South Tyneside and Sunderland NHS Foundation Trust

Integrated Diagnostic Centre

DESIGN AND ACCESS STATEMENT
MURPHY PHILIPPS ASSOCIATES LLP | JULY 2021

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1.0 Introduction

This document has been produced by Murphy Philipps Associates LLP on behalf of Alliance Medical and South Tyneside & Sunderland NHS Foundation Trust in support of:
The development of the new South Tyneside and Sunderland NHS Foundation Trust Integrated Diagnostic Centre (STSFT IDC), South Tyneside. The purpose of this document is to outline the requirement and design principles that have led to the form and type of proposed development.

1.1 Project Background

Demand on diagnostic imaging is increasing by approximately 10% per annum nationally and to date Alliance Medical has provided overflow imaging capacity to STSFT via mobile MRI and CT vans on site 7 days per week. Mobiles are not a long term solution and do not offer all the benefits and efficiencies you can achieve with a purpose build, patient centered facility. Therefore, STSFT in partnership with Alliance Medical plan to build a new Integrated Diagnostic Centre (IDC) to satisfy the current pressures on diagnostic services and respond to the ever-growing demand.

The IDC will provide for the anticipated growth of the Trusts overflow requirements over the next 10 years with the provision of 4 MRI scanners and 4 CT scanners serving the South Tyneside and Sunderland community, therefore bringing a fundamental service to the door step of the local community, improving access for patients which will mean a much quicker turnaround time so patients can begin treatment sooner.

As the NHS recovers from COVID-19 and begins to tackle the major backlog of patients now waiting for treatment, South Tyneside's new Integrated Diagnostic Centre will play a pivotal role in reducing waiting lists. More patients will have access to scans and will experience their care from a new purpose-built, permanent facility rather than a mobile scanning van at various locations across the Trust hospital sites.



1.0 Introduction

1.2 Overview

The new building will be a single storey construction on a site which previously housed a disused 1930's nurses' accommodation building. The entrance is on the site frontage (south elevation), reached via a pavement from the existing hospital and from the existing car park to the West, providing easy access for both pedestrians and vehicular traffic.

The new facility will provide:

- 3 CT scanners with control and equipment rooms
- 2 1.5T MRI Scanners with control and equipment rooms
- 2 mobile units at the rear of site
- Uptake rooms
- Public waiting area
- Associated support spaces, admin and staff rest facilities
- Plant enclosure area at rear and side of building



Proposed Site Plan

2.0 Existing Site

2.1 Existing Site Photographs

1. View of the existing car park and trees from the entrance road

2. View of the site with existing building (demolished under planning reference number - ST/0993/16/DEM) and the opposite Ingham Wing building.

3. View of the existing building from the North-West.

4. View from the adjacent roundabout to the site with existing building (demolished under planning reference number - ST/0993/16/DEM).

5. View of the Edythe Brown House in relation to the site.



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3.1 Proposed Design

Patients will arrive by car or on foot to the main entrance via the entrance canopy located on the southern facade of the new building. The main waiting area is located adjacent to the reception. Front of house spaces for the unit are close to the reception.

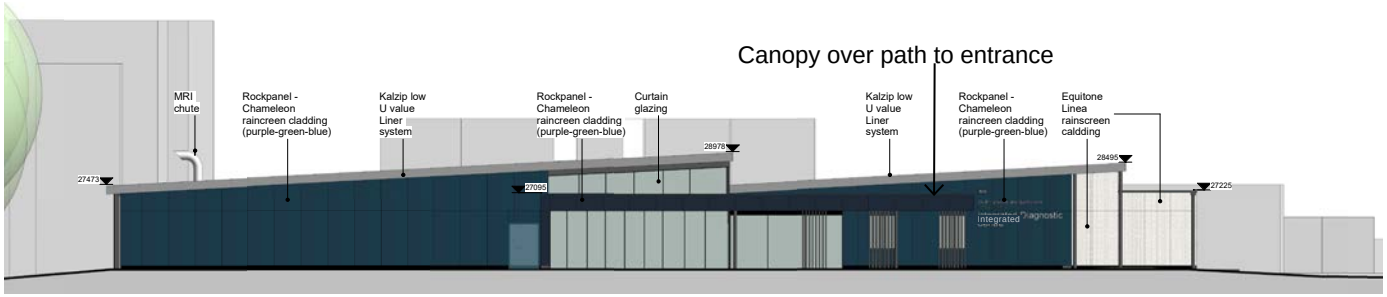
Accommodation is arranged around a main circulation spine running north to south. This will be a bright and airy double height space naturally lit through high level glazing. This area also accommodates central support and administration facilities. Patients upon arrival in the main reception will be directed to the appropriate sub wait area. Patients will then be escorted into the MRI, CT or Scanner department by a clinical member of staff where they will be prepared for their scan.

The MRI suite contains two 1.5T MRI scanners. A shared control room overlooks the two scanner rooms that are located on the external wall to allow for installation and replacement as required. As this is a single storey building it is proposed the quench pipes will be taken through the roof. A vacant shell will be constructed as part of the initial build to provide space to expand the existing MRI department with a further 2 MRI scanners as the demand increased over the length of the contract.

