CALEDONIAN

HMP FORD - MOJ CAT D EXPANSION

Design & Access Statement

Document Number: 622608-5315-RPS-000-ZZ-RP-Z-0510
Rev: P01
Date: 21.09.2021

MAKING COMPLEX EASY

[redacted]



CONTENTS

Introduction 4

Document Overview 4
Project Details 4
Location 4
Surrounding Context 5

Design Philosophy / Proposals

Architecture 7
Building Type Provision 7
Design Evolution / Stakeholder Engagement 10
Appearance / Materials 11

Civils Design 16
Site Levels & Topographical Information 16
Floor Risk Assessment 17

MEP Design 20
Lighting 20
Photovoltaics 20
Air Source Heat Pumps 21
Ventilation Strategy 21
Plant Room Provision 22

Utilities & Services 24
Existing Underground Services 24
Drainage Strategy 25

Access & Movement Provision 28
External Site Access 28
Internal Access Routes 28
Car Parking Provision 28
Access & Use of the Buildings (DDA Compliance) 29
Access for Maintenance Purposes 29

Ecology 31

Sustainability 33
Management 33
Health & Wellbeing 33
Energy & CO2 Emissions 33
Transport 33
Water Use 33
Materials 34
Waste Management 34
Air Quality 34
Land Use & Ecology 34
Noise 34

INTRODUCTION

INTRODUCTION

Document Overview

This Design and Access Statement has been prepared to support the planning application for the Ministry of Justice Cat D Expansion at HMP Ford.

Project Details

The proposed development involves the addition of the following components to the existing Prison complex: -

- The construction of 2 new modular two-storey accommodation blocks.
- The construction of a single storey storage building (for kitchen dry goods).
- The construction of a single storey storage building (Personal Property Store).
- The construction of a single storey office building for OMU staff.
- The construction of a new car park to provide 80 car parking spaces.

Location

The development lies within the grounds of HMP Ford, to the east and to the west of Ford Road.

The prison complex lies approximately 1km to the east of the town of Yapton approximately 2km to the west of Littlehampton and approximately 4km to the south of Arundel, West Sussex.

An aerial photograph and location plan are included in Figure 1 and Figure 2 below and opposite, which identify the location of the site.

Figure 1: Aerial view of the site and surroundings

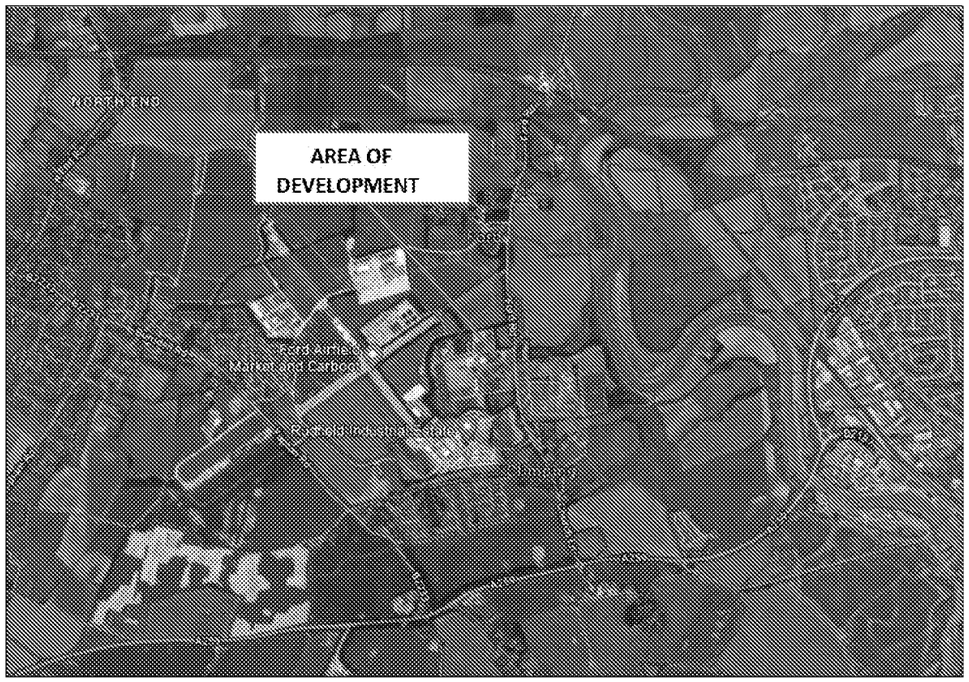
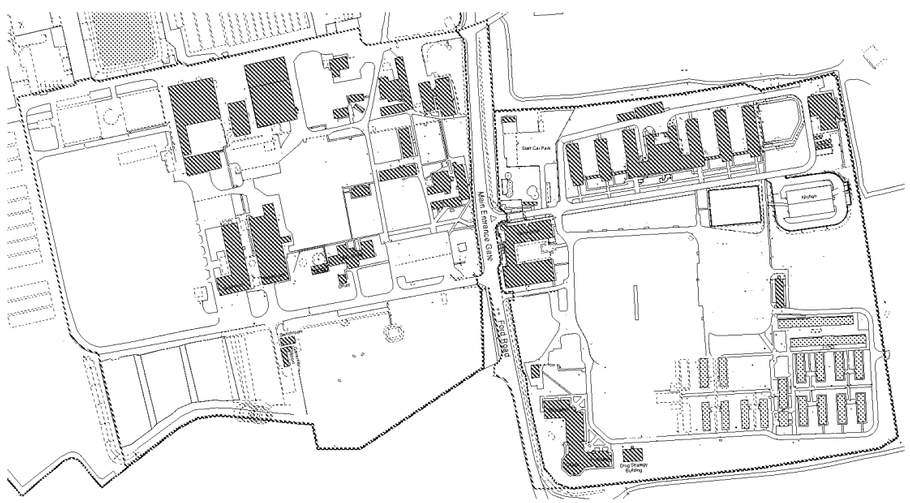


