within the site. Groundwater occurs at shallow depth (1.7mbgl), albeit this should not pose risk of groundwater emerging on surface.
- 5.4 Mitigation measures against potential surface water and sewer flood risk will include:
- Locating new block within higher part of the site;
 - Raised floor level;
 - No land raising within surface water floodplain;
 - Maintaining flood flow routes / flood storage area; and
 - Maintain adequate easement (3.5m) on either side of the existing public sewer.
- 5.5 Surface water runoff from the development will be disposed of via infiltration into ground. Site infiltration testing established suitable infiltration rates for the use of infiltration drainage.
- 5.6 Infiltration SuDS proposed for the site will comprise soakaways and /or permeable paving. Runoff will be managed on site up to the 1:100 year event including 40% climate change allowance in line with the *NPPF/EA* requirements. A 10% allowance will be considered for urban creep (subject to further discussion with HCC). Use of local soakaways and permeable paving will ensure these features remain at a shallow depth.
- 5.7 The use of permeable paving and soakaways with appropriate pre-treatment devices (silt chambers) will ensure the quality of runoff entering the groundwater body is of acceptable quality.
- 5.8 Consequently, the development will not increase surface water runoff or flood risk in the locality, or will not adversely affect water quality of the receiving water environment.

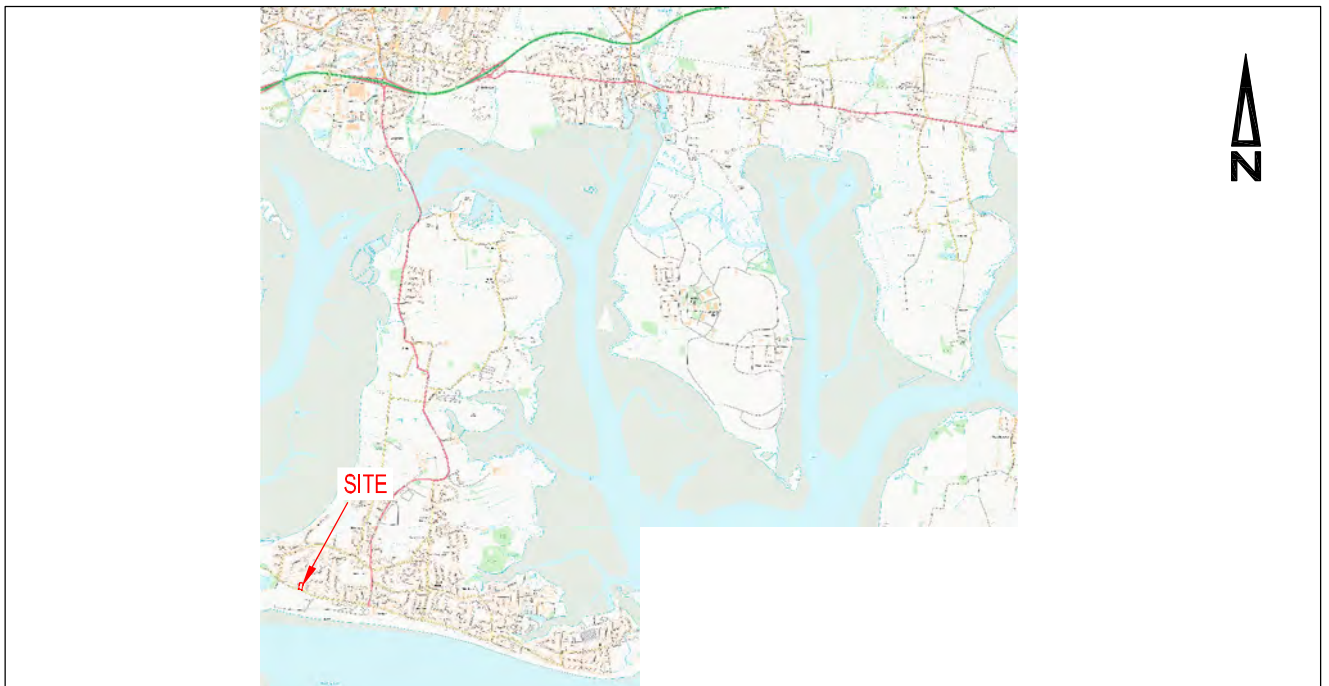
- 5.9 The development will discharge foul flow into the 225mm public foul sewer in Sea Front utilising the existing connection in agreement with Southern Water.
- 5.10 This study has been undertaken in accordance with the principles set out in *NPPF*. We can conclude that providing the development adheres to the conditions advised in this report it can be accommodated without placing development itself at risk or without increasing flood risk within the locality in accordance with objectives set by Central Government and the EA.