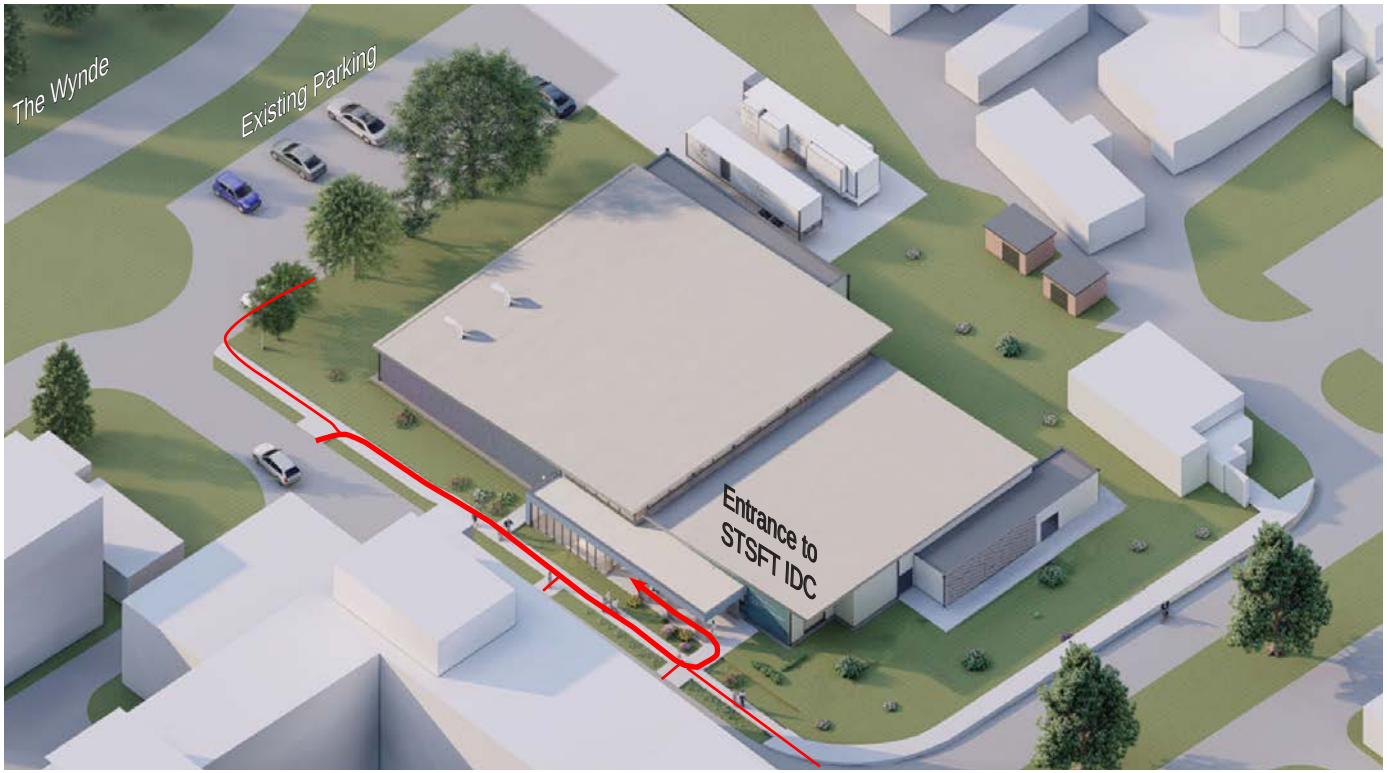
The CT suites are located on the opposite side of the main circulation spine. The CT suite comprises 2 scanners with a central shared control room. A clean utility, cleaners room and linen store support the suite. There is provision for 3 uptake rooms, sub wait and hot lab. The 'hot' area of the department is contained within thicker walls to allow for the radioactive lead shielding required.

The building is served by two plant rooms, one located to the north for the MRI suite(s), the other on the east facade for the CT departments. The waste area including lead safe will be located here.

There will be an external hard-standing at the rear of the building for the parking of mobile scanner units as required to meet increasing demand.



Entry Elevation



Proposed View from the South-East

3.0 Proposals

3.2 External Materials and Design

Alliance Medical are looking to give the building a modern look that is clear and welcoming for visitors. The proposals are for a mixture of different external applications. The three main materials we are proposing are:

- Rainscreen Cladding in a mix of colour tones:
  - Purple-Green-Blue, to identify the South entrance elevation and respond by dynamically changes when light from the South falls on it . Blue, accented in the canopy over the entrance path
  - White, to identify the clinical spaces
- Traditional feathered fencing surrounding the external substation.
- White render lining where the external walls meet the ground
- Louvres facade for plant which blend with the cladding on either side of it.

Additional materials to complement the above are:

Smooth, light granite paving

We believe these material choices will be in keeping with the design precedents on the site, and will create a coherent and inviting look for users – staff, patients and community alike.