Figure 2: Existing site plan



ARUN DISTRICT COUNCIL F/16/21/PL

INTRODUCTION

Surrounding Context

Immediately to the south of the western area of the HMP Ford complex is a surrounding industrial estate beyond which is an area of residential development (Horsemere Green) with agricultural land beyond.

To the south of the eastern area of the HMP Ford complex is a church and a farm building complex, with agricultural land beyond.

The River Arun lies to the east, with the town of Littlehampton beyond.

To the north lies agricultural land, with residential properties to the east of Ford Road.

To the west lies the Ford Airfield Industrial Estate, with the town of Yapton beyond.

The coastline of the English Channel is situated approximately 1.7km to the south of the site complex.

Figure 3: Aerial view of the site and its surroundings



ARUN DISTRICT COUNCIL F/16/21/PL

DESIGN PHILOSOPHY / PROPOSALS

ARCHITECTURE

ARCHITECTURE

Building Type Provision

Accommodation blocks – 2 no

An open, non-secure residential block for inmates providing the following accommodation:

Ground Floor

26 no standard cell units

2 no accessible cell units with DDA compliant bath and bedroom.

DDA compliant - Communal laundry and drying room.

DDA compliant Kitchenette for prisoner use

Association / hobby room for prisoner use.

DDA compliant staff office and WC

Plant & Hot water storage

First Floor

32 no standard cell units

Communal laundry and drying room.

Kitchenette for prisoner use

Association / hobby room for prisoner use.

Mechanical Plant area

Server room.

Discussions with the MOJ concluded that all DDA compliant accommodation be located on the ground floor only.

Roof Space

The pitched roof provides an insulated service zone between the insulated flat roof of the modular accommodation units (the inner roof) and the insulated pitched standing seam roof (the outer roof). The roof zone has been designed to provide a walkable 'gantry' to create an accessible, walkable service zone for plant and services.

