



NAVIGATOR QUARTER, LAND ADJACENT TO SOUTHAMPTON AIRPORT

FLOOD RISK ASSESSMENT & DRAINAGE STRATEGY

HYBRID PLANNING APPLICATION

MAY 2025

**blocwork (Eastleigh) LLP
&
Southampton International Airport Ltd**



**Navigator Quarter,
Land adjacent to Southampton Airport
Flood Risk Assessment and Drainage Strategy**

for

**blocwork (Eastleigh) LLP &
Southampton International Airport
Limited (SIAL)**

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Issued by: Burrows Graham Limited
5 Ambassador Place
Stockport Road
Altrincham
WA15 8DB

Tel: +44 (0)161 804 8046

Client: blocwork (Eastleigh) LLP and Southampton International Airport Limited (SIAL)

Project: Navigator Quarter, Land adjacent to Southampton Airport

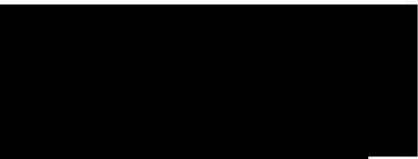
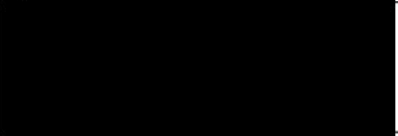
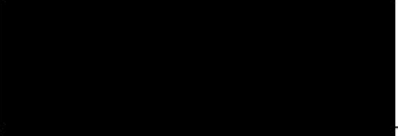
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Prepared		Matthew Murray - Senior Engineering Technician	
Checked		Jack Williams CEng MICE MCIHT - Civils Director	
Approved		Jack Williams CEng MICE MCIHT - Civils Director	

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1.0 EXECUTIVE SUMMARY

1.1 This report has been prepared to support the planning application for the following proposal.

1.2 The proposal is for development of the site to provide employment floorspace of up to 92,000 sqm (GIA) within use Classes E (g) (ii & iii), B2 and B8.

1.3 Reference should be made to the GEO2 Preliminary Risk Assessment for further detail on the site and ground conditions. Report ref: Geo2_4362.A.2_Navigator-Quarter_GEA_25-04-08.

1.4 The flood risk assessment identifies that the site is located in flood zone 1 (low risk) in respect to fluvial flood risk and from all other sources.

1.5 The surface water drainage hierarchy has been considered and the preferred drainage solution for disposal of surface water is to discharge via a connection to the River Itchen.

1.6 The use of Sustainable Drainage Systems (SuDS) has been considered. Pollution prevention and site control methods will be utilised prior to outfall.

1.7 The SuDS and other drainage elements will be regularly maintained by an appointed management company on behalf of the client/occupier.

1.8 Foul flows will outfall at a maximum rate of 6.96 l/s to the public foul sewer located to the north of site. This shall be agreed in principle with Southern Water.

2.0 PROJECT BACKGROUND

Appointment

2.1 Burrows Graham Limited have been commissioned by blocwork (Eastleigh) LLP and Southampton International Airport Limited (SIAL) (referred to as 'the applicant' hereafter) to undertake a flood risk assessment and drainage strategy of suitable scope to support a planning application for a proposed commercial development at the Navigator Quarter, on land adjacent to Southampton Airport.

Aim of study

2.2 This FRA and Drainage Strategy has been developed in due cognisance of all relevant available policy information. It is anticipated that this report will satisfy the requirements of the National Planning Policy Framework (NPPF) and all relevant flood risk planning policies.

Relevant policy and strategy documents

2.3 The following documents were reviewed as part of this Flood Risk Assessment:

- Defra Sustainable Drainage Systems Non-Statutory Technical Standards for Sustainable Drainage Systems (March 2015)
- Environment Agency Climate Change Guidance (February 2016)
- Flood and Water Management Act (April 2010)
- National Planning Policy Framework (Updated December 2025) and Planning Practice Guidance (March 2014)
- Sustainable Drainage Systems Written Statement HCWS161 (December 2014)
- South Hampshire Strategic Flood Risk Assessment Version 6 (February 2024)

Proposed development

2. 4 Hybrid Planning Application for the development of the site to provide employment floorspace of up to 92,000 sqm (GIA) within use Classes E (g) (ii & iii), B2 and B8 with ancillary offices and areas for service yards, car parking, landscape, ancillary buildings and associated activities, comprising a detailed application for the initial infrastructure works and new access road and outline application for the remaining development of employment floorspace, reserving all matters except the means of access.