Curtain wall allows natural light into draft lobby

Roof - Kalzip low U value liner roof system



Purple - Green - Blue

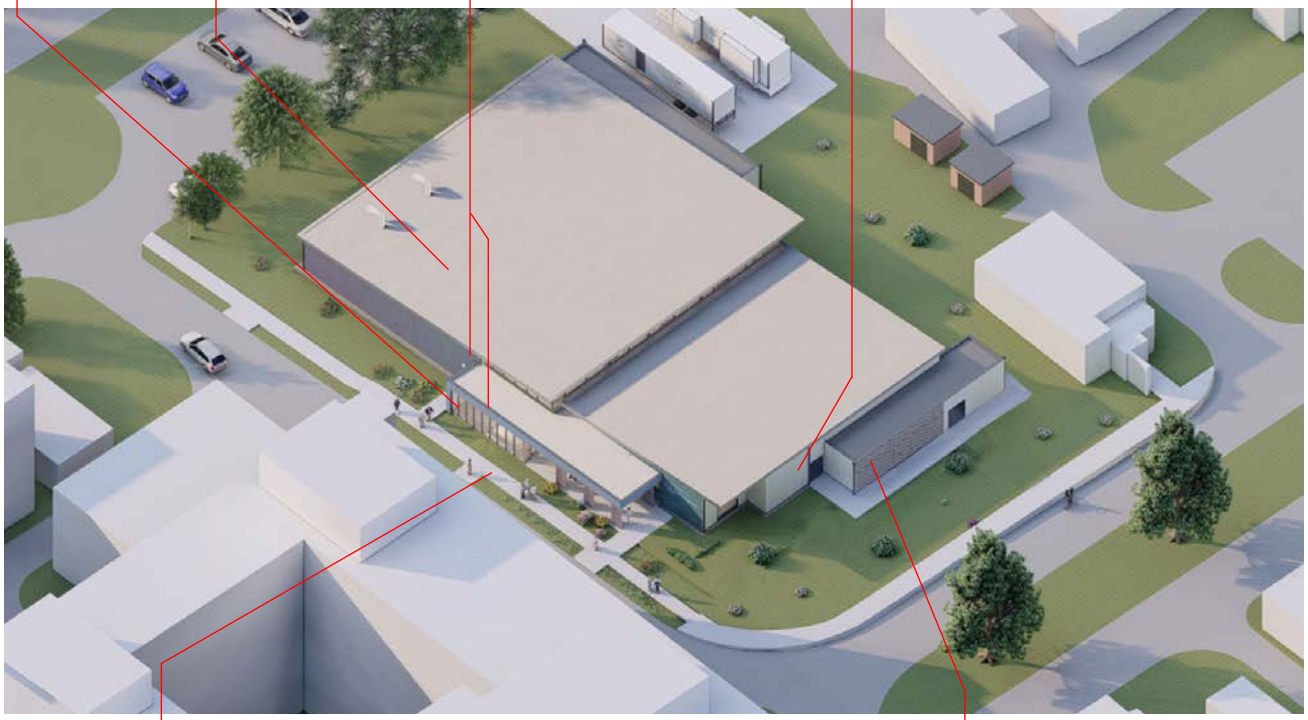


Chalk

Rainscreen Cladding

We are proposing to use two rainscreen cladding products: Rockpanel Chameleon and Equitone Linea shown on the left. Different colours indicate hot, cold and entrance areas.

The canopy will be clad in the same system with Rockpanel Chameleon.



Proposed Material Choices

Marshalls



Paving

We are proposing to use 'Modal Light Granite - Smooth' paving from Marshalls around the site.



Caice weather louvred panels for plant areas

3.0 Proposals

3.3 Lighting Strategy

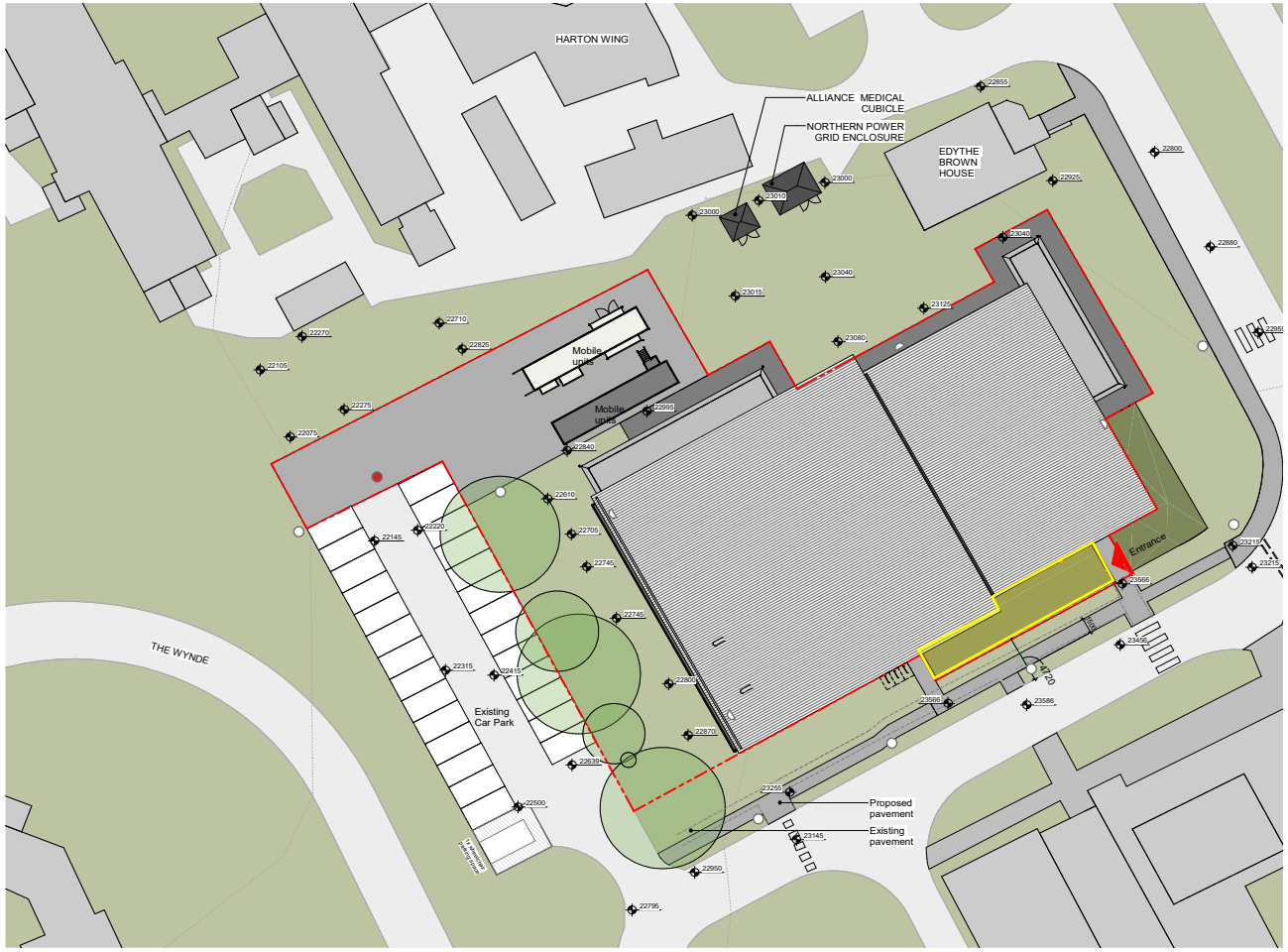
The proposed pavement to the building will be lit by single-headed LED galvanised steel lamps at regular intervals.