Figure 4: Accommodation blocks GA Plans

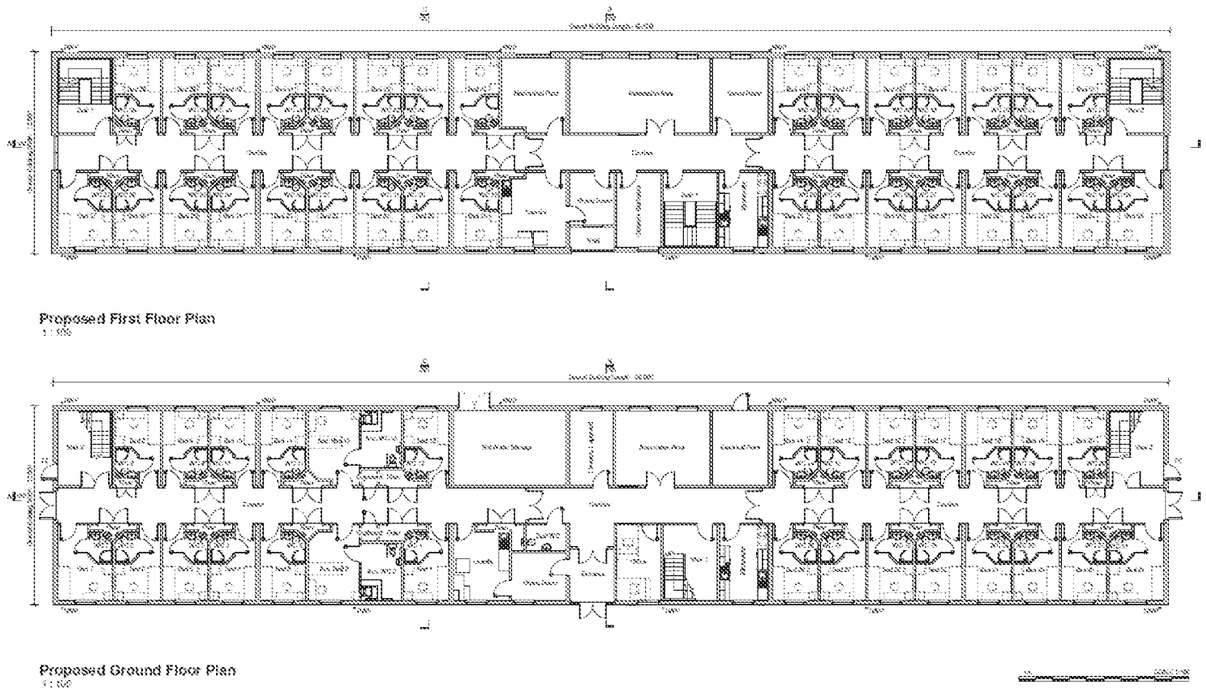
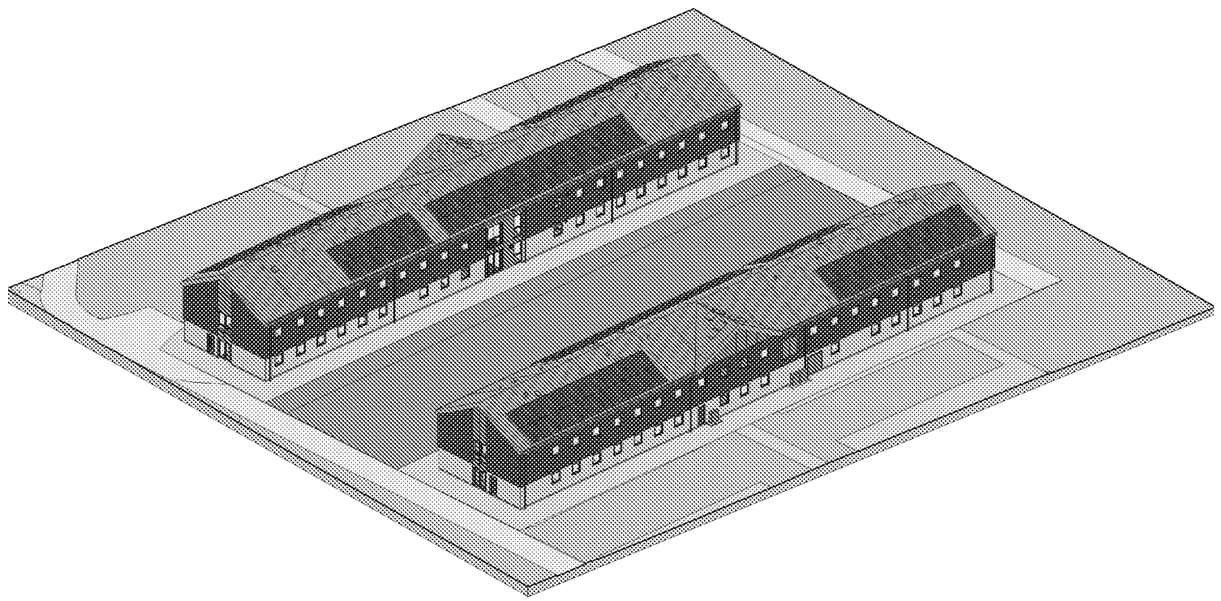


