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Drainage Impact Assessment
for
Proposed Hotel and Restaurant Development
at
Nelson Hotel
Pier Road, Littlehampton
West Sussex
BN17 5LP

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Drainage Impact Assessment

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Appendix A

Site Location Plan	Bayside 017 PL-01
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Existing Floor Plans	Bayside 017 SU-02
Existing Elevations	Bayside 017 SU-03
Existing Drainage Plan FC2784/01	
SW Sewer Records dated 30/08/18 SW Ref:307032	

Appendix B

Site and Block Plan	Bayside 017 PL-02A
Proposed Plans	Bayside 017 PL-03
Proposed Elevations	Bayside 017 PL-04
Greenfield Runoff Rates (Windes)	
Proposed Drainage Layout Plan	ABMH FC2784/03

Drainage Impact Assessment

1. Introduction

- 1.1 We have been appointed by Goran Miteski to provide a Drainage Impact Assessment (DIA) to accompany the planning application, for a proposed development consisting of a Hotel and Restaurant at Nelson Hotel, Pier Road, Littlehampton, West Sussex, BN17 5LP.
- 1.2 The aim of the report is to review how the existing site is drained and how the proposed site can be drained in accordance with current design practice and the requirements of local planning authority.
- 1.3 The report details the existing and proposed flows that are/will be generated and how these proposed storm water and foul water flows can be managed and discharged in a safe manner.
- 1.4 The DIA has been based upon the following documentation;
- | | | |
|-------|---------------------------------|--------------------|
| 1.4.1 | Site Location Plan | Bayside 017 PL-01 |
| 1.4.2 | Topographical Survey Site | Bayside 017 SU-01 |
| 1.4.3 | Existing Floor Plans | Bayside 017 SU-02 |
| 1.4.4 | Existing Elevations | Bayside 017 SU-03 |
| 1.4.5 | SW Sewer Records dated 30/08/18 | SW Ref:307032 |
| 1.4.6 | Site and Block Plan | Bayside 017 PL-02A |
| 1.4.7 | Proposed Plans | Bayside 017 PL-03 |
| 1.4.8 | Proposed Elevations | bayside 017 PL-04 |

2. Existing Site Use

2.1 Site Setting & Topography

- 2.1.1 The site is situated within the southern portion of Littlehampton at Nelson Hotel, Pier Road, Littlehampton, West Sussex, BN17 5LP. The site is positioned northeast of the junction with Pier Road, South Terrace and Arun Parade. A site location plan, Bayside 017 PL-01, as shown in Appendix A.
- 2.1.2 The site is currently developed, as shown on the Topographical Survey Site, Bayside 017 SU-01, Appendix A.
- 2.1.3 The existing building, the former Nelson Hotel, as shown on drawings Existing Floor Plans and Elevations Bayside 017 SU-02 & 03, Appendix A, comprises of:
 - 2.1.3.1 Basement with function room, toilets and stores
 - 2.1.3.2 Ground Floor with Bar, Kitchen and 1 Hotel room
 - 2.1.3.3 First Floor with 5No Hotel rooms and a staffroom.
- 2.1.4 The site has an area of approximately 321m² (0.03 ha) in extent, as shown on Bayside 017 SU-01, Appendix A.
- 2.1.5 Site levels generally fall from west to east and from south to north, with maximum west to east level difference along the northern boundary approximately 1.25m, and maximum south to north level difference along the eastern boundary approximately 0.6m.

2.2 Watercourses

- 2.2.1 There are no listed watercourses within the site. However, the River Arun, classified as a main river is situated within 25m to the west of the site.

2.3 Hydrology & Geology

- 2.3.1 Geotechnical soil investigations including soil infiltration testing and ground water monitoring are yet to be undertaken on site. However, from experiences of other site's within Littlehampton it is anticipated that soil infiltration drainage options are not viable given the exceptionally poor infiltration rates and high ground water table anticipated on site.

2.4 Existing Drainage

- 2.4.1 A CCTV drainage survey has yet to be undertaken of the existing site's drainage system.
- 2.4.2 The site topographical survey indicates the presence of a positive gravity drainage system within the northeast quadrant of the site. It is assumed that as only one positive drainage system is present that the system is combined.
- 2.4.3 Furthermore, given the presence of an existing basement within the building, which contains toilets, then a pumped outlet from these facilities to the onsite gravity drainage system is deemed to exist.
- 2.4.4 The condition of the assumed pumping facility serving the basement and the gravity drainage system, together with its discharge outlet off site, assumed to be the combined sewer within the passageway immediately to the east of the site, are yet to be ascertained through a CCTV drainage survey.
- 2.4.5 In addition, any rainwater down pipes and soil vent pipes along the western, southern and eastern facades are assumed to have direct connections to drainage systems off site. These pipes along the southern and eastern facades are likely to connect to the existing sewer network, but it is unclear at present where pipes on the western façade would discharge too.
- 2.4.6 The Southern Water sewer records, Appendix A, show the following:
- 2.4.6.1 A 525mm diameter storm sewer to the east of the site, flowing in a southerly direction at an approximate depth of 3m.
- 2.4.6.2 A 300mm diameter combined sewer to the east of the site, flowing in a southerly direction, at an approximate depth of 2.4m.
- 2.4.6.3 A foul sewer situated within the northeast quadrant of the site.
- 2.4.6.3.1 It should be noted that the position of the foul sewer indicated on the sewer map corresponds to existing manhole positions within the site on the topographical survey, thus suggesting that a designated foul sewer is situated within the site.

- 2.4.6.3.2 In addition, the topographical survey suggests that this drainage flows north east out of the site, which would suggest that the extent of the adopted sewer network within the site is greater than that currently portrayed on the sewer records.
- 2.4.7 It is highly recommended that a CCTV drainage survey be undertaken as soon as possible to determine how and where the existing building is drained to, the condition of this drainage system, and in so doing determine the extent of any adopted drainage within the site.
- 2.4.8 Assumed existing drainage is as shown on drawing FC2784/01, Appendix A.

2.5 Indicative Site Flood Risk

- 2.5.1 Initial indications based on long term flood risk information maps on the GOV.UK website site suggest that the site is situated within a Flood Zone 3, ie high with regards to flood risk from Rivers or the Sea.
- 2.5.2 Specific site flood risks, other than proposed drainage issues, fall outside the scope of this report. Please refer to the separate site specific flood risk assessment undertaken for this development for further detailed information.

3. Proposed Development

3.1 The proposed site is to be developed to form a hotel and restaurant as shown on drawings, Appendix B;

3.1.1	Site and Block Plan	Bayside 017 PL-02A
3.1.2	Proposed Plans	Bayside 017 PL-03
3.1.3	Proposed Elevations	Bayside 017 PL-04

3.2 Facilities within the development will included:

- 3.2.1 Meeting room, plant rooms, stores and Wcs within a new basement
- 3.2.2 Bar, restaurant and kitchen at ground floor
- 3.2.3 7No Hotel rooms at first floor
- 3.2.4 7No Hotel rooms at second floor
- 3.2.5 Hotel dining room and WCs at third floor

4. Foul Drainage

4.1 Existing Foul Drainage

- 4.1.1 As highlighted previously in Section 2.4, the site is envisaged to have a combined discharge to the designated foul sewer within the site and the designated combined sewer to the east of the site.
- 4.1.2 Given that the existing drainage is likely to be combined, without a detailed CCTV survey of the existing drainage network it is difficult at this stage to gauge the existing peak flows entering the designated foul/combined sewer network.