Entry to the building will be lit with recessed strip lighting in the timber underside of the canopy.

The north, west and east elevations will have wall mounted wall lighting to light the path to the plant areas and the hard-stands and emergency lighting to the fire exits.



Canopy lighting



Lighting Strategy Plan

- Proposed LED single headed galvanised steel lamp
- Demolished existing LED single headed galvanised steel lamp
- Proposed Path lit by ceiling lighting in canopy
- Proposed Built-in wall lights

3.4 Access and Parking Provision

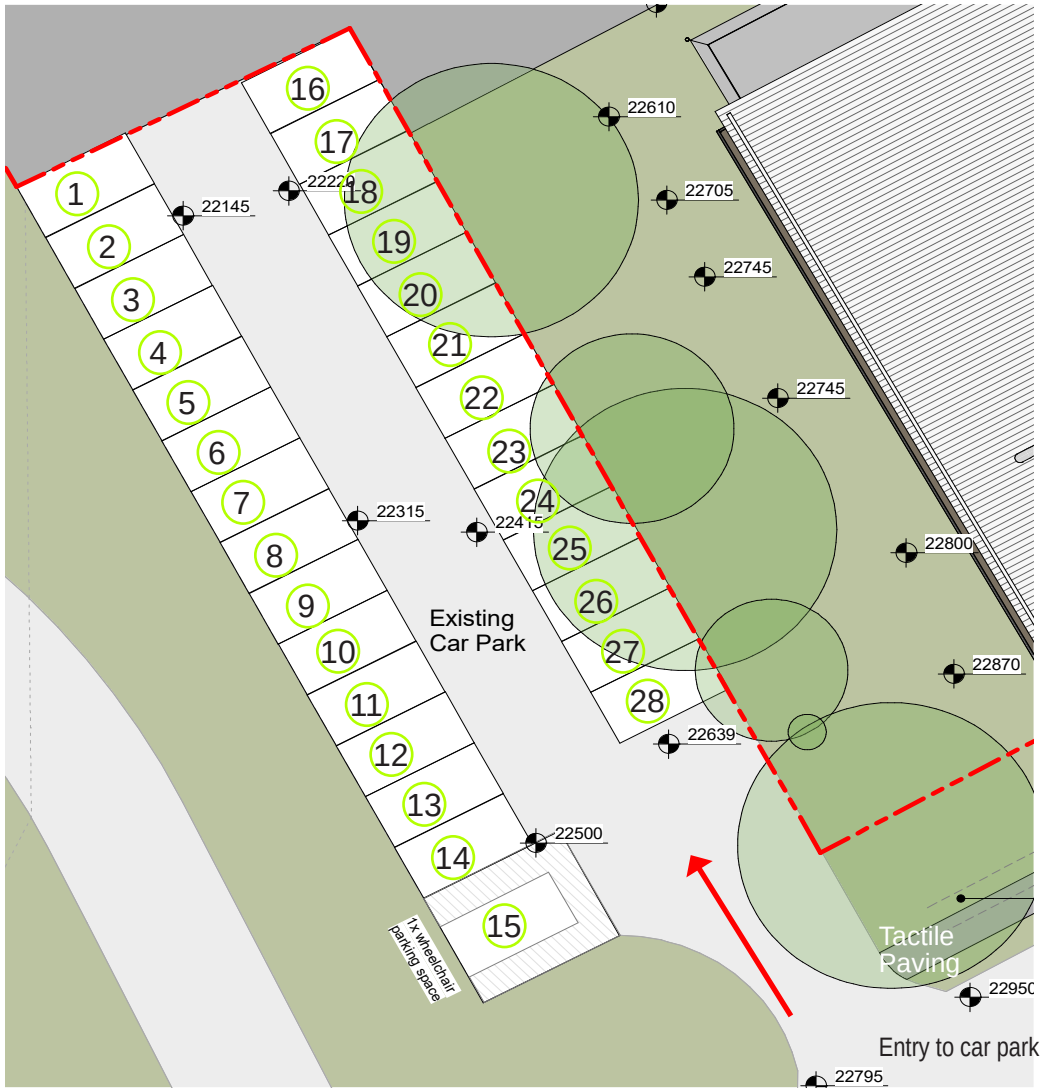
The existing car park adjacent to the site currently provides parking for patients accessing all diagnostic services on the South Tyneside hospital site and no further capacity will be added as part of the IDC building.

- The existing car park consists of 28 car parking bays
- One bay is to a bay for accessible parking
- Proposed paving will provide access from the parking to the entrance to the South and to the mobiles to the North
- 3 Sheffield stands for cycle parking are being provide to the South of the proposed building

Please refer to separate transport statement.



