KEYSTONE

CONSULTING ENGINEERS



Alliance Medical

Integrated Diagnostic Centre (IDC)

South Tyneside & Sunderland NHS Trust

Drainage Strategy

2021101

Revision -

June 2021

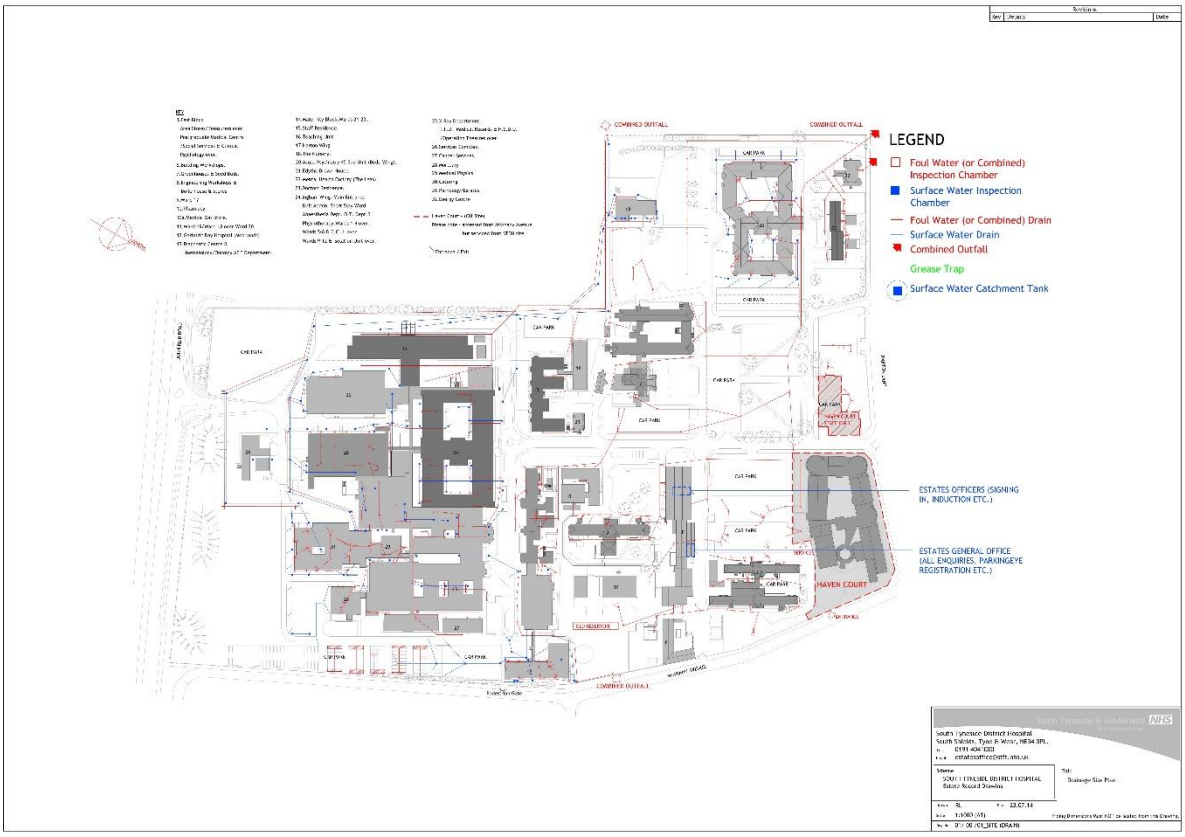
2021101 South Tyneside & Sunderland NHS Trust – Integrated Diagnostic Centre – Drainage Strategy

Site Description

The proposed site is located on the South Tyneside district hospital, NE34 0PL. The scheme proposes the construction of a single storey Integrated Diagnostic Centre (IDC) on the site of the previous nurses accommodation building which is to be demolished under planning consent ST/0993/16/DEM.