Figure 5: Accommodation blocks 3D View



ARCHITECTURE

Ancillary Buildings

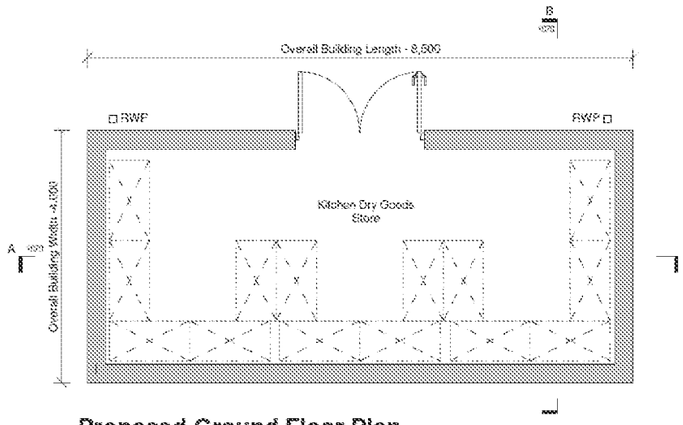
As a result of the increase in numbers of inmates provided by the 2 new accommodation blocks certain ancillary buildings require additional provision to provide for the additional increase in capacity.

Kitchen dry goods store

A single storey mono pitched building located on the embankment area to the SE of the existing kitchen. The building is to provide additional dry goods storage provision for 120 covers.

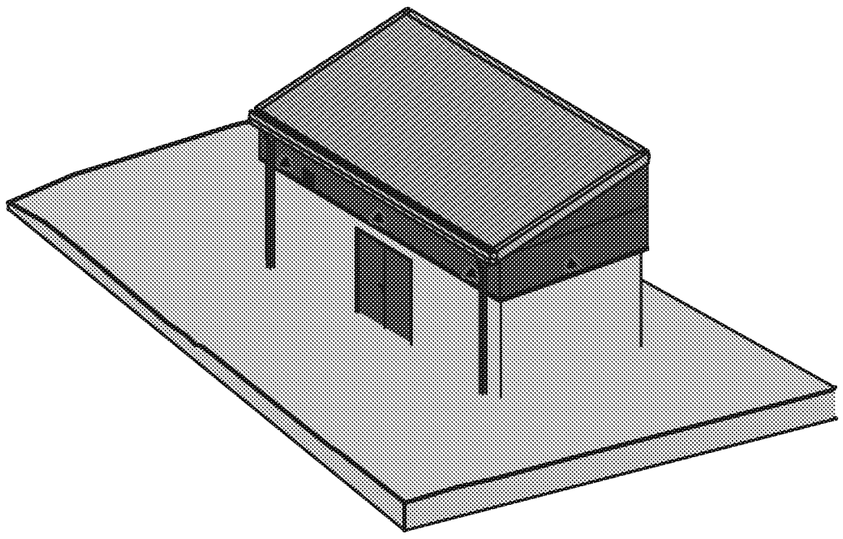
Standard catering style racking is provided 3 units high. In order to maximise the storage provision, and due to there been no requirement for administration activities, the façade is windowless.