Cycle Parking Provision



Access and Parking Provision

3.5 Landscaping Planting and Biodiversity

The proposed design for the new Integrated Diagnostic Centre has taken steps to minimise changes to the existing site through methods such as:

- Following the topography:

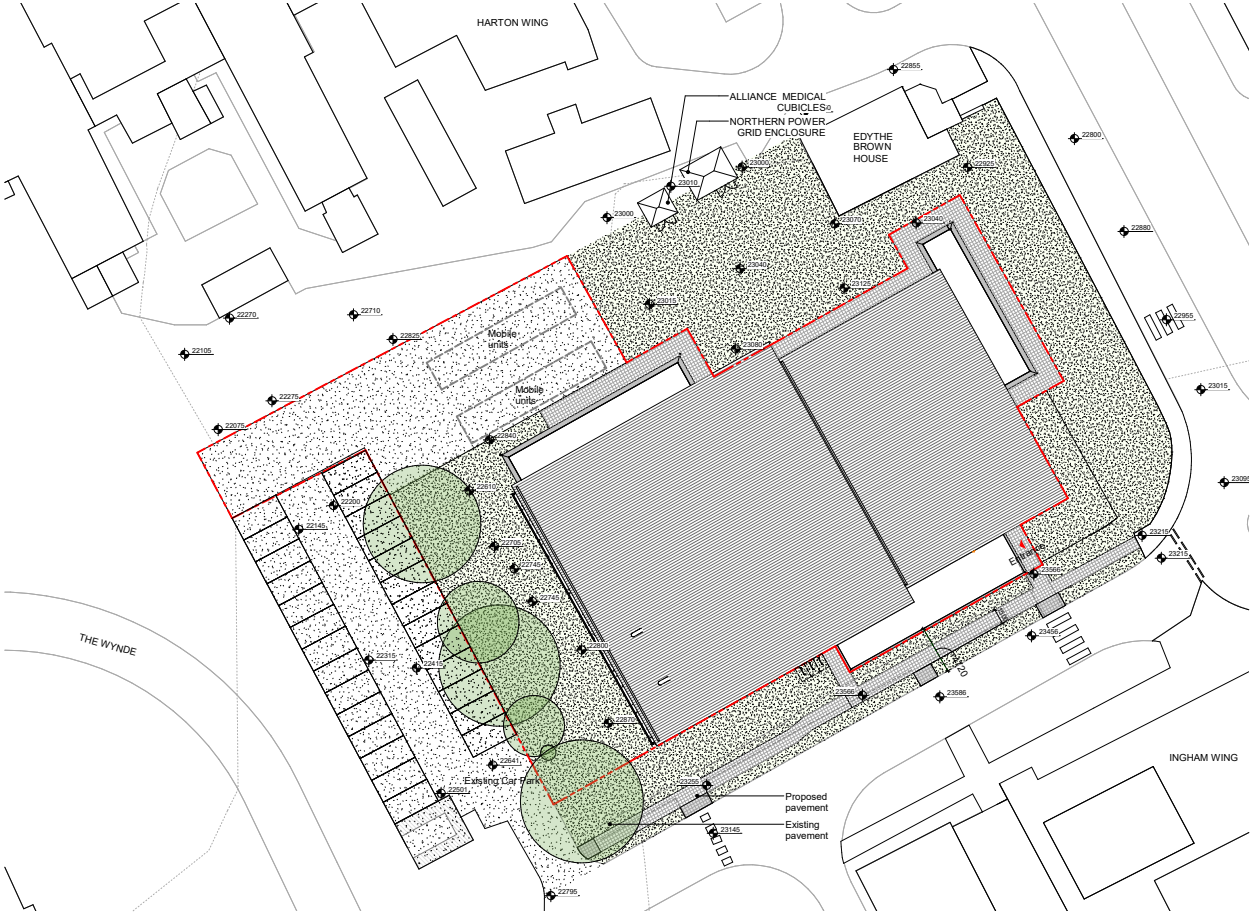
The design has placed the new Integrated Diagnostic Centre at an optimal level for maintaining the existing site levels. Any material displaced by the building excavation will be used as infill.

- Retaining the landscape:

All existing trees will be retained as part of the development to the West of the scheme and two shrubs on the South will be removed. Grass will be reinstated upon completion of the scheme.

- Biodiversity:

To increase the site's biodiversity, a row of low level, native species shrubs along the site frontage will line the entrance path.



Landscape Finishes Plan

3.6 Noise impact assessment

A noise impact assessment has been prepared by Hunter Acoustics commissioned to assess noise emissions limits from the surrounding area of the proposed site. The proposed noise levels are to be 5dB lower that the background noise levels at the nearest residences.

Please refer to separate noise impact assessment statement.

3. ENVIRONMENTAL NOISE SURVEY

The following environmental noise survey was undertaken by Apex Acoustics, fellow members of the Association of Noise Consultants (ANC), on behalf of Hunter Acoustics Ltd. Data was forwarded to Hunter Acoustics for post-analysis and inclusion in the report.

3.1 Procedures

Continuous noise monitoring was carried out from 1023hrs on Monday, 14 June 2021 to 1033hrs on Tuesday, 15 June 2021 at position A.

Data including L_{Amax}, L_{Aeq} was logged at continuous 1s periods over the monitoring period, to allow for further post-processing analysis of $L_{A90,1hr}$ and $L_{A90,15min}$ values

Figure 3.1 – Site Plan Showing Monitoring Location



Site plan in Figure 3.1 above shows the development site and continuous monitoring positions used, namely:

Table 3.1 – Continuous Monitoring Location Details

Position	Description
A	Fixed to a lamppost on The Wynde, representative of background sound levels at nearest residences

Note: All microphone position approximately 4m above local ground level.