2. 5 Reference should be made to the 'Site Layout' included in Appendix A, an extract of which is shown below.



Figure 1 – Site Masterplan

3.0 SITE DETAILS

3.1 The proposed development site is located to the north of Southampton Airport and totals approx. 31Ha in area. The west of the site is bound by the railway, the north by the rail depot and the east by the River Itchen. The site is served by the existing Mithcell Way which will be extended to suit the development proposals.

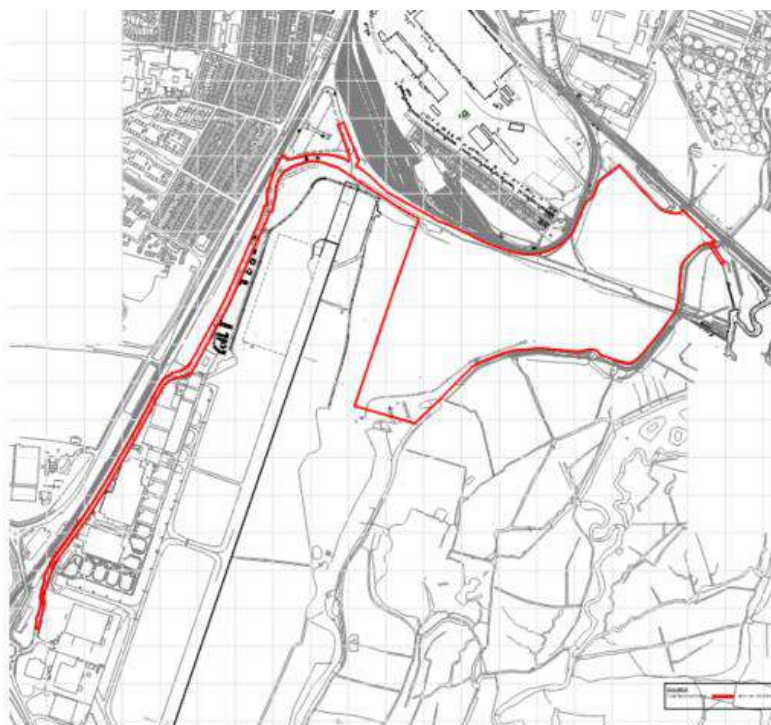


Figure 2 – Site Location Plan

Site description

Site address	Land adjacent to Southampton Airport
Grid reference	E: 446092.297 N: 117661.778
Area (hectares)	The site boundary has been measured to be 31 hectares.
Usage	Made up of greenfield land, divided in places by strips of vegetation. The only structure on the site is a radar tower next to the site's eastern boundary, which is no longer needed for airport operations and is to be removed.
Surroundings	South – Southampton Airport is located immediately to the south and west of the site North – There is a train depot, located at the converging of trainlines from Southampton and Portsmouth. Sandwiched between train depot land there is also a residential area on Campbell Road and Barton Park Industrial Estate is located beyond the depot to the north.
Topography	Site levels generally fall from Northwest to Southeast. Levels are highest in the Northwestern area of the site and at approximately 12.8m AOD. The lowest lying area of the site is the South at a level of approximately 9.5mAOD. A copy of the topographical survey has been included in Appendix B of this report.

Table 1 - Site characteristics

Existing drainage

3.2 There is no evidence of existing surface water drainage running through the site. The Hoare Lee utilities drawing 'REP-2929537-5A-LEH-20241112-Utilities Report-00' shows an existing Foul Rising Main that runs from East to Northwest through the side.