4.2 Proposed Foul Drainage

- 4.2.1 The peak foul flows entering the foul sewer network from the proposed development as a whole are deemed to increase significantly from the existing foul flows, due to the additional provision of meeting room, ground floor restaurant, additional 8No hotel rooms and third floor hotel dining room.
- 4.2.2 The exact foul peak flows are yet to be determined and will be based on envisaged restaurant/dining room covers and staff numbers, yet to be confirmed by the client.
- 4.2.3 However, it is envisaged that the new development, in line with current Building Regulations will provide separate foul and storm drainage systems.
- 4.2.4 In so doing the existing storm water flows currently entering the onsite foul/combined sewer will be removed, thus offsetting the increase in foul flow from the proposed development. This is envisaged to result in very insignificant variations in flows from site to the designated foul/combined sewer from existing to proposed scenarios.
- 4.2.5 Therefore, although the proposed foul flows from the development will increase to the combined/foul sewer, the actual increase in total flow is not deemed to be significant, through the removal of the storm water flow element, and thus envisaged not to result in capacity or flooding issues within the adopted foul/combined sewer network.
- 4.2.6 Proposed direct/indirect connections to the adopted foul/combined sewer system will be subject to Southern Water approvals via a S106 sewer connection application.
- 4.2.7 An indicative foul drainage layout for the development is shown on drawings FC2784/02, Appendix B, and indicates that a pumped and gravity foul drainage system from site to the adopted sewer system is viable.

5. Storm Water Drainage

5.1 Existing Storm Water Drainage

5.1.1 The site has an area of approximately 321m² (0.03 ha) in extent, as shown on Bayside 017 SU-01, Appendix A.

5.1.2 Greenfield runoff rates for the site using Windes software, based on a site area of 0.03 ha, have been calculated, as shown on Appendix B.

5.1.3 A summary of the greenfield runoff rates are as follows:

5.1.3.1	Qbar	0.3 l/s
5.1.3.2	1 in 1 year	0.3 l/s
5.1.3.3	1 in 30 years	0.5 l/s
5.1.3.4	1 in 100 years	0.6 l/s

5.2 Proposed Storm Water Drainage

5.2.1 The most appropriate method of disposing of the surface water runoff from site, in line with Building Regulations drainage hierarchy, is as follows, to discharge to:

- 5.2.1.1 soakaways
- 5.2.1.2 an existing watercourse
- 5.2.1.3 storm water sewer
- 5.2.1.4 combined sewer

5.2.2 Detailed geotechnical investigations have yet to undertaken on site encompassing soil infiltration testing in accordance with BRE365. However, soil infiltration is deemed unlikely to be viable on site based on the cohesive nature of the soils and envisaged high ground water table.

5.2.3 Furthermore, the proposed site layout and the requirement to maintain a minimum of 5m from any existing/proposed structure for traditional soakaways effectively makes this option unviable on this site.

5.2.4 Infiltration drainage on site has therefore been deemed not valid.

5.2.5 The River Arun, the closest watercourse, has an elevated water level, influenced by sea tides and enhanced levees forming river/sea defences, and thus makes a connection to this watercourse from site unviable.

5.2.6 On this basis it is proposed to drain the vast majority of the new development site to storm water sewer adjacent to the eastern boundary.

5.2.7 The proposed surface water drainage design for the development is shown on drawing FC2784/02.

- 5.2.8 The storm water design criteria used for the developments are in line with DEFRA 'Non statutory technical standards'.
- 5.2.9 The proposed drainage strategy is that the site's roof areas will drain by gravity via attenuation tanks and pipe drainage systems before discharging to the storm water sewer adjacent to the eastern boundary. Attenuation tanks are proposed to be provided at roof level, via a green/blue roof system, such as the BauderBLUE Roof System.
- 5.2.10 The blue roof system is a sustainable drainage method designed to attenuate and manage storm water on a flat roof over a 24-hour period via a restrictive flow outlet.
- 5.2.11 The blue roof is a solution for urban areas where options for ground-based attenuation systems are limited, and in particular, where construction is being carried out within flood sensitive areas. The roof system has no moving parts, is simple to install and easy to maintain. It is designed to slow the release of rainwater into the drainage system and to discharge the water completely over a 24-hour period.
- 5.2.12 Development and expansion of towns and cities has seen exponential use of impervious surfaces causing artificially high rates of rainwater runoff. In measures to prevent flooding, planners are restricting the amount of rainwater leaving a site via the drainage system which can be limited to 5-10 litres per second per hectare, the same flow rates for regional greenfield sites.
- 5.2.13 This rooftop sustainable urban drainage system (SuDS) has weight load implications and the project's structural engineer will need to be engaged with the design process from an early stage.
- 5.2.14 The specifically engineered outlet restricts the discharge of stormwater to a calculated and predesigned flow rate to significantly slow down the volume of water leaving the site. As the storm passes, water continues to discharge from the roof at a controlled rate which helps to avoid downstream or localised flooding.
- 5.2.15 The blue roof system can be constructed at either rooftop or podium level. The designed void space between the flat roof waterproofing membrane and hard or soft landscaping finish allows the stormwater to attenuate.
- 5.2.16 Further information regarding blue roofs can be obtained via the web link, www.bauder.co.uk/blue-roofs
- 5.2.17 Storm water flows from the north east courtyard are not proposed to be attenuated as the proposed courtyard area is so small as to render the practicality of restricted flows from this area as unviable.

5.2.18 DEFRA Technical Standards S3 States that

‘S3 For developments which were previously developed, the peak runoff rate from the development to any drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event must be as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event, but should never exceed the rate of discharge from the development prior to redevelopment for that event.’

5.2.19 As the majority of the site comprises roof area, with very limited externally paved areas (courtyard only), the provision of a blue roof system will effectively limit surface water runoff flows to almost greenfield runoff rates in line with DEFRA technical standard S3.

5.2.20 Existing runoff rates from site would be approximately 4.5l/s, based on a rainfall intensity of 50mm/hr, taking into account a site area of 321m².

5.2.21 Restricting the flows from site to greenfield runoff rates as indicated in section 5.1, with proposed runoff flows at approximately 0.3-0.6l/s, represents a significant reduction in surface water peak runoff flow rates from the development prior to redevelopment.

5.3 Runoff Volume Calculations

5.3.1 DEFRA Technical Standards S5 and S6 state that:

‘S5 Where reasonably practicable, for developments which have been previously developed, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event must be constrained to a value as close as is reasonably practicable to the greenfield runoff volume for the same event, but should never exceed the runoff volume from the development site prior to redevelopment for that event.’

S6 Where it is not reasonably practicable to constrain the volume of runoff to any drain, sewer or surface water body in accordance with S4 or S5 above, the runoff volume must be discharged at a rate that does not adversely affect flood risk.’

5.3.2 As soakaways on site are deemed to be unviable at present the ability to comply with Defra Technical Standard S5 cannot be achieved.

5.3.3 However, as the proposed development is restricting flows to greenfield runoff discharge rates, the runoff volumes will be significantly reduced from the development site prior to redevelopment, and thus will not adversely affect flood risk, and therefore complies with Defra Technical Standards S6.

5.4 Residual Risks and Exceedance Flows and Runoff in Excess of Design Criteria

5.4.1 DEFRA Technical Standards S7-S9 state that:

***S7** The drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur on any part of the site for a 1 in 30 year rainfall event.*

***S8** The drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur during a 1 in 100 year rainfall event in any part of: a building (including a basement); or in any utility plant susceptible to water (e.g. pumping station or electricity substation) within the development.*

***S9** The design of the site must ensure that, so far as is reasonably practicable, flows resulting from rainfall in excess of a 1 in 100 year rainfall event are managed in exceedance routes that minimise the risks to people and property. '*

5.4.2 The proposed development is business/residential and is considered to have a lifetime of 50-100 years. The climate change allowances to be considered for the proposed development is between 20-40% in accordance with EA '*Flood risk assessments – climate change allowances*' guidance released in Feb 2016.

5.4.3 In line with normal planning requirements, a climate change allowance of 40% is to be used.

5.4.4 The proposed surface water drainage system will be designed with no flooding up to the 1 in 100 annual probability rainfall event in accordance with S7 and S8 above, with a climate change allowance of 40% taken into account.

5.4.5 It is difficult to completely guard against flooding during extreme events which are greater than the design standard event. It is practicable to minimise the risk by careful design of the layout, with falls away from the buildings, such that internal flooding is avoided.

5.4.6 The proposed provisional finished floor levels and external levels show that the risk can be minimised with falls away from buildings.