Survey methods

3.4 Results

Time history graph in Figure B.3 of Appendix B show L_{Amax}, L_{Aeq} sound pressure levels measured at position A. Table B.1 and Table B.2 show calculated daytime $L_{Aeq,1hr}$, $L_{A90,1hr}$ & $L_{Amax,F}$ and night-time $L_{Aeq,15mins}$, $L_{A90,15mins}$ & $L_{Amax,F}$ values.

The following minimum consistent daytime and night-time background L_{A90} sound levels have been determined;

Table 3.3 – Minimum Consistent Daytime and Night-time Background L_{A90} Results

Period	Position A
Daytime (0700-2300hrs) $L_{A90,1hr}$ (dB)	49
Night-time (2300-0700hrs) $L_{A90,15min}$ (dB)	39

A graph in Figure B.4 of Appendix B show statistical analysis of background sound levels measured at position A.

Results from existing measured background levels at A

4.2 Proposed Noise Criteria

4.2.1 Residential SSRs

At this stage we propose to design to a rating level at least 5dB lower than background noise levels at the nearest residences.

Table 4.1 – Proposed Environmental Night-time Rating Noise Limits

SSR	Proposed Daytime Rating Limit $L_{Ar,1hr}$ (dB)	Proposed Night-time Rating Limit $L_{Ar,15mins}$ (dB)
The Wynde	44	34

These criteria are to apply at the closest noise sensitive receivers with all plant operating normally.

These proposed limits shall be confirmed acceptable with the Local Planning Authority/Environmental Health Officer prior to any orders being placed.

Proposed background noise rating level

3.7 Drainage and Soil Contamination

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 of drainage scheme

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.

Soil contamination

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.

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 of soil contamination findings

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.
Please refer to appendix for full drainage and contamination report.

3.8 Sustainable Design and Construction

A sustainable design approach has been taken via several approaches such as:

Massing and Building Orientation:

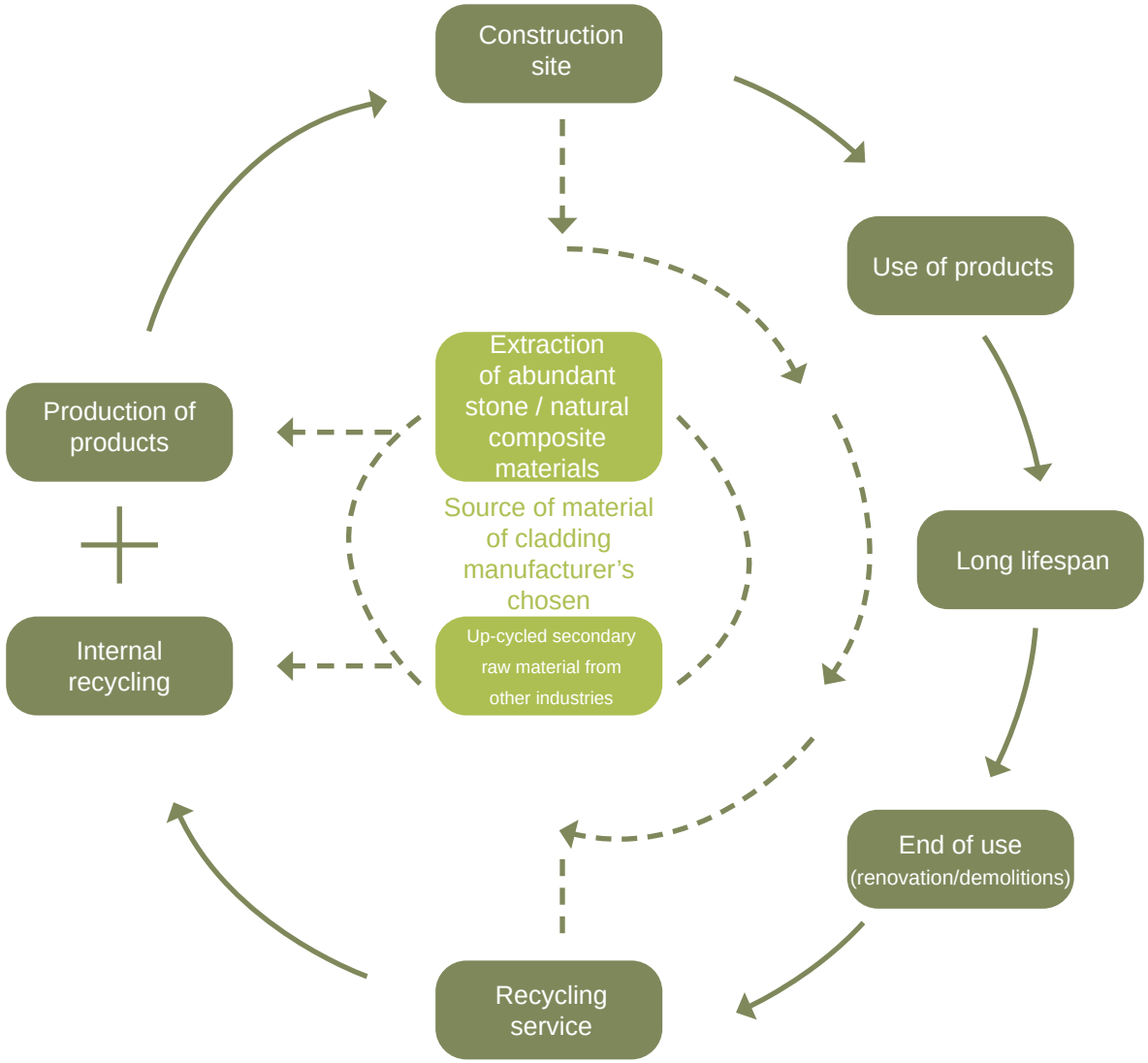
The building is oriented to take advantage of the South. Therefore a glazed canopy, waiting area and reception as well as admin areas are placed to the South. The North-South orientation of the high level glazing brings a good quality of light into the volume of the main circulation core. To the north, rooms that are less consistently inhabited or do not require natural light or ventilation are placed such as the preparation rooms, stores and utilities. Plant rooms with specialist equipment and technology are found to the north and east, which ensures that they do not get overheated.