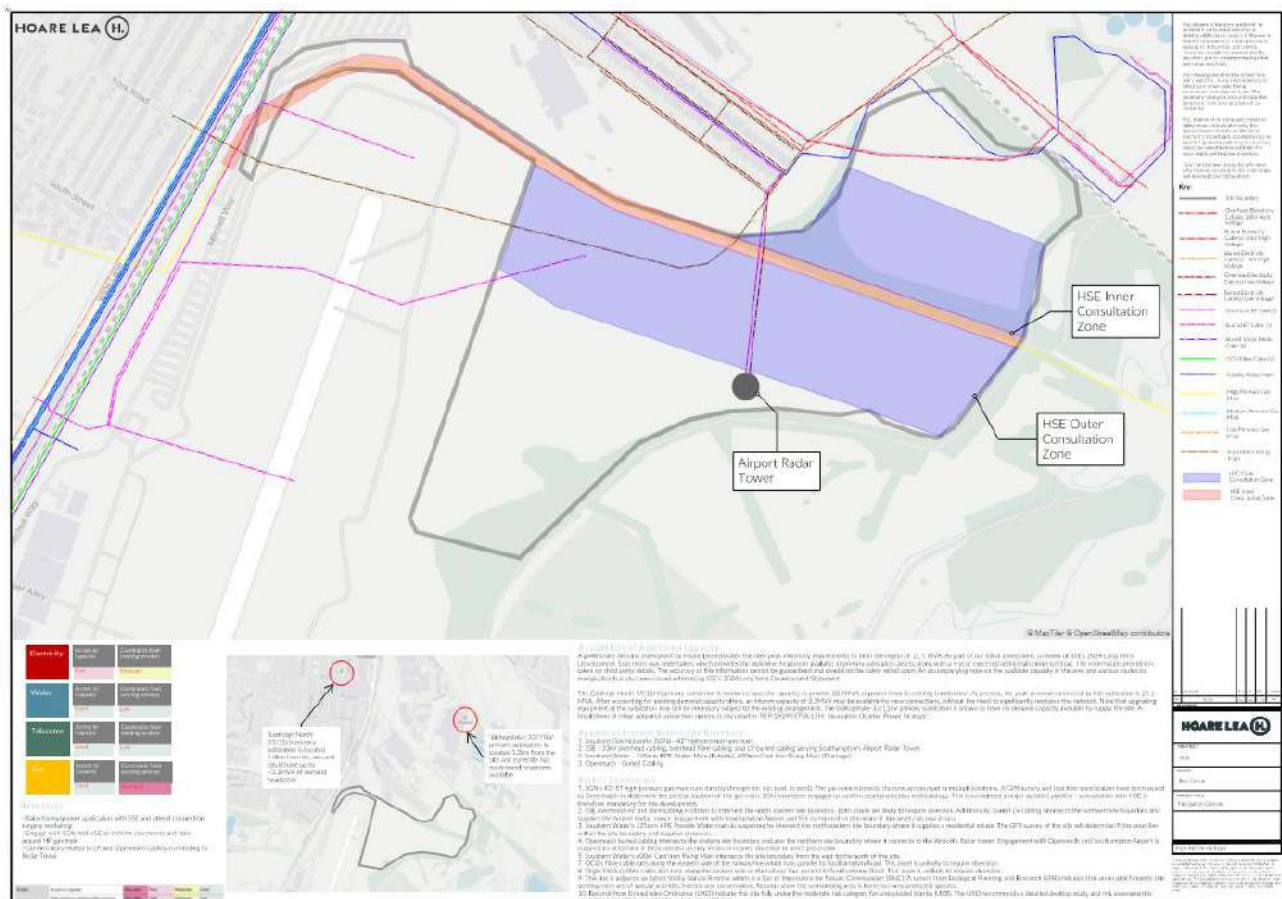


Figure 3 – Hoare Lee Utilities Report Drawing

Existing watercourses

3.3 The River Itchen is c.500m away & runs adjacent to the site. There are a number of feeder channels which run along the eastern boundary of the site and within the woodland areas within the site. These ultimately connect to the River Itchen.

Geology and hydrogeology

3.4 Reference should be made to the Phase 1 Preliminary Geo-Environmental Risk Assessment by Geo2, which has been included in Appendix C of this report, and the key findings of which have been summarised below.

3.5 The site is underlain by a limited thickness of Made Ground (in developed areas only), proven to a maximum depth of 1.50 m bgl, this is generally followed by natural cohesive silts of the River Terrace Deposits to c. 1.50 m bgl and then granular gravels to c. 5.00 m bgl.

3.6 Across the eastern area the River Terrace Deposits were identified directly below topsoil. Bedrock of the London Clay Formation was identified as silt/sandy silt across much of the western and central northern areas to completion of the boreholes at 10.00 m bgl. The Wittering Formation of sand and silt was identified below a limited thickness of River Terrace Deposits within two locations in the most eastern southern areas.