5.5 Water Quality

- 5.5.1 The majority of the runoff from the proposed development will be from roof areas, in which the runoff is regarded as being unpolluted, and thus no further enhanced pollution control measures are required.
- 5.5.2 However, the blue roof system, with roof top attenuation measures is likely to provide some elements, such as gravel layers/catch pits etc to further assist water quality runoff from the roof.
- 5.5.3 Runoff from the courtyard is proposed to be discharged to trapped road gullies/gullies/channel drains prior to discharging to the below ground drainage system.
- 5.5.4 This standard arrangement is generally regarded as adequate to ensure that the water runoff quality is sufficiently treated to enter a sewer system, given the proposed low risk uses of the development, subject to EA/LLFA approvals.

5.6 General Maintenance Regime

- 5.6.1 The surface water drainage proposals for this site should include the following maintenance measures:
- Cleaning of the catchpits of roof drainage runs to improve the quality of the water
 - Cleaning and maintenance of the flow control system and its catchpits to maintain effective drainage
 - Cleaning and maintenance of the attenuation tanks to maintain effective drainage
 - Cleaning and maintenance of the green/blue roof system to maintain effective drainage
- 5.6.2 The actual cleaning and maintenance regime to be adopted is proposed to be set out within a 'Drainage Maintenance Strategy Report' following detailed design of the drainage system, following planning approval.

5.7 Southern Water Approvals

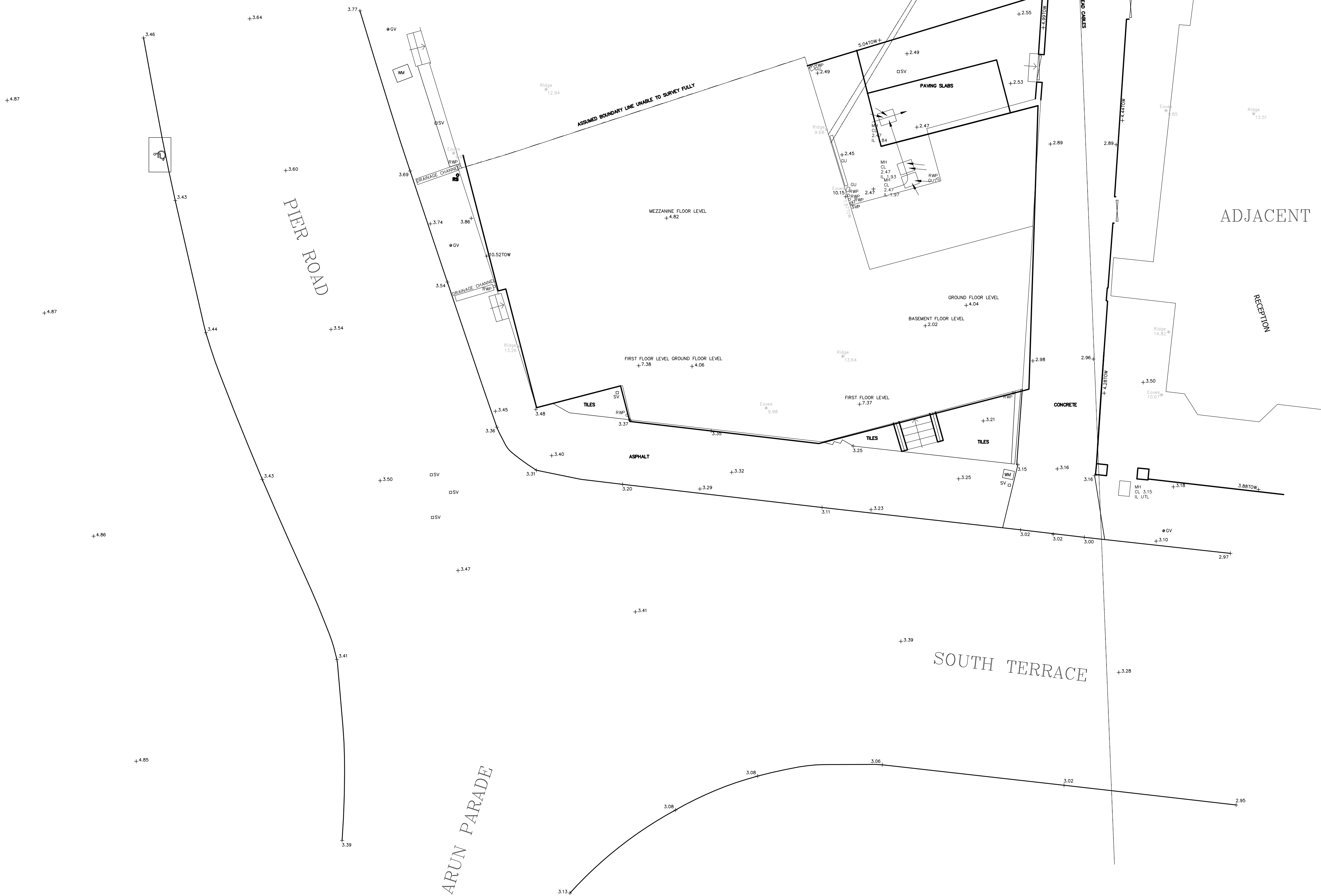
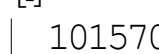
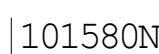
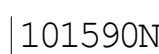
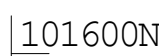
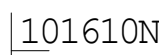
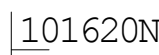
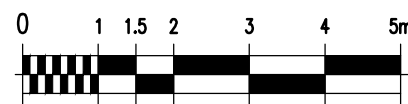
- 5.7.1 It should be noted that the assumed location on site of adopted foul/combined sewers and the proposed location of the basement will require the existing adopted drainage to be diverted.
- 5.7.2 Given the proposed extent and location of the basement as currently envisaged, the proposed foul sewer diversion will in part be required to be carried out on third party land, as indicated on drawing FC2784/02 Appendix B.
- 5.7.3 Approvals of third party owners will be required to implement the sewer diversions, proposals of which are yet to be agreed with Southern Water. If consents of third party owners cannot be obtained, then sewer requisitions undertaken on behalf of the client by Southern Water will be required.
- 5.7.4 It may be prudent to obtain approvals in principle from the adjacent land owners and Southern Water as early as possible to ensure that the proposed development layout is not compromised at a later stage. However, in order to undertake this, a CCTV drainage survey would be required, to confirm the existing layout of onsite and offsite drainage.
- 5.7.5 Furthermore, due to the proximity of the proposed new build to the existing sewers, build close too agreements will be required to be entered into with Southern Water, to enable them to ensure that the sewer network is not compromised by the development.
- 5.7.6 In addition, all indirect and direct storm and foul water connections will require approvals from Southern Water via S106 applications.

6. Summary

- 6.1 This report has been prepared to outline the proposed foul and surface water arrangements for the proposed Hotel and Restaurant development at Nelson Hotel, Pier Road, Littlehampton, West Sussex, BN17 5LP.
- 6.2 Detailed geotechnical investigations have yet to be undertaken on site. However, soil infiltration is deemed unlikely to be viable on site based on the anticipated cohesive nature of the soils, envisaged high ground water tables and the proposed site layout.
- 6.3 Foul flows from the development will be pumped to a discharge manhole within the site and then connected to the foul/combined sewer either just within the site or adjacent to the site.
- 6.4 Peak foul flows are deemed to be no greater than existing combined flows from site, through the removal of the existing storm water flows from the foul/combined system for the proposed development.
- 6.5 Therefore, although the proposed foul flows from the development will increase, the actual increase is not deemed to be significant, and thus envisaged not to result in capacity or flooding issues within the adopted foul sewer network.
- 6.6 The roof areas of the development are proposed to be constructed as blue/green roofs, thereby providing attenuation and runoff storage at roof level. Flows from the roof areas will be attenuated to greenfield runoff rates, in line with DEFRA guidance, significantly reducing storm water runoff peak flows from the development in comparison with the current site.
- 6.7 The roof construction will provide storage to cater for storm return periods up to 100 years whilst taking into account a climate change allowance of 40%.
- 6.8 The surface water drainage design proposed complies with the local planning guidance and the DEFRA 'Non statutory technical standards'.
- 6.9 In so doing, the proposed drainage design significantly reduces the surface water flows from site.
- 6.10 On this basis, it is not envisaged that Southern Water will not have any concerns with the proposed foul and storm flows from the development, subject to a S106 sewer connection application.
- 6.11 It is therefore considered that the proposed drainage strategy for the surface water and foul drainage are accepted as part of the planning application for this development.