Light weight and recyclable Cladding:

The cladding materials chosen are supported by lightweight construction, which helps to achieve an overall lower carbon footprint of building projects. The Rockpanel cladding panels are produced from sustainable compressed natural basalt volcanic rock while Equitone is produced with mainly locally sourced materials and actively minimises energy and water usage during production. The natural ventilation of the rain screen cladding lets air move throughout the design, helping to reduce heating and cooling costs. Both Rockpanel and Equitone cladding panels and fixing systems have the potential to be re-used and recycled.

Hot water:

Hot water will be generated locally by high efficiency water heaters and use a pumped return system to maintain and control legionella.



Life cycle of cladding materials

3.8 Sustainable Design and Construction

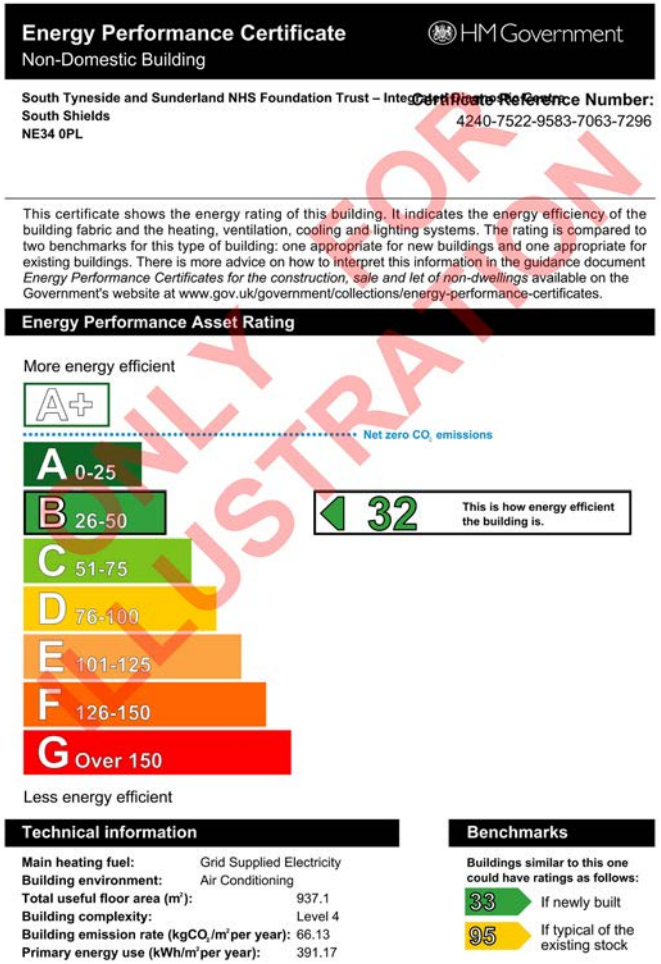
Renewable Energy Source Considerations:

Consideration to using CHP/Biomass was given and due to impact on air quality and in favour of more efficient generation this technology was not considered viable.

High efficiency air source heat pumps will be used to generate heating and cooling for the facility. Ground source was considered to be uneconomically viable for this scheme.

There is potential to include photovoltaic panels if required to meet the requirements of Building Regulations Part L. These could be located on the roof of the proposed development.

Please refer to separate energy statement, design stage EPC and BRUKL document.



Energy Performance Certificate
Non-Domestic Building

HM Government

South Tyneside and Sunderland NHS Foundation Trust – Integrated Diagnostic Centre
South Shields
NE34 0PL

Certificate Reference Number:
4240-7522-9583-7063-7296

This certificate shows the energy rating of this building. It indicates the energy efficiency of the building fabric and the heating, ventilation, cooling and lighting systems. The rating is compared to two benchmarks for this type of building: one appropriate for new buildings and one appropriate for existing buildings. There is more advice on how to interpret this information in the guidance document *Energy Performance Certificates for the construction, sale and let of non-dwellings* available on the Government's website at www.gov.uk/government/collections/energy-performance-certificates.