Cole Easdon Consultants Limited
August 2017

Appendix 1



Scale 1:10,000



Scale 1:100,000

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Job Title:

Godbey House,
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Hayling Island

Drawing Title:

Site Location Plan

Client:

Perbury Developments Ltd

Drawn By

MR

Checked By

NP

Date Drawn

July 2017

Drawing No.

5550/500/Figure 1

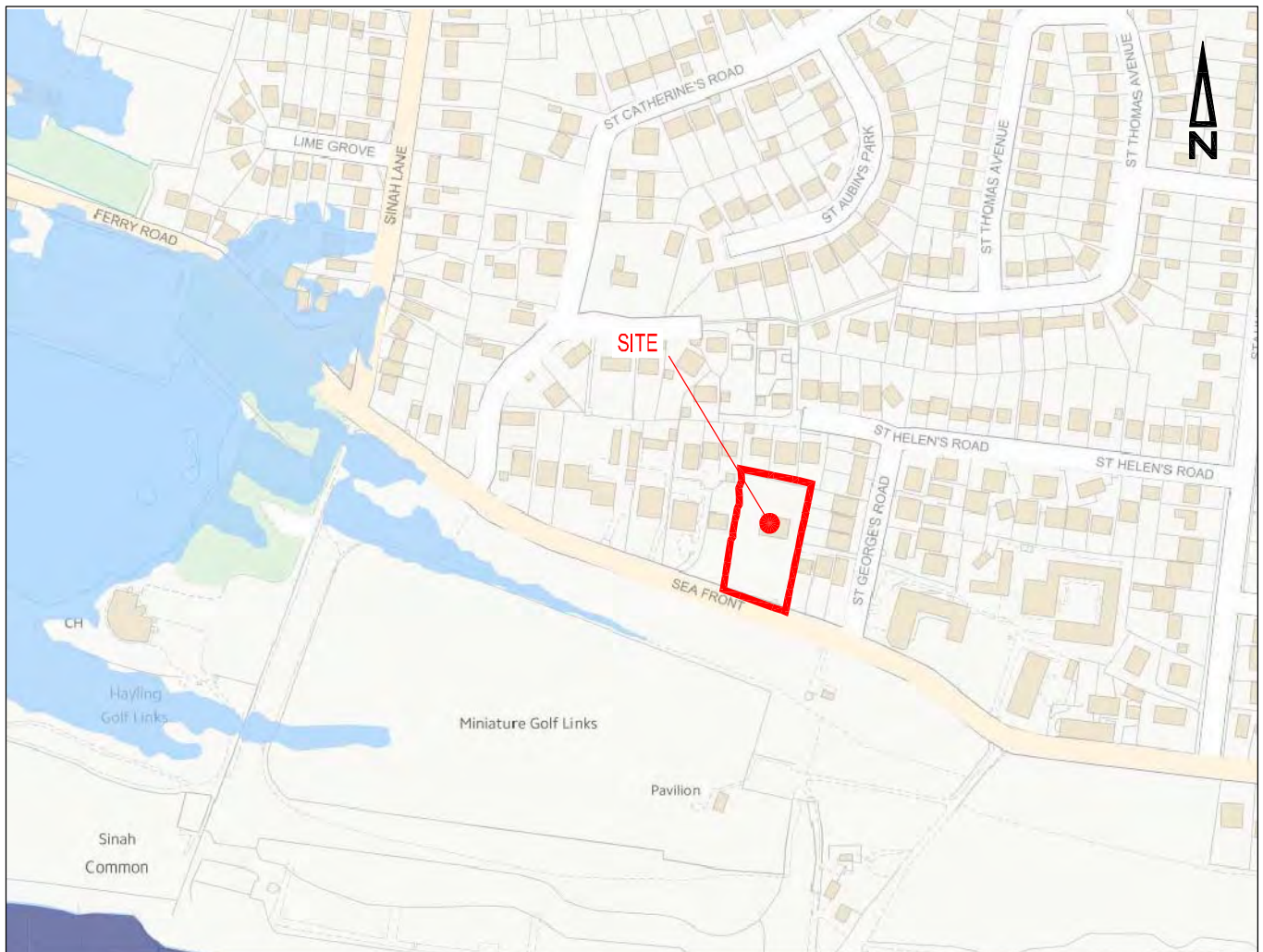
Drawing Status:

CONSTRUCTION AT CLIENT AND/OR CONTRACTOR RISK	FOR COMMENT	☒
	FOR PLANNING	☐
	FOR TENDER	☐
	FOR APPROVAL	☐
	FOR CONSTRUCTION	☐
	AS BUILT	☐

Scale

As Shown @ A4

Revision



- Flood Zone 1
- Flood Zone 2
- Flood Zone 3

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E-mail : cec@ColeEasdon.com

Job Title:

Godbey House,
380 Sea Front,
Hayling Island

Drawing Title:

Flood Zone Map

Client:

Perbury Developments Ltd

Drawn By

MR

Checked By

NP

Date Drawn

July 2017

Drawing No.

5550/500/Figure 2

Drawing Status:

CONSTRUCTION AT CLIENT AND/OR CONTRACTOR RISK	FOR COMMENT	☒
	FOR PLANNING	☐
	FOR TENDER	☐
	FOR APPROVAL	☐
	FOR CONSTRUCTION AS BUILT	☐

Scale

1:5,000 @ A4

Revision



KEY

- Site Boundary
- Existing Storm Water Sewer
- Existing Foul Water Sewer
- Existing Foul/Combined Private Drain
- Existing Hard Area
- Existing Site Levels
- SI Trial Pits
- Flood Flow Route

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Client
Perbury (Developments) Ltd

Job Title
**Godbey House,
380 Sea Front
Hayling Island**

Drawing Title
Existing Site Plan

Drawing Status:					
FOR COMMENT	FOR PLANNING	FOR TENDER	FOR APPROVAL	FOR CONSTRUCTION	AS BUILT
CONSTRUCTION AT CLIENT / CONTRACTOR RISK					
Designed by:		Drawn by: NP		Checked by: RB	
Date July 2017		Scale: 1:200 (A1)			
Dwg. No. 5550/500				Rev. -	