Appendix A

Site Location Plan	Bayside 017 PL-01
Topographical Survey Site	Bayside 017 SU-01
Existing Floor Plans	Bayside 017 SU-02
Existing Elevations	Bayside 017 SU-03
Existing Drainage Plan FC2784/01	
SW Sewer Records dated 30/08/18 SW Ref:307032	



The Survey has been computed to Ordnance survey grid by means of G.P.S

All direction arrows indicate UP unless otherwise stated.

Visible features in the vicinity of any boundaries, as shown on the

Whilst every effort has been made to determine wall materials, no guarantee is given. Materials should be regarded as assumed unless verified by a qualified third party.

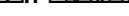
Copyright of this drawing is retained by HB Surveys Ltd. Any discrepancy between this drawing and any other information



IDENTIFICATION

Mr 

IDENTITY

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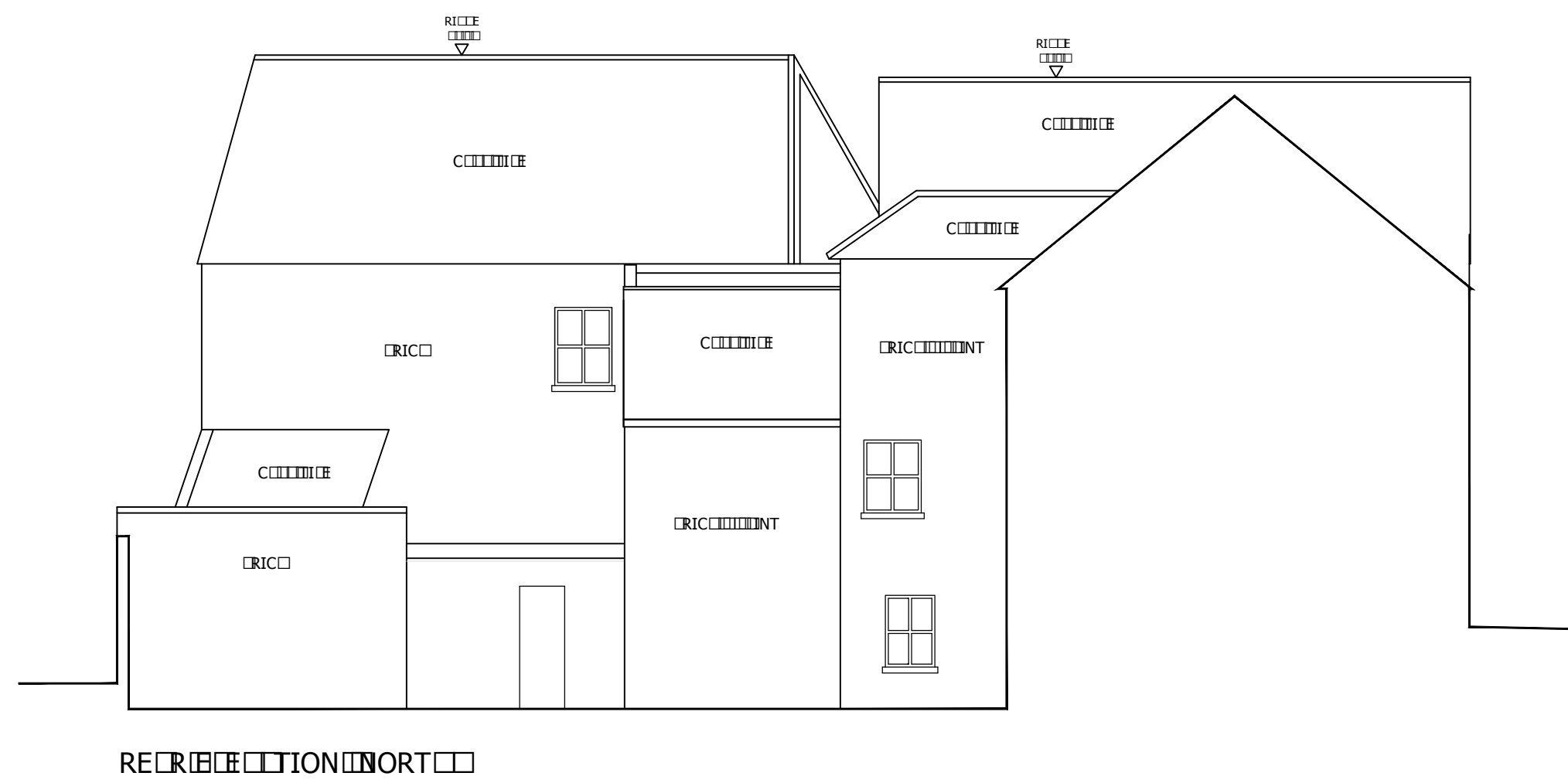
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CRIMINAL RECORD



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Delta Green Environmental Design Ltd
No 2 Station Farm Barns
Station Road
Lewes
East Sussex
BN8 6EU

Your ref 18080
Our ref 307032
Date 30 August 2018
Contact searches@southernwater.co.uk
Tel 0845 272 0845
0330 303 0276
Fax 01634 844514

Attention: James Porter

Dear Customer

Re: Provision of public sewer and water main record extract

Location: 61 Pier Road, Littlehampton, West Sussex BN17 5LP

Thank you for your order regarding the provision of extracts of our sewer and/or water main records. Please find enclosed the extracts from Southern Water's records for the above location.

We confirm payment of your fee in the sum of £49.92 and enclose a VAT receipt for your records.

Customers should be aware that there are areas within our region in which there are neither sewers nor water mains. Similarly, whilst the enclosed extract may indicate the approximate location of our apparatus in the area of interest, it should not be relied upon as showing that further infrastructure does not exist and may subsequently be found following site investigation. Actual positions of the disclosed (and any undisclosed) infrastructure should therefore be determined on site, because Southern Water does not accept any responsibility for inaccuracy or omission regarding the enclosed plan. Accordingly it should not be considered to be a definitive document.

Should you require any further assistance regarding this matter, please contact the LandSearch team.

Yours faithfully

LandSearch



101454

TQ0201NE

Date: 29/08/2018

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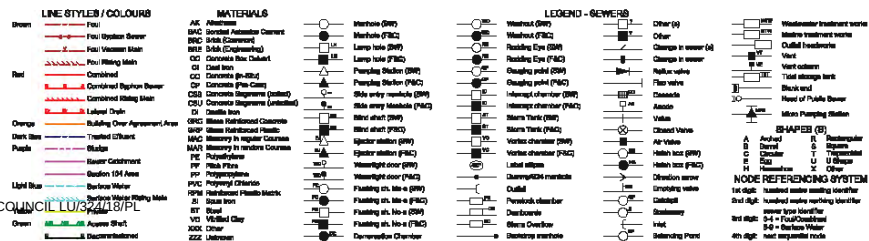


Southern Water

503029

SEWER RECORDS PAGE 2 OF 2

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0505X	2.18			375	VC	CIRC				868BX				225	VC	CIRC				Node	Cover	Invert	Size	Material	Shape					Node	Cover	Invert	Size	Material	Shape																																				
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Drawn by: kumaria

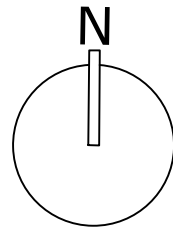
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Date: 29/08/2018



NODE REFERENCING SYSTEM

1st digit:	Numbered master meeting identifier
2nd digit:	Numbered master meeting identifier
3rd digit:	sewer type identifier 3-4 = Foul/Combined 5-9 = Surface Water
4th digit:	next sequential node



101620N

101610N

101600N

101590N

101580N

101570N

502820E

502810E

502800E

502790E

502780E

502770E

502760E

ADJOINING PROPERTIES

ADJACENT PROPERTY

PIER ROAD

SOUTH TERRACE

ARUN PARADE

- NOTE THE FOLLOWING:
- Existing Drainage information based on the following:
1. CCTV Report
 - 1.1. Ref XX-dated XX
 2. Southern Water Sewer Records
 - 2.1. SW Ref 307032 dated 30/08/18