Energy Performance Asset Rating

More energy efficient

A+ Net zero CO_2 emissions

A 0-25
B 26-50
C 51-75
D 76-100
E 101-125
F 126-150
G Over 150

32 This is how energy efficient the building is.

Less energy efficient

Technical information

Main heating fuel:	Grid Supplied Electricity
Building environment:	Air Conditioning
Total useful floor area (m^2):	937.1
Building complexity:	Level 4
Building emission rate ($kgCO_2/m^2$ per year):	66.13
Primary energy use (kWh/m^2 per year):	391.17

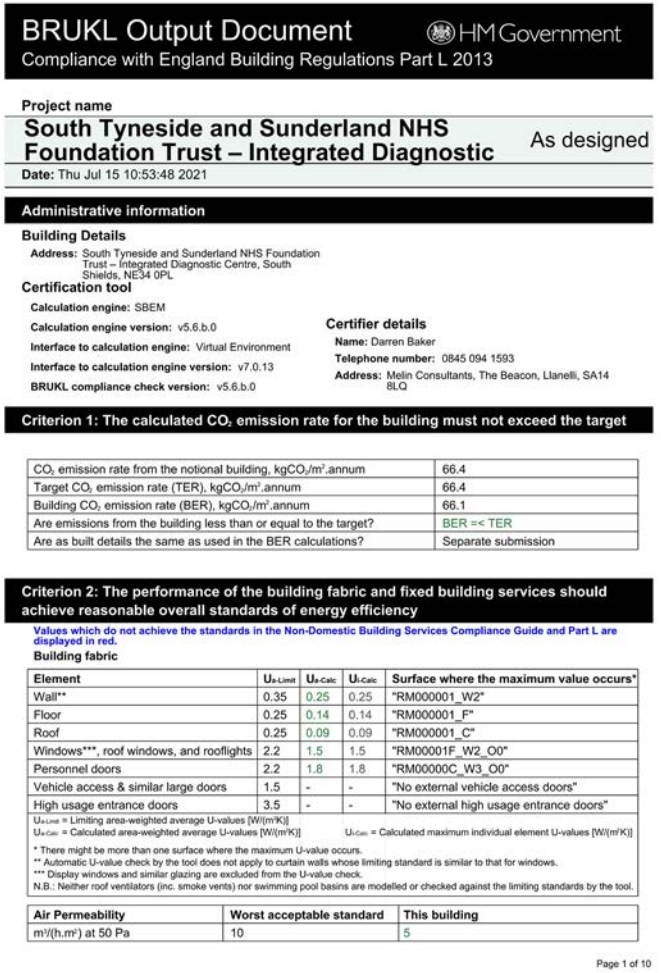
Benchmarks

Buildings similar to this one could have ratings as follows:

33 If newly built
95 If typical of the existing stock

ONLY FOR ILLUSTRATION

Energy Performance Certificate



BRUKL Output Document
Compliance with England Building Regulations Part L 2013

HM Government

Project name
South Tyneside and Sunderland NHS Foundation Trust – Integrated Diagnostic As designed
Date: Thu Jul 15 10:53:48 2021

Administrative information

Building Details
Address: South Tyneside and Sunderland NHS Foundation Trust – Integrated Diagnostic Centre, South Shields, NE34 0PL

Certification tool
Calculation engine: SBEM
Calculation engine version: v5.6.b.0
Interface to calculation engine: Virtual Environment
Interface to calculation engine version: v7.0.13
BRUKL compliance check version: v5.6.b.0

Certifier details
Name: Darren Baker
Telephone number: 0845 094 1593
Address: Melin Consultants, The Beacon, Llanelli, SA14 8LQ

Criterion 1: The calculated CO_2 emission rate for the building must not exceed the target

CO_2 emission rate from the notional building, $kgCO_2/m^2.annum$	66.4
Target CO_2 emission rate (TER), $kgCO_2/m^2.annum$	66.4
Building CO_2 emission rate (BER), $kgCO_2/m^2.annum$	66.1
Are emissions from the building less than or equal to the target?	BER =< TER
Are as built details the same as used in the BER calculations?	Separate submission

Criterion 2: The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Values which do not achieve the standards in the Non-Domestic Building Services Compliance Guide and Part L are displayed in red.

Building fabric

Element	$U_{i\text{-Limit}}$	$U_{i\text{-Calc}}$	$U_{i\text{-Calc}}$	Surface where the maximum value occurs*
Wall**	0.35	0.25	0.25	"RM000001_W2"
Floor	0.25	0.14	0.14	"RM000001_F"
Roof	0.25	0.09	0.09	"RM000001_C"
Windows***, roof windows, and rooflights	2.2	1.5	1.5	"RM00001F_W2_O0"
Personnel doors	2.2	1.8	1.8	"RM00000C_W3_O0"
Vehicle access & similar large doors	1.5	-	-	"No external vehicle access doors"
High usage entrance doors	3.5	-	-	"No external high usage entrance doors"

$U_{i\text{-Limit}}$ = Limiting area-weighted average U-values [W/(m²K)]
$U_{i\text{-Calc}}$ = Calculated area-weighted average U-values [W/(m²K)] $U_{i\text{-Calc}}$ = Calculated maximum individual element U-values [W/(m²K)]

* There might be more than one surface where the maximum U-value occurs.
** Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.
*** Display windows and similar glazing are excluded from the U-value check.
N.B.: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air Permeability	Worst acceptable standard	This building
$m^3/(h.m^2)$ at 50 Pa	10	5

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BRUKL Output Document showing the carbon emission footprint

3.9 Visuals



Image showing Integrated Diagnostic Centre entrance

3.9 Visuals



Image showing orthographic view from rear of the building

4.0 Conclusion

4.0 Conclusion

The proposals contained within this application will provide significant improvements to a range of diagnostic services currently offered to the community with a new state of the art Integrated Diagnostic Centre.

Internally, the design prioritises patients' and staff's experiences, from easy access to an efficient scanning service.

The external design has been carefully considered to reflect those ambitions, providing a modern patient-centred diagnostic facility, and one that is a focal point and visual enhancement to the South Tyneside District Hospital site.

5.0 Appendices

5.1 Consilium

Energy Statement
Design Stage Energy Performance Certificate
BRUKL Output Document

5.2 Keystone

Drainage Strategy
Soil Contamination Report

5.3 Vectos

Transport Statement

5.4 Hunter Acoustics

Noise Impact Assessment