Existing Site Drainage

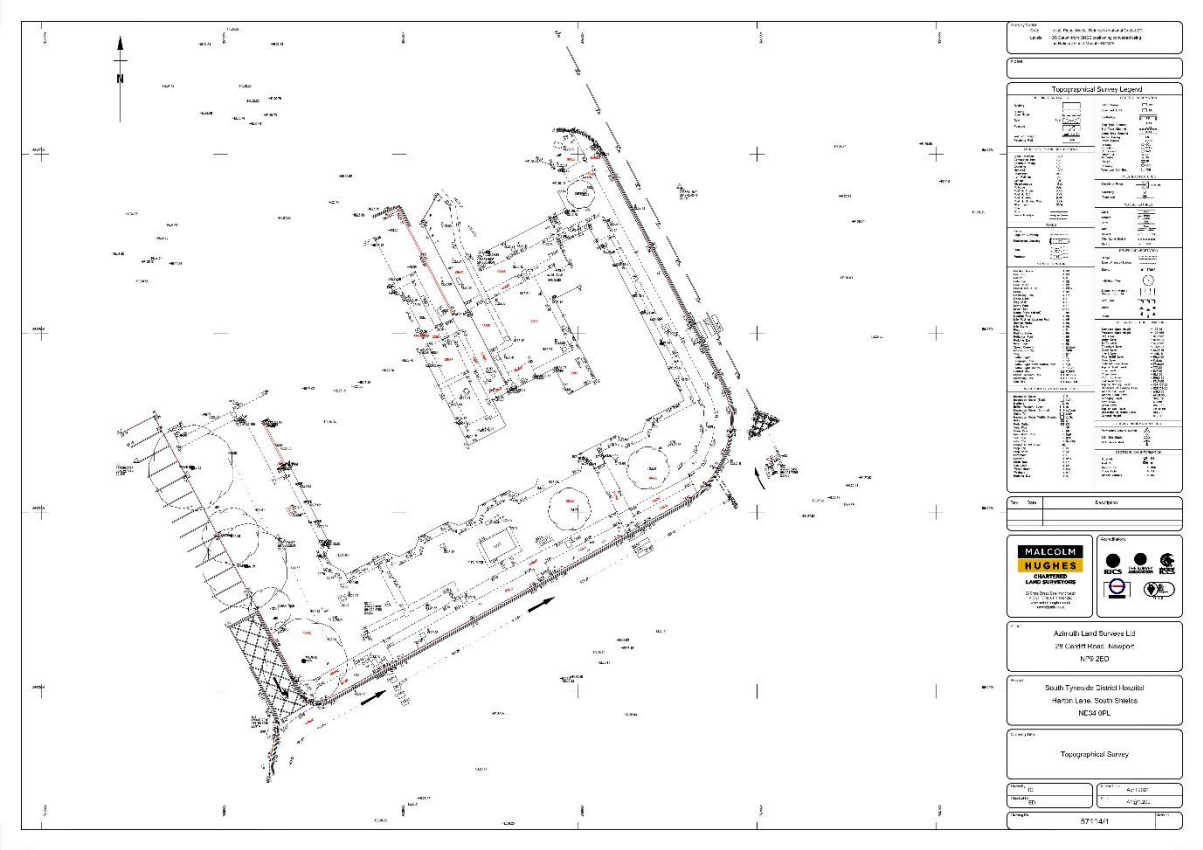
Records received from the trust confirm that the existing nurses accommodation building has a positive foul and surface water connection into the local private network managed by the trust, before discharging offsite into the Northumbrian Water adopted assets.



Northumbrian Water drainage asset records show that there are no adopted surface or foul water networks within the hospital estate adjacent to the site.

Detailed record drawings of the Nurses accommodation are not available, but there is foul drainage provision within the building which is arranged over 3 stories with bathrooms and toilets.

The external paved areas and car park are positively drained with an unrestricted discharge into the surface water gravity network within the estate.



Discussions with the trust have confirmed that the drainage network within the site has not suffered surcharge or flooding and is currently adequate.

Local Watercourses

Reference to EA plans and records show there are no watercourses within communicable distances of the site.

Site Flooding

A review of possible flooding mechanisms has been undertaken, including anecdotal evidence from the trust who operate the site and can be summarised as follows;