Legend

- - - - - Existing Foul Sewer
- - - - - Existing Surface Sewer
- - - - - Existing Foul Drain
- - - - - Existing Surface Drain

-	Issued For BUDGET/APPROVAL ONLY	03/12/18
REV	DESCRIPTION	DATE

abmh

ABMH Civils Ltd

1 The Grove, Felpham, Bognor Regis, West Sussex PO22 7EY

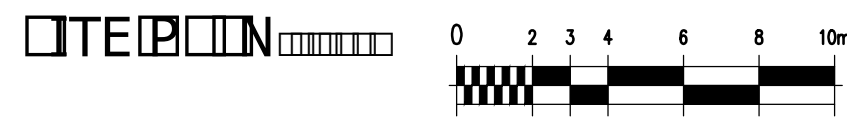
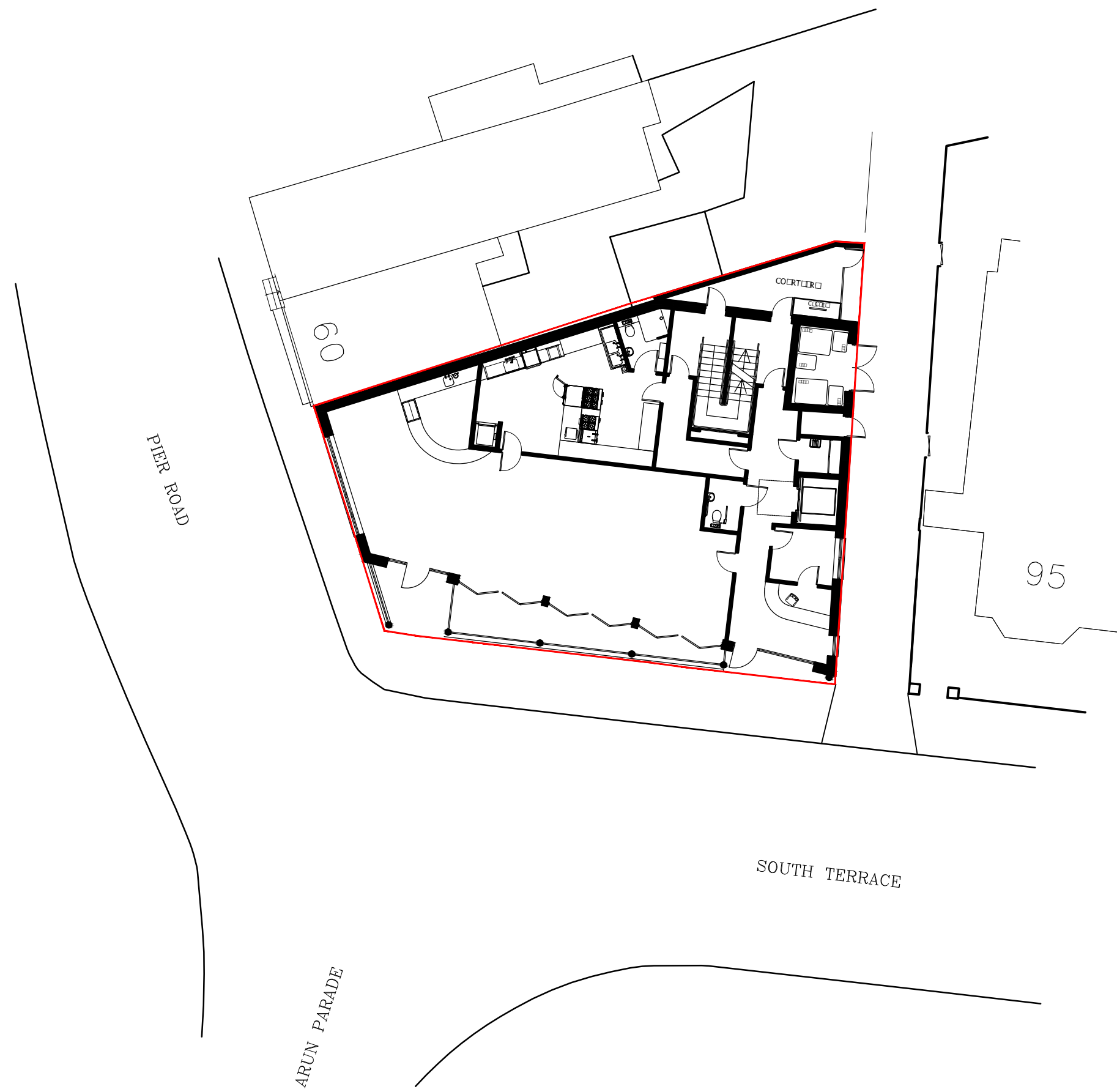
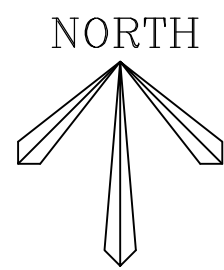
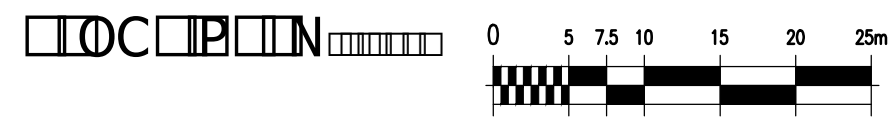
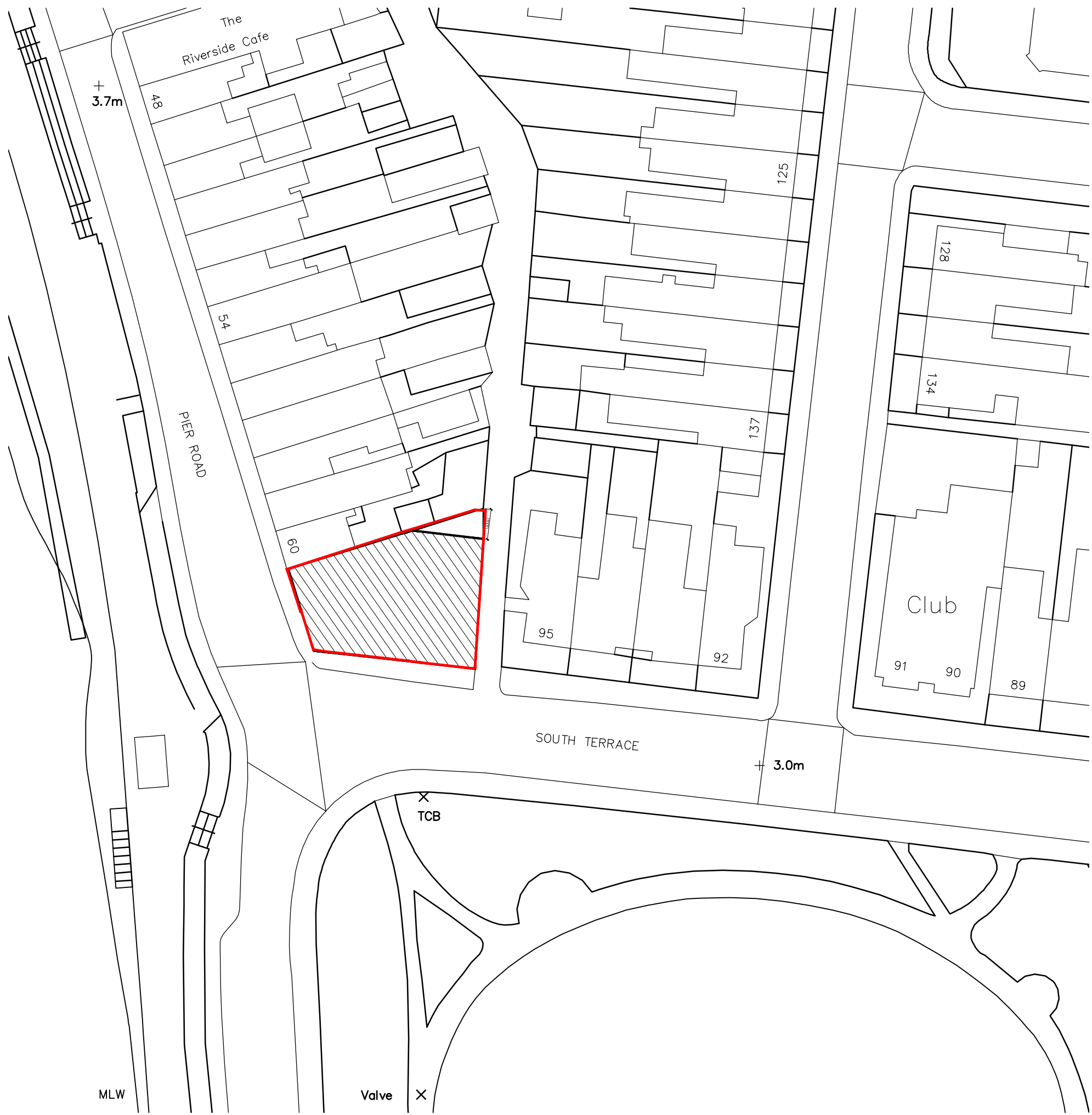
Mark Mob: 07761 950000