4.0 FLOOD RISK STATEMENT

Fluvial flood risk

4.1 The National Planning Policy Framework (NPPF) categorises flood risk as follows:

- Zone 1 (low probability) – Land assessed as having less than a 1 in 1,000 annual probability of river or sea flooding (<0.1%).
- Zone 2 (medium probability) – Land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1%) in any year; and
- Zone 3a (high probability) - Land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.
- Zone 3b The Functional Floodplain - This zone comprises land where water must flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the EA. (Not separately distinguished from Zone 3a on the Flood Map).

4.2 The EA flood maps for planning show that the entirety of the site is in Flood Zone 1.



Figure 4 – EA Flood Map for Planning

4.3 Based on the above, the site is considered to be at low risk of flooding from rivers or sea.

Surface water flooding

4.4 The EA descriptions for the High, Medium and Low risk scenarios for surface water flooding are as follows:

- High risk means that each year this area has a chance of flooding of greater than 3.3%.
- Medium risk means that each year this area has a chance of flooding of between 1% and 3.3%.
- Low risk means that each year this area has a chance of flooding of between 0.1% and 1%.
- Very Low risk means that each year this area has a chance of flooding of less than 0.1%.

4.5 The EA Map of long-term flood risk from surface water indicates that the site is at a very low risk from surface water.



Figure 5 – EA Flood Map for Surface Water

Groundwater flood risk

4.6 Groundwater flooding occurs when the water table, the level of water below the ground, rises above the ground surface or into cellars and basements. Groundwater flooding is most likely to occur in low lying areas underlain by permeable rocks (aquifers). These may be extensive, regional aquifers, such as chalk or sandstone, or may be localised sands or river gravels in valley bottoms underlain by less permeable rocks.

4.7 Based on the ground conditions outlined in Sections 3.4 to 3.6, the risk of flooding from groundwater cannot

be ruled out.

4.8 The Risk of Flooding from Groundwater maps, taken from the SFRA, show most of the site to be in an area with between 25-50% chance of groundwater emergence. The eastern and north eastern parts of the site have a greater than 75% chance of groundwater emergence.

4.9 It is therefore recommended that a condition be included for groundwater monitoring to be undertaken prior to the site being developed to verify this.

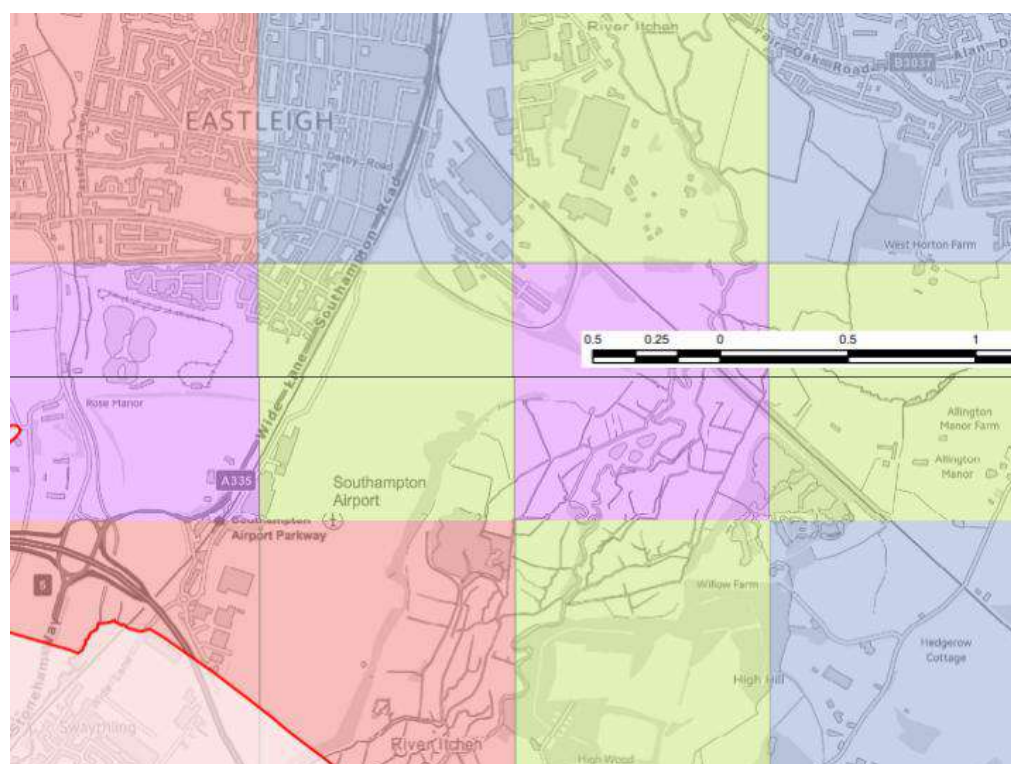


Figure 6 – Groundwater Flooding Susceptibility Map (SFRA)

Sewer flooding

4.10 There are no existing public sewers within the vicinity of the site. Therefore, the site is at low of risk of flooding from sewers.