Figure 6: Kitchen Dry Goods GA Plan



Proposed Ground Floor Plan
1 : 50

Figure 7: Kitchen Dry Goods 3D View

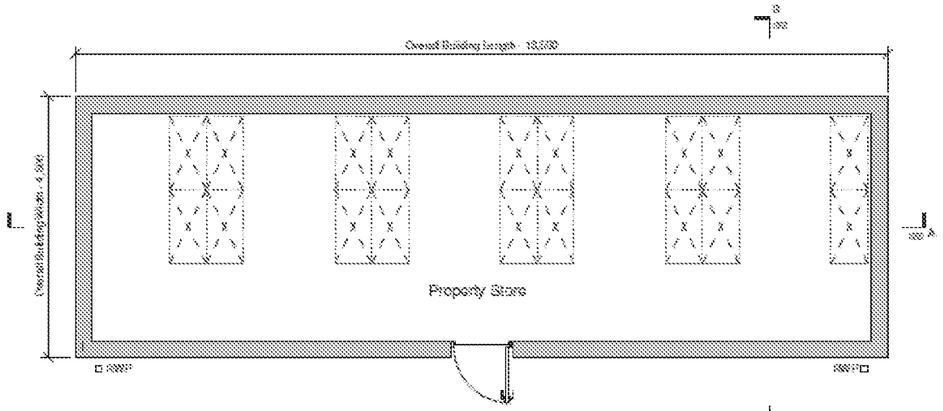


Personal property store single storey

A single storey modular building to serve as additional storage for inmates' personal possessions. The building has been designed as a storage facility and is fitted with racking 5 units high. In order to maximise the storage provision, and due to there been no requirement for administration activities, the façade is windowless.

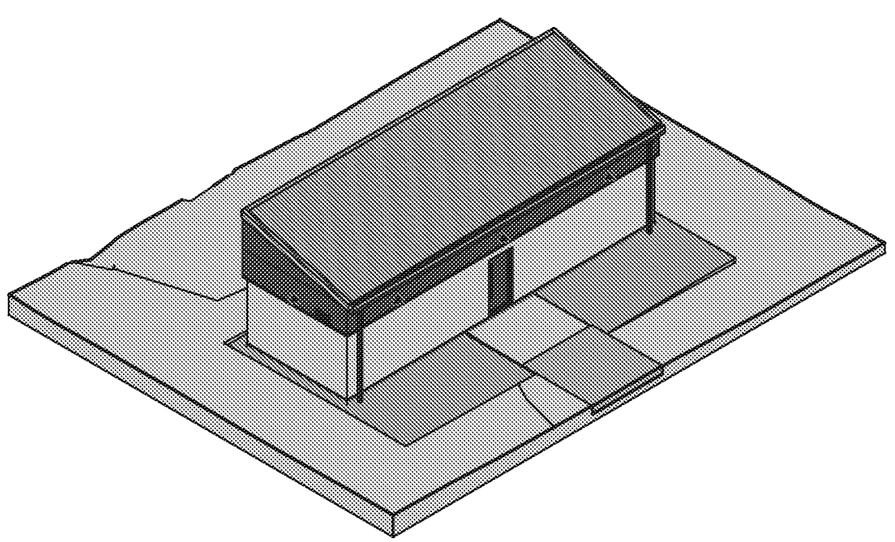
The building is located on vacant land opposite the main prison reception facility.

Figure 8: Personal Property Store GA Plan



Proposed Ground Floor Plan
1 : 50

Figure 9: Personal Property Store 3D View



ARCHITECTURE

OMU Office

Provision of additional office space to the existing OMU building. The building is a separate structure with a covered walkway connecting to the existing office. Accommodation comprises of the following:

- 4 Nr. Interview rooms 9m² (3 Nr. seats to 2 Nr. desks) 4 Nr.
- Offices 4.5m² per occupant (1 desk 1 seat) (assumed 12 people)
- 1 Nr. Group room 20.25m² (2 desks 8 seats)
- 1 Nr. accessible Male and female WC's:
- Tea station to include circulation space