Email: mark@abmh.co.uk / Web: www.abmh.co.uk

PROJECT	NELSON HOTEL 61 PIER ROAD LITTLEHAMPTON, W SUSSEX BN17 5LP			
DRAWING	EXISTING DRAINAGE LAYOUT			
SCALE	1:100	DATE	DEC 18	INITIAL
REV	-	CHKD	-	REV
FC2784/01				
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Appendix B

Site and Block Plan	Bayside 017 PL-02A
Proposed Plans	Bayside 017 PL-03
Proposed Elevations	Bayside 017 PL-04
Greenfield Runoff Rates (Windes)	
Proposed Drainage Layout Plan	ABMH FC2784/03



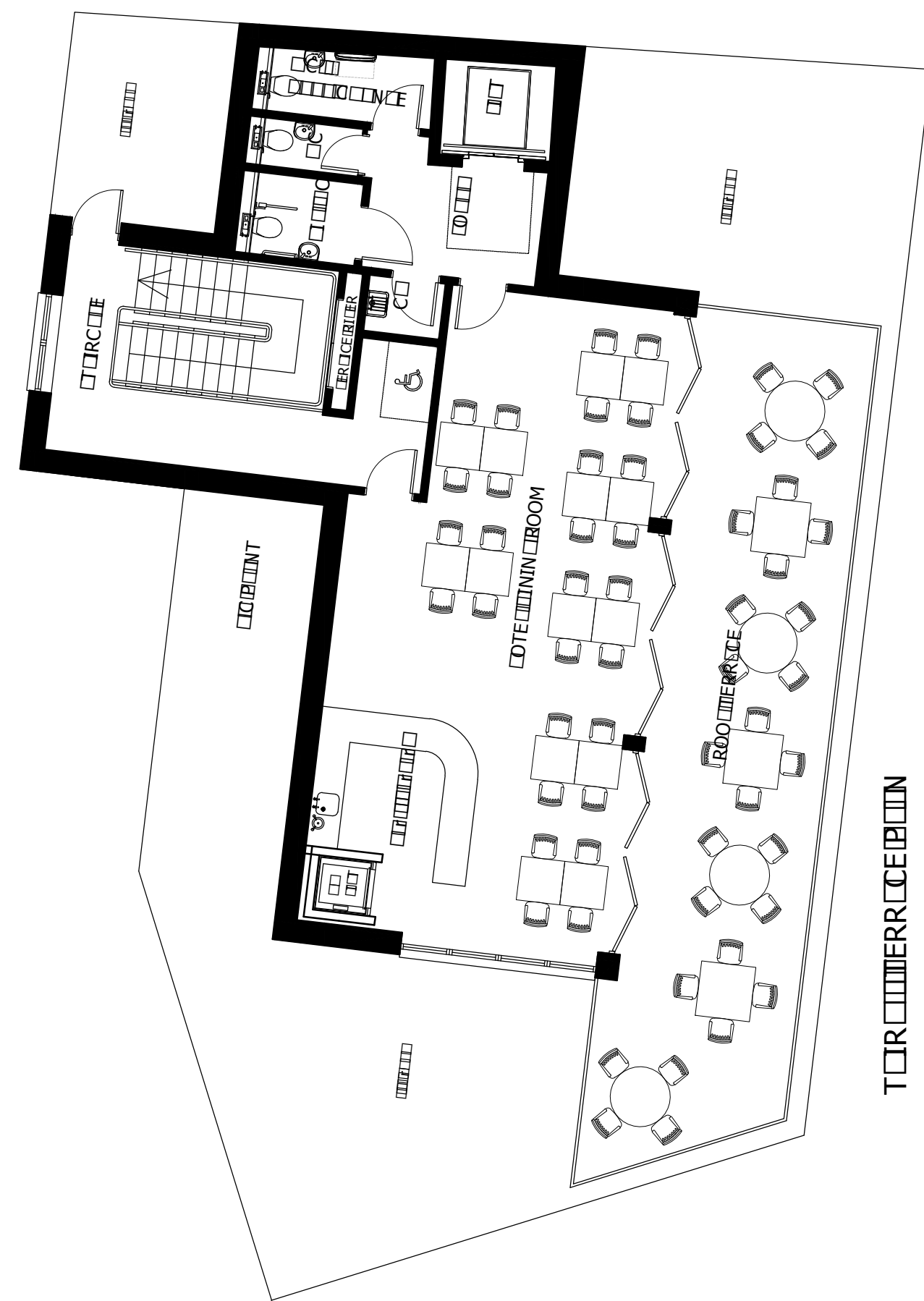
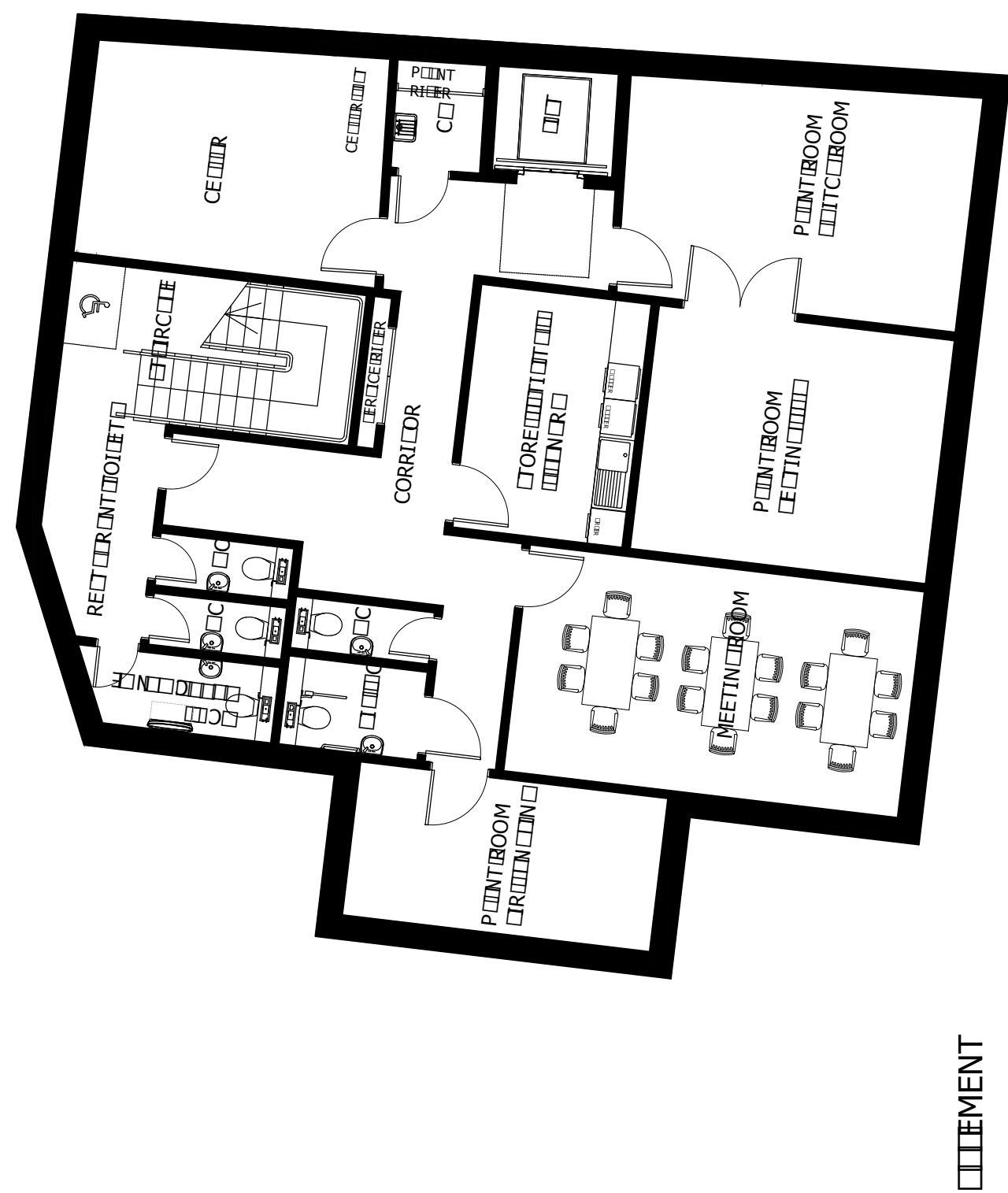
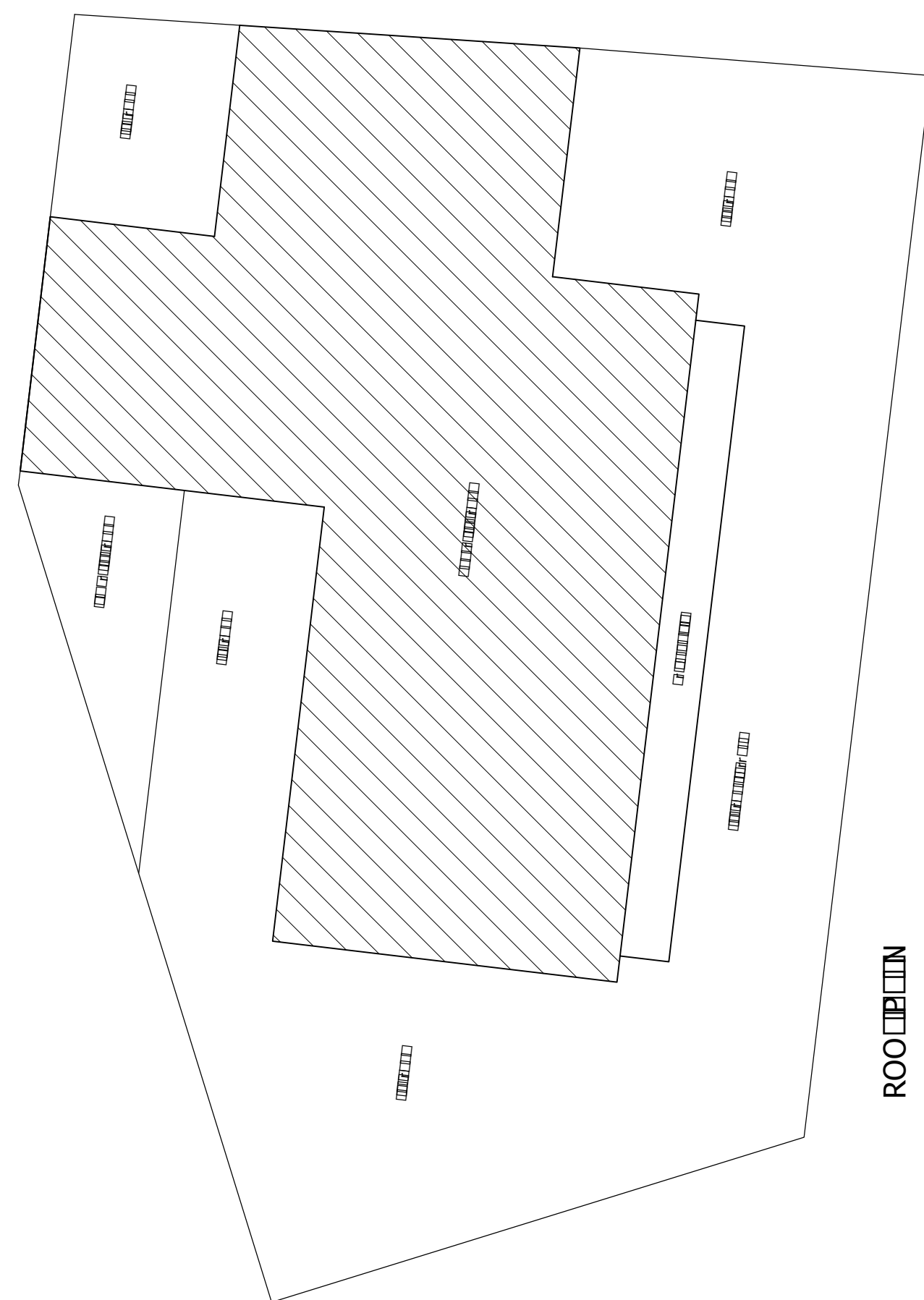
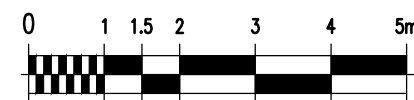
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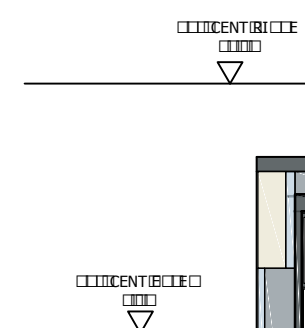
bayside
ARCHITECTURAL DESIGN LIMITED