Tidal flooding

4.11 The site is remote from tidal influences and is therefore not at risk of tidal or coastal flooding.

Reservoir flooding

4.12 Based on the EA Flood Risk from Reservoirs Map, the site is not at risk of flooding from reservoirs.

5.0 SURFACE WATER DRAINAGE STRATEGY

Disposal of surface water

5.1 The method for removal of surface water from the site has been selected in accordance with the hierarchy outlined in Building Regulations Part H as summarised below:

- Infiltration to the ground
- Discharge to a watercourse
- Connection to a surface water sewer
- Connection to a combined sewer

5.2 As described in sections 3.4 to 3.6 of this report, the majority of the site is underlain by River Terrace deposits and the London Clay Formation. The superficial deposits are generally favourable to infiltration. However, given the area is susceptible to groundwater flooding, it is considered that soakaway drainage will not be a suitable means of disposing surface water runoff from the developed site.

5.3 Therefore, it is proposed to discharge surface water runoff to the existing feeder channel mentioned in section 3.3 (manhole with broken slab previously mentioned in section 3.3, where runoff will conveyed to the east to the River Itchen at greenfield runoff rates. This approach mimics the existing situation).

Sustainable Drainage Systems

5.4 Sustainable Drainage Systems (SuDS) will be utilised in line with The SuDS Manual (C753) guidance and aim to minimise the impact a development has on the runoff quantity and quality and maximise amenity and biodiversity opportunities.

5.5 The management train approach is a fundamental principle of SuDS, it aims to primarily reduce pollution, flow rates and volume of runoff from the site. The main objective is to treat the runoff as close to the source as possible and it is imperative that **at least two** of the following should be included within the drainage strategy.

- **Prevention** – The use of good site design and rainwater re-use measures to prevent runoff.
- **Source Control** – Controlling the runoff as close to source as possible by using; green roofs, porous pavements and soakaways.
- **Site Control** – Use of water management techniques within local area, i.e. detention basins and geo-cellular storage.
- **Regional Control** – Management of water from a number of sites in a specific location, i.e. balancing ponds and wetlands.

5.6 The drainage strategy for this development will incorporate prevention where possible through good site design and site control in the form of **flow control** and associated **attenuation ponds and swales**.

General strategy

5.6 For details of the outline drainage proposals for the site, reference should be made to drawing (ref: 30228-BGL-XX-XX-DR-S-00250), which has been included in Appendix D of this report.

Total site area and impermeable areas

5.7 The total drained impermeable area of the proposed development has been measured to be approximately 22.75 hectares.

Climate Change

5.8 In line with the latest guidance, a 25% allowance has been made based on a 2070s Epoch in the central allowance for this area.

Discharge rates

5.9 The site is a greenfield development. The hydrological characteristics for the site have been taken from uksuds.com and summarised in Table 2

Table 2 – Hydrological characteristics for the site

SAAR (mm)	798
Hydrological region	7
Soil type	2
SPR	0.3

5.10 Using the IH124 method (Institute of Hydrology, 1994) and the above hydrological characteristics, the greenfield runoff rates for a site based on a total site area of 31 hectares have been set out in Table 3.

Table 3 – Greenfield runoff rates (per hectare)

QBAR	2.12 l/s
Q(1)	1.80 l/s
Q(30)	4.89 l/s
Q(100)	6.78 l/s

5.11 The maximum runoff rate from the developed site will not exceed the equivalent QBAR rate for all storms up to and including the 1 in 100 year storm plus 25% allowance for climate for the contributing impermeable area.

Attenuation storage

5.12 In order to achieve the restriction in peak rate of surface water runoff from the developed site as described above, on site surface water attenuation storage will be required in order to temporarily store the residual volume of surface water for rainfall events resulting in a peak runoff rate over and above QBAR.