Figure 10: OMU Office GA Plan

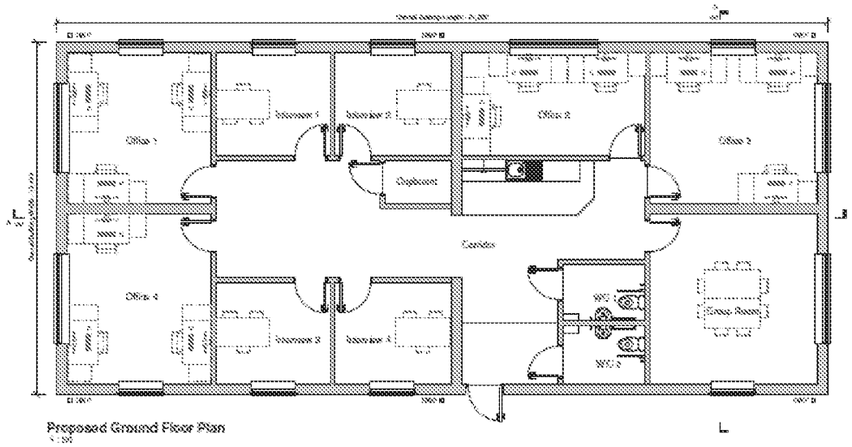
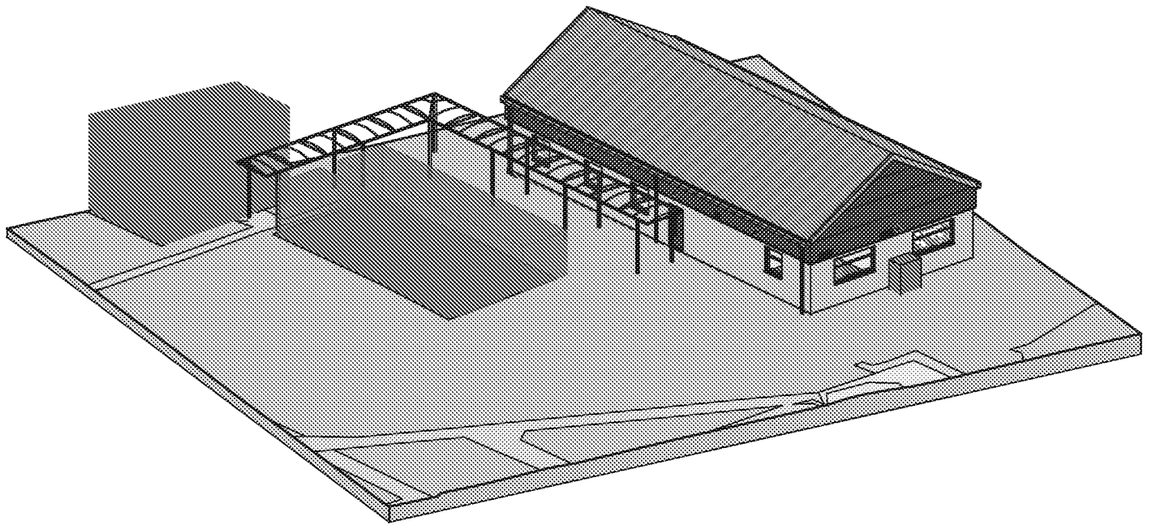


Figure 11: OMU Office 3D View



New car park to provide 80 car parking spaces.

The provision of 80 additional car park spaces at the rear of the existing car park. This will provide a large, safe and secure area for staff parking and will free up the existing staff car park for dedicated visitor parking. Both areas will be served by the established access roads.

Figure 12: Proposed Car Park



ARCHITECTURE

Design Evolution & Stakeholder Engagement

Throughout RIBA 2, design development has been managed and recorded by a series of Client engagement meetings attended by the MOJ sponsors and building users, MOJ Technical Advisors and the design teams at the following key decision-making stages:

- Confirmation of full scope of works.
- Confirmation of building locations and orientation of buildings.
- Agree standardization of typical room layouts.
- Finalize a frozen design.
- Agree MEP systems and integration distribution routing and access strategies.
- Review final proposals.

Project sponsors and Stakeholders consulted include the following:

Mace Technical advisory Team

Kate McNulty, Bharat Pankhania, Aleksandra Sliwa, Roger Ceccarelli, Caroline Cochrane, Aleksandra Sliwa, Eduardo Souto, Marija Milosevic, Bakani Bango, Gary Cullings, Chinedu Ahiauzu