CLIENT
Mr. Mr.
PROJECT
Pier Road
DRAWING
Pier Road

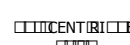
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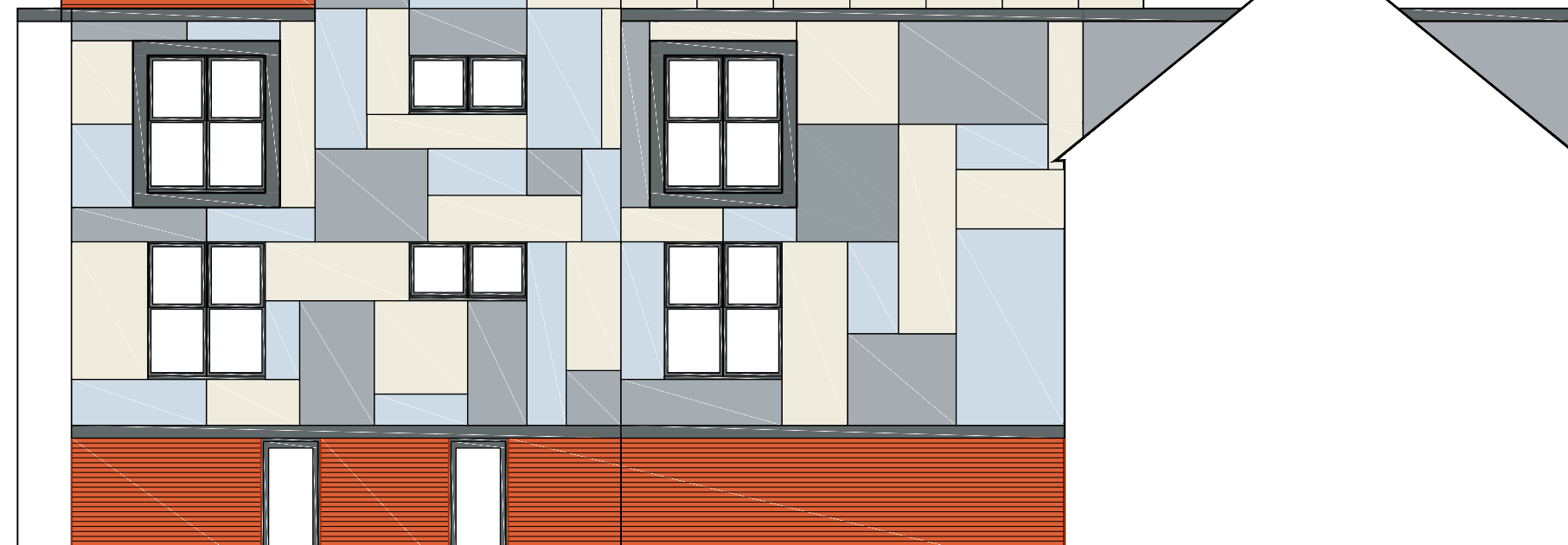