KEY

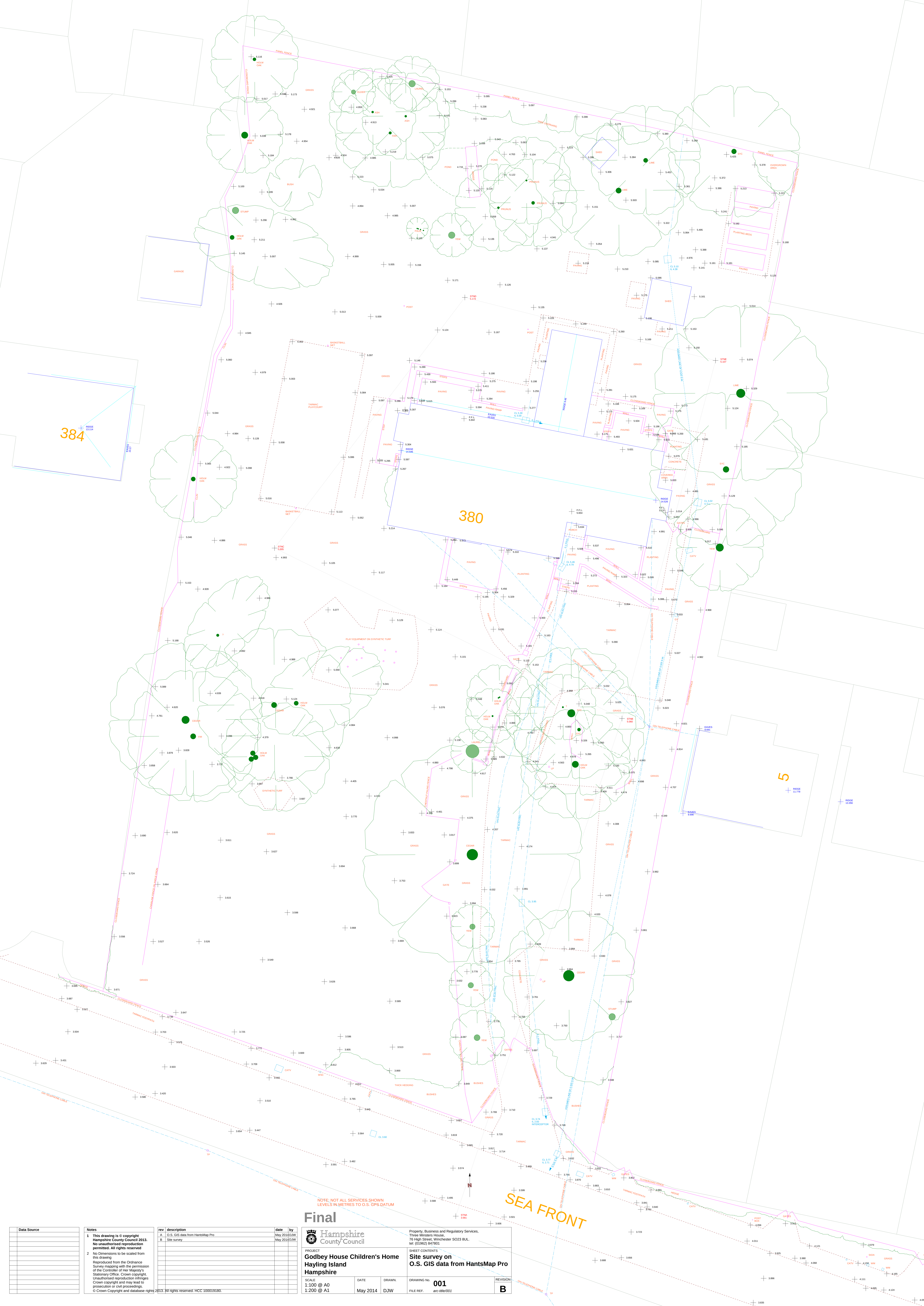
- Site Boundary
- Existing Public Storm Water Sewer
- Existing Public Foul Water Sewer
- Existing Foul/Combined Private Drain
- Proposed Surface Water Drain
- Proposed Foul Water Drain
- Proposed Building
- Proposed Site Levels
- Permeable Block Paving
- Non-Permeable Block Paving Construction
- Cellular Storage
- Flood Flow Route
- SI Trial Pits

Notes:

- Existing drainage information based on survey provided by Hampshire County Council (Drawing No. 001(B) [Site Survey]) and Southern Water sewer records.
- Drainage shown is indicative only, and is subject to detailed design.