5.13 Attenuation will be provided in the form of detention ponds and swales.

5.14 The attenuation storage will be designed to ensure that there is no surface water flooding on site for rainfall events up to and including the 1 in 30 year storm event. The attenuation storage will be designed to ensure that surface water runoff for storm events up to and including the 100 year storm plus a 25% allowance will not cause a risk of flooding to properties or increase the flood risk outside of the site.

5.15 A hydraulic modelling exercise of the proposed drainage system has been undertaken and the results have been included in Appendix E of this report.

Water quality

5.16 Water quality has been considered and the following measures have been included within the surface water drainage proposals:

- All drainage from car park areas, which are considered low risk, will pass through either a Class 1 by-pass separator or a swale prior to discharging to the attenuation ponds, which will provide a second stage of treatment for all runoff from these areas.
- All drainage from service yards, which are considered high risk, will pass through a Class 1 full retention separator prior to discharging to the main attenuation pond, which will provide a second stage of treatment for all runoff from these areas.
- All drainage from the site road and other hard surfaces will pass through the main attenuation pond, which will provide treatment for runoff from these areas.
- Silt will be prevented from entering the system by the use of channels with silt traps and catch pits where required.

Maintenance

5.17 Reference should be made to the Drainage Inspection and Maintenance Schedule in Appendix F, which includes required actions and typical frequencies for all drainage infrastructure serving the development. The drainage will be managed and maintained by an appointed Management Company.

6.0 FOUL WATER DRAINAGE STRATEGY

6.1 The Southern Water sewer records have been received (Appendix G). The nearest adopted foul manhole is located to the north of the site ref. 3001 shown below. It is currently proposed to discharge the foul flows generated from the development will discharge to this sewer subject to confirmation from Southern Water. This will require a S104 or S98 to lay a sewer in third party land to the north of the railway.



Figure 7 – Southern Water Sewer Records

6.2 Any new connections (including the re-use of existing connections) to the public sewerage system will require a Section 106 agreement.

6.3 Based on an anticipated gross internal floor space of 92,000 square metres, it is anticipated that the average foul flow from the development will be 1.74 l/s and the peak flow will be 6.96 l/s. This has been calculated using the following formula:

$$6DWF = 6PG + I + 3E$$

Where:

6DWF = foul drainage design flow (l/d)

P = population = 165 litres per person per day

G = water consumption = 90 l/person/day

I = dry weather infiltration = 10%

E = trade effluent = No allowance for trade Effluent

7.0 MITIGATION / MANAGEMENT OF FLOOD RISK

Access and egress

7.1 It is anticipated that access will be taken from the northwest corner of the site, off Mitchell Way. This is in accordance with Policies E7 and E9 of the Local Plan, which require that developers of land adjacent to Southampton Airport make contributions towards the opening of the new Chickenhall Lane Link Road.

7.2 The site access and main estate road within Parcel 1 is proposed to be detailed in the application, with access zones to the development parcels identified for further clarification at Reserved Matters stage.