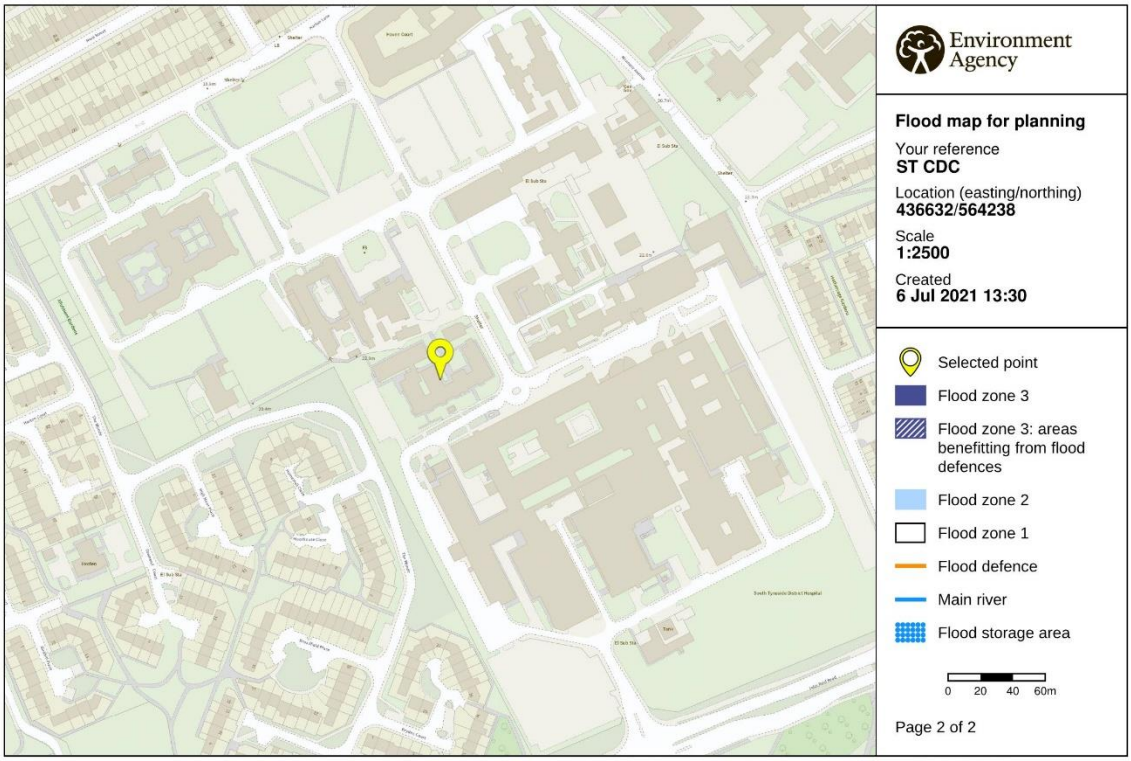
Fluvial Flooding – A review of the local area, historic flooding and EA refence show that the site is not as risk of fluvial flooding.

Pluvial Flooding – Discussions with the trust have confirmed that there are no issues with flooding or inundation as a result of overland flows/rainfall.

Drainage Surcharge – The trust have confirmed that the drainage system operates effectively, localised maintenance may be required for local faults but no issues that prevent the effective operation of the system.

Flood Zone

Reference has been made to the Environment Agency Flood mapping in support of planning applications, this has shown the site is not in an area at risk of flooding.



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Hard Paved & Positively Drained Areas

The proposed development will form a single storey building on the site of the previous nurses accommodation, the general area of proposed positively drained roof will be similar to the existing building, as such the rainwater run off will be unaffected.

The existing car park will be retained and extended to form provision for patients. An area of permeable paving will also be formed to support potential mobile scanner units.

Geophysical Site Investigation

A site investigation has been undertaken by Solmek ref S21045/SI to establish the underlying ground conditions, these have shown the ground to be predominantly high plasticity clays that would not support the use of soakaways.

The site is not located in the vicinity of a significant aquifer or increased ground water sensitivity.

Surface Drainage Hierarchy Of Disposal

In line with current BRegs, SuD's manual, good practice and SPG's the method of surface water control and disposal for the site has been assessed and can be summarised as follows;

Infiltration – A geophysical site investigation has been undertaken and concluded that due to the clay subsoils soakaways and infiltration methods are not viable on this site.

Fluvial – A review of local topography and EA records show there are no water courses within communicable distance to the site.

Sewer – The existing building on the site discharges into the private surface water system, it is proposed to retain this connection but offer betterment through the use of attenuation to limit the flow rate.

Proposed Surface Drainage

The proposed building will have a positively drained gravity drainage system for surface water, collecting run off from the car park and roof drainage. This will be discharged through a controlled & attenuated discharge system into the private surface water drainage network adjacent to the building.

The attenuation tank will be designed for the 1:100 year flood event with 30% climate change, with an attenuation device, likely hydrobrake, to control flows into the system. This will deliver a surface water system that offers reduced flow rates and hence improvement over the current un attenuated discharge.