A	RT/NP	18.08.17	Extent of permeable paving amended, FW route revised, key amended, notes added, sewer offset details added
No.	By	Date	Revision Details
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		YORK HOUSE EDISON PARK DORCAN WAY SWINDON WILTSHIRE SN3 3RB Tel : 01793 619965	
COLE EASDON CONSULTANTS		Web Site E-mail	www.ColeEasdon.com cec@ColeEasdon.com
Client Perbury (Developments) Ltd			
Job Title Godbey House, 380 Sea Front Hayling Island			
Drawing Title Proposed Drainage Layout			
Drawing Status: FOR COMMENT FOR PLANNING FOR TENDER FOR APPROVAL FOR CONSTRUCTION AS BUILT			
CONSTRUCTION AT CLIENT / CONTRACTOR RISK			
Designed by: NP		Drawn by: NP	
Date July 2017		Checked by: RB	
Scale 1:200 (A1)			
Drg. No. 5550/501		Rev. A	

Appendix 2



Data Source

Notes

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2 No Dimensions to be scaled from this drawing

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rev	description	date	by
A	O.S. GIS data from HantsMap Pro	May 2014	DJW
B	Site survey	May 2014	DJW

**Hampshire
County Council**

PROJECT

**Godbey House Children's Home
Hayling Island
Hampshire**

SCALE

1:100 @ A0
1:200 @ A1

DATE

May 2014

DRAWN

DJW

DRAWING NO.

001

FILE REF.

arc-00w/002

REVISION

B

Property, Business and Regulatory Services,
Three Ministers House,
76 High Street, Winchester SO23 8UL.
tel: (01962) 847801

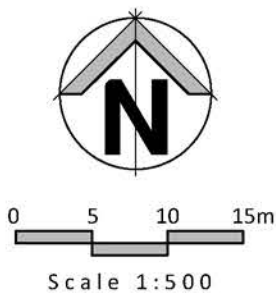
**Site survey on
O.S. GIS data from HantsMap Pro**



- Key
- Site Boundary
 - Existing Building
 - Neighbouring Properties

Existing Block Plan

1:500@A3



General Notes

Ordnance Survey data received from client on 04.07.2016, drawn by Hampshire County Council in May 2014.

Tree Survey Data drawn by and received from Barrell Tree Consultancy on 03.04.2017.

All dimensions to be confirmed on site. All drawings subject to planning and building regulations consent.

All drawings are subject to Local Authority consent.

The details shown are for design intent purposes only and are subject to further design development with suppliers and sub-contractors.

Do not scale off drawings, if in doubt ask.

A. 24.04.17 Refinements and minor corrections JH DE

Rev.	Date	Details	Drawn	Checked

Issued for:

PLANNING

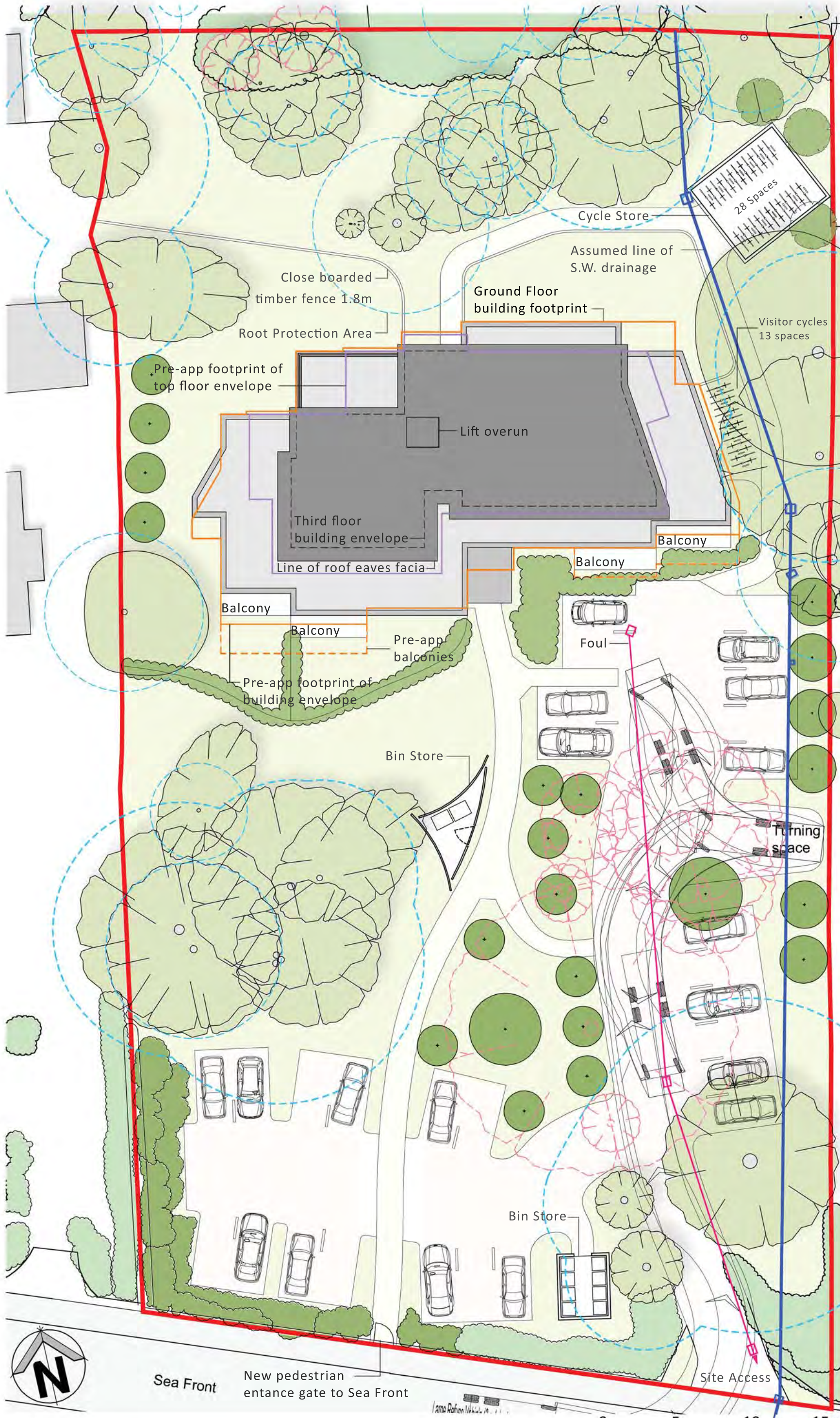
Project/Client:	Project No:
Godbey House	16054
Hayling Island	Dwg No:
Perbury Group	P01
	Rev:
	A
Drawing:	Scale:
Existing	1:500 @A3
Block Plan	Drawn By: Date:
	JH 13.04.17
	Checked By: Date:
	DE 13.04.17



BrightSpace
architects

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- Key
- Site Boundary
 - Proposed Building
 - Neighbouring Properties
 - Root Protection Areas
 - Trees to be removed
 - Pre-App building footprint
 - Pre-App top floor envelope
 - Assumed line of S.W. drainage
 - Foul sewer
 - Proposed trees
 - Proposed additional hedges
 - Proposed low level planting with low level post and wire fencing

General Notes

Ordnance Survey data received from client on 04.07.2016, drawn by Hampshire County Council in May 2014.

Tree Survey Data drawn by and received from Barrell Tree Consultancy on 03.04.2017.

All dimensions to be confirmed on site. All drawings subject to planning and building regulations consent.

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Do not scale off drawings, if in doubt ask.

B	11.07.17	Revised according to Barrell tree report	DM	DE
A	27.04.17	Minor refinements	JH	DE
Rev	Draw	Details	Drawn	Checked
Issued for:				
PLANNING				
Project/Client:		Project No:		
Godbey House		16054		
Hayling Island		Dwg No:		
Perbury Group		P03		
Drawing:		Rev:		
Proposed		A		
Site Plan		Scale:		
		1:250 @A3		
		Drawn By:		
		JH		
		Date:		
		12.04.17		
		Checked By:		
		DE		
		Date:		
		12.04.17		



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Site Plan 1:250@A3

Scale 1:250