Drainage & exceedance flow routes

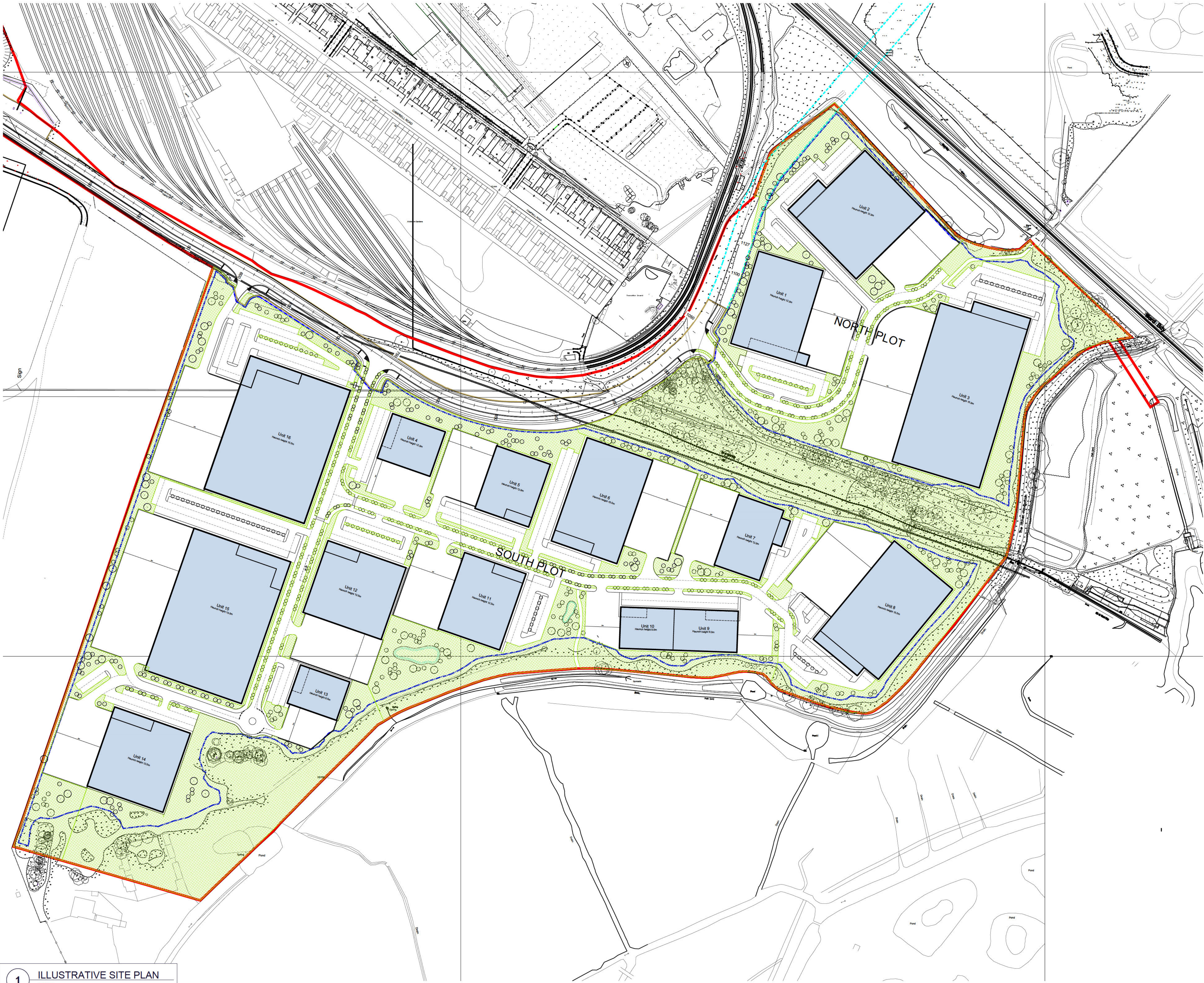
7.3 The proposed surface water drainage system will be designed in accordance with the drainage strategy set out in Section 5.1 to 5.15 of this report. This will ensure that there is no increase in flood risk to the site or elsewhere in the local catchment for all storm events up to and including the 100 year storm plus 25% climate change.

7.4 It should be noted that if storm events in excess of the 100 year storm plus 25% climate change or blockages occur, this will result in flood water arising from the site drainage system. If the site drainage system were to flood, it is considered that any surface water arising from the site drainage system would be contained within the area of dock levellers which are below ground.

8.0 CONCLUSION

8.1 This Flood Risk Assessment and Drainage Strategy has concluded that the development is appropriate and can be occupied safely subject to implementation of the flood risk mitigation described in this report being carried out.

APPENDIX A – DEVELOPMENT MASTERPLAN



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LEGEND:

— GROSS SITE BOUNDARY

- - - PLOT BOUNDARIES

PROPOSED NEW ROAD LAYOUT TAKEN FROM
BURROWS GRAHAM DRAWING NO:
30228-BGL-XX-XX-XR-C-00014 P06
DATED: 16.04.25

GROSS SITE BOUNDARY TAKEN FROM TITLE PLAN
HP882317 & DRAWING EASTLEIGH - REDLINE
DATED: 27.04.22

PL03	19/05/25	Red line & road layout updated.	sd	mt
PL02	23/04/25	Road layout updated	sd	mt
PL01	09/04/25	First Issue	sd	mt
REV	DATE	NOTES	DRAWN	CHECKED



11 PLATO PLACE ST DIONIS ROAD LONDON SW6 4TU
020 7736 6162 WWW.MSA-ARCHITECTS.CO.UK

PROJECT TITLE

**NAVIGATOR QUARTER,
SOUTHAMPTON**

CLIENT

BLOCWORK (EASTLEIGH) LLP & SIAL

DOCUMENT TITLE

ILLUSTRATIVE SITE LAYOUT PLAN

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MT

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PL03

APPENDIX B– TOPOGRAPHICAL SURVEY