OTTERCEFECTIONOTOT



DECLARATION OF INTEREST



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PIERROTIFICATIONEET



PIERRO THE TION REIT
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bayside
ARCHITECTURAL DESIGN LIMITED

COINTEGRATION

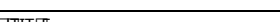
Mr 

COINTEGRATION

N 

P 

COINTEGRATION

Pr 

017 PL-04 -

[illegible]

NOTES

- This drawing is to be read in conjunction with drawing Nos. FC2784/01-25.
- Existing onsite drainage is shown on drawing FC2784/01.
- All adopted drainage and connections to the sewer system are to be constructed in accordance with 'Sewers for Adoption' 6/7th Edition or as stipulated in the Southern Water Addendum.
- Connections to the adopted drainage system are subject to the approval of Southern Water the Drainage Authority. Diversified, diverted, build close to/over sewers, and new sewers are subject to SW approval. All other drainage is to remain private.
- All pipes to be adopted, or connecting to adopted sewers, and/or situated under highway to be verified clay to BS EN 295 & BS65 (SWS only), or Concrete pipes to BE EN 1916 & BS5911 Part 1, or Thermoplastic Structured wall sewer pipes to WIS 4-35-01 (class 8kN/sqm) and be capable of withstanding 4000 PSI jetting pressure.
- Cover levels shown are approximate. Covers and frames shall be set to finished ground levels and falls.
- All drainage to be constructed to BS EN 752:1999 and subject to the approval of Building Control/LPA and the Environment Agency.
- Gully and channel drain positions are liable to amendment when the design levels have been determined.
- All downpipes are to be sealed, ie connected directly to the stormwater drain. Access points to be provided 1m above ground level for external RWP's and 1m above FFL for internal RWP's.
- All below ground concrete to accord with AGES site classification of AG-1, as per Geotechnical Report.
- Aco channel drain to be K100S with grade C250 Quicklock 'heelguard' cast iron grating or equivalent, where adjacent to kerbing or within pedestrian areas. Elsewhere Aco channel drain to be Road Drain 100 Class F. All channel drain outlets to have oil traps
- The Contractor should construct works in accordance with the Local Authority specification for the works they are to undertake.
- Road gully pipes are to be 150mm dia. with concrete surround and flexible joints, all other un-referenced pipes are assumed to be 100mm dia.
FW min gradient - 1 in 40 (100 dia) no WC's connected
FW min gradient - 1 in 80 (100 dia) min 1 WC connected
FW min gradient - 1 in 150 (150 dia) min 5WC's
SW min gradient - 1 in 100 (100/150 dia)
- If any sub soil drainage systems are uncovered during the Works contact the Engineer for instructions. Generally sub soil drains affected are to be diverted around new Works and connected into the surface water drainage system. Pipe diameters and gradients are to be maintained.
- Before commencing construction the Contractor must check the invert levels of existing sewers to which connections are made. In addition the Contractor must locate and determine invert levels of the existing spurs to which connections are proposed. Additional spur/manhole connections are to be agreed with the relevant adopting authority. Any discrepancies are to be notified to the Engineer immediately, prior to construction.
- Road reinstatements are to be to the Highway Authority approval.
- No private areas are to drain onto adoptable areas and vice versa.
- All redundant drainage to be abandoned once the Contractor and Client have satisfied themselves that no connections remain live. Drains and sewers less than 1.5m deep which are in open ground should as far as is practicable be removed. Other pipes should be sealed at both ends and at any other point of connection and solidly filled at intervals not exceeding 25m with Class G3 or G4).

SUBJECT TO CONFIRMATION OF:
Ext levels & RWs
RG & CD positions
Landscaping
ILs of SWS/FWS
Tree Root protection areas
FW Pumping Station
Blue Roof Design
Foundation Design
Services
Crane base location/extent and TOF

SUBJECT TO THE APPROVAL OF:
LPA/LLFA
BUILDING CONTROL/NHBC
Southern Water
S106 New FWS connection (direct)
S106 New SWS connection (Direct)
S185 FWS/CS Diversion
Build Close Too Agreements
Sewer Requisition Notices

PLANNING ONLY

-	Issued For BUDGET/APPROVAL ONLY	03/12/18
REV	DESCRIPTION	DATE



PROJECT	NELSON HOTEL 61 PIER ROAD LITTLEHAMPTON W SUSSEX, BN17 5LP			
DRAWING	DRAFT PROPOSED DRAINAGE LAYOUT			
SCALE	1:100	DATE	DEC 18	
REV		DATE	DEC 18	
INITIAL		DATE	DEC 18	
CHKD		DATE	DEC 18	
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Legend (Scale 1:100)



10.000

PRELIMINARY FWD LAYOUT 1:100
(showing basement layout)

PRELIMINARY SWD LAYOUT 1:100
(showing roof layout)

SW runoff flows from proposed blue/green roofs to be restricted form site to Greenfield site runoff rates. Paved courtyard to be drained to SWS unattenuated.

NOTE THE FOLLOWING:

- Southern Water Agreements
 - SW Section 106 Approval for FW Connection to CS:
 - SW-Ref-0185-xxx-dated-xxx
 - 4No Direct Connection to Ex-GS
 - SW Section 106 Approval for SW Connection(s) to SWS
 - SW-Ref-0185-xxx-dated-xxx
 - Direct Connection(s) to Ex-SWS
 - SW Diversion of Ex FWS/CS Sewers within/adjacent site
 - SW-Ref-0185-xxx-dated-xxx
 - SW Build Close Too Agreement
 - SW-Ref-xxx-dated-xxx
- FW Pumping Station
 - Refer to xxx Design & Details dated-xx
 - Dwg-Ref-xx
- Blue/Green Roof Design
 - Refer to XXX Design
 - Dwg-Ref-xx
- CCTV Report
 - Refer to drawing FC2784/01

SW CS/FWS Diversion agreement required with additional agreements for offsite works from adjacent landowners, or additional Sewer Requisition Agreements with Southern Water

Assumed EX FWS assumed from site Approx location tbc on site via CCTV survey

EX CD/FWS MH
SW Ref: tbc
CCTV Ref: CL 2.47 tbc
IL 1.84 tbc
MH position tbc

EX FWS assumed from SW Sewer Records Approx location tbc on site via CCTV survey

FW Diversion New online adopted MH to CS
CL 2.85 tbc
PL 1.850.85 new 1500 VC FWS diversion backdrop connection
PL 1.850.85 new 1500 VC FWD diversion backdrop connection
IL 0.70 tbc
Ex 3000 FWS tbc

FW Rising main discharge MH
CL 2.85 tbc
PL 2.29 tbc
IL 2.00 tbc
Type D MH
B125

FW Pumping station incorporated within the basement slab construction, indicative area shown - tbc, taking all proposed foul connections within the development. Duty & standby pumps
Chamber Volume tbc following confirmation of loadings
CL 0.25 tbc
PL -0.55 tbc
SL -1.65 tbc
Double sealed cover

SW Build Close Too agreements from Southern Water Required due to position/proximity of proposed basement construction.

ADJACENT

ADJACENT

RECEPTION

ABMH		Page 1
1 The Grove Felpham West Sussex PO22 7EY	Nelson Hotel Littlehampton SW Runoff	
Date 03/12/2018 12:55 File F2431 CRL Eltham UGF - ...	Designed by MH Checked by	
Micro Drainage Source Control 2017.1.2		
<u>ICP SUDS Mean Annual Flood</u> Input Return Period (years) 100 Soil 0.400 Area (ha) 0.030 Urban 0.750 SAAR (mm) 745 Region Number Region 7 Results 1/s QBAR Rural 0.1 QBAR Urban 0.3 Q100 years 0.6 Q1 year 0.3 Q30 years 0.5 Q100 years 0.6		
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