Proposed Foul Water

The proposed building has limited toilet and washing facilities with consequent reduced flow rate over the current nurses accommodation. A gravity drainage system is proposed into the local network using the same connection point as the existing building. The scheme will therefore discharge lower volumes to the private network, the discharge periods will also be associated with operating hours which are outside the normal peak periods offering further improvement over the existing arrangement.

Summary

The proposed scheme can be designed and developed in line with current guidance and offer an improvement over the existing arrangement. The completed scheme will not affect adjacent properties or increase risk of flooding and discharges of foul and surface water will be at a reduced rate to the current system.

DRAWINGS

200m3 SURFACE WATER ATTENUATION
(STORMCELL OR SIMILAR APPROVED
TO SPECIALIST DETAILS)
16x12.5x1.0m DP
COVER LEVEL @ 22.650 (TBC)
INVERT LEVEL @ 21.650 (TBC)
900mm MIN. COVER OVER

NEW SILT TRAP
CL=23.000 (TBC)
IL=21.700 (TBC)

EXISTING MANHOLE
CL=21.690 (TBC)
IL=16.150 (TBC)

HYDROBRAKE
DISCHARGING AT 5 l/s
CL=22.200 (TBC)
IL=21.200 (TBC)

EXISTING 500mmø
STORM SEWER

EXISTING 300mmø FOUL
SEWER RECONSTRUCTED
CL=21.690 (TBC)
IL=16.150 (TBC)

NEW MANHOLE
CONSTRUCTED ON
EXISTING LINE
CL=22.850 (TBC)
IL=19.020 (TBC)

NEW MANHOLE
CONSTRUCTED ON
EXISTING LINE
CL=22.000 (TBC)
IL=16.100 (TBC)

NOTE: EXISTING
DRAINAGE AND
MANHOLE INVERTS
TO BE ESTABLISHED
PRE-COMMENCING
SITE WORKS

IMPORTANT: EXISTING
SERVICES CROSS SITE
- CONTRACTOR TO
TAKE APPROPRIATE
MEASURES TO MITIGATE

100mm @ A1 (50mm @ A3)

NOTES

GENERAL

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
2. ALL LEVELS ARE IN METRES UNLESS NOTED OTHERWISE.
3. ALL LEVELS RELATE TO ORDNANCE DATUM UNLESS NOTED OTHERWISE.
4. DO NOT SCALE FROM THIS DRAWING. USE FIGURED DIMENSIONS ONLY.
5. ANY DISCREPANCIES TO BE REPORTED IMMEDIATELY TO THE ENGINEER.
6. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, SUBCONTRACTORS AND SPECIALISTS DRAWINGS AND SPECIFICATIONS.
7. THIS DRAWING IS COPYRIGHT © KEYSTONE Ltd CONSULTING ENGINEERS

DRAINAGE

1. ALL SURFACE WATER PIPES TO BE 100mmø, OSMA ULTRARIB, LAID AT A MINIMUM FALL OF 1:100 UNO
2. ALL FOUL BRANCH PIPES TO BE 100mmø, OSMA ULTRARIB, LAID AT A MINIMUM FALL OF 1:80, IF SERVING WC'S AND A MINIMUM FALL OF 1:40 IF NOT SERVING A WC UNO
3. ALL PIPES WITH LESS THAN 900mm COVER TO RECEIVE TYPE Z CONCRETE SURROUND
4. ALL PIPES WITH LESS THAN 600mm COVER IN LANDSCAPED AREAS TO RECEIVE TYPE Z CONCRETE SURROUND.
5. FOR SETTING OUT & LOCATIONS OF ALL INTERNAL SVP'S & FLOOR GULLIES ETC REFER TO ARCHITECTS AND/OR MODULECO DRAWINGS (THIS DRAWING IS INDICATIVE ONLY).
6. UNLESS NOTED OTHERWISE INSPECTION CHAMBERS TO BE AS FOLLOWS:
   UP TO 1.2m DEEP = 450mmø OSMA
   OVER 1.2m DEEP = 500mmø OSMA
   (NON ENTRY WITH 350mmø RESTRICTOR)
7. ALL MANHOLE COVERS IN TRAFFICKED AREAS TO BE BE HEAVY DUTY METAL.
8. THE LAYOUT AND INVERT LEVELS OF EXISTING CONNECTING MANHOLES TO BE CONFIRMED PRIOR TO THE INSTALLATION WORKS COMMENCING..
9. ALL EXISTING DRAINAGE TO BE CCTV SURVEYED PRIOR TO THE WORKS COMMENCING TO ENSURE THE SYSTEM IS CLEAR AND FREE FROM DEBRIS. A FINAL CCTV SURVEY & RECORD DRAWING TO BE PRODUCED PRIOR TO HANDOVER.
10. ALL NEW DRAINAGE TO BE AIR TESTED PRIOR TO BACKFILLING AND APPROVED BY THE LOCAL AUTHORITY BUILDING CONTROL. NEW PIPEWORK TO BE LAID AND ROCKER PIPES TO BE INSTALLED AS RECOMMENDED BY THE MANUFACTURERS.
11. EXCAVATE AND CUT OUT SECTION OF EXISTING DRAIN AS REQUIRED TO FORM NEW MANHOLES ON EXISTING RUNS. INSTALL NEW INSPECTION CHAMBERS AND SHORT PIPE SECTIONS AND CONNECT TO EXISTING DRAIN.
12. ALL DRAINAGE POINTS TO HAVE RODDABLE ACCESS.

Rev	Date	Drawn	Eng	Amendments
P1	JULY 21	BP	JM	FIRST ISSUE - RIBA 3

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Project Name:
ALLIANCE MEDICAL LTD
SOUTH TYNESIDE & SUNDERLAND
NHS FOUNDATION TRUST
IINTEGRATED DIAGNOSTIC CENTRE

Drawing Title:
DRAINAGE STRATEGY

Alliance Medical
Intelligent imaging

Scale(s):		1:125 @ A1
Issue Status:		RIBA STAGE 3 TENDER
Proj. No.	Dwg. No.	Rev.
2021101	101	P1

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Our Ref: 2021101 South Tyneside & Sunderland NHS FT - IDC

Date: 16/7/2021

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By email

Dear Gary;

Contamination Summary – South Tyneside & Sunderland NHS Foundation Trust - IDC

As instructed, we can summarise below the approach and ground conditions for the above site in support of the planning application for the proposed Integrated Diagnostic Centre (IDC).

Background

The proposed IDC is a single storey structure that is to be constructed on the grounds of the demolished nurse's accommodation on the South Tyneside District Hospital estate. The Nurses accommodation is to be demolished under a separate contract by the trust and the site transferred to our client prepared for development.

Investigations

A phase 2 geophysical environmental site investigation has been undertaken by Solmek Ltd, ref S210451/SI June 2021. The report has undertaken contamination testing and commented upon the site for the proposed end use.

Contamination Testing Results

For full details of testing results reference should be made to the site investigation report, however the extract below details the summary;

- From the 5no samples subject to testing no levels of metals, semi-metals and non-metals were recorded above the relevant thresholds.
- In terms of TPH CWG or Speciated PAH, no elevated determinants were recorded.
- Sulphates between <10mg/l and 12mg/l, pH is slightly alkaline.
- No asbestos fibres detected in the 5no samples subject to testing.
- 2no raised phytotoxic levels raised locally.

Contamination Analysis

The extract of the Solmek report below confirms there is minimal risk to end users and localised capping of soft landscape areas should be implemented.

- Based on the levels recorded to date, there is a minimal risk existing to end users of the site.
- For peripheral soft landscaping – A suitable growing of 500mm should be implemented comprising 200mm of clean site won topsoil over 300mm of screen site-won clean subsoil.
- If any zones of odorous, brightly coloured or suspected contaminated ground or groundwater are

encountered then work should cease in that area until the material has been investigated. The results of the investigation will therefore determine whether or not remediation will be required.

- Risk to ground water considered low due to low contamination levels to date.
- Full PPE must be incorporated for workers.
- With respect to utilities, levels of pH preclude the use of copper pipes, however, consultation with a utility
- supplier is recommended.
- Sub surface concrete should be designed to DS-1 ACEC (Class AC-1s).

Potential Contaminant Sources due to Demolition

The demolition of the nurse's accommodation raises a potential risk of localised contamination from the demolition process. The Trust has engaged a reputable engineering consultancy to oversee the works and post demolition testing and validation reporting will be undertaken to confirm that the site is not contaminated when handed over to Alliance medical.

Summary

The investigation has not identified contaminants or concentrations that would prevent the use of the site for the intended Integrated Diagnostic Centre. The issues that are noted are common in construction and can be managed through accepted design solutions such as capping layers and site control of work.

Should you wish to discuss any of the above or require any further information please do not hesitate to contact us.

Yours sincerely,



Jonathan Meek BEng (HONS) CEng MICE
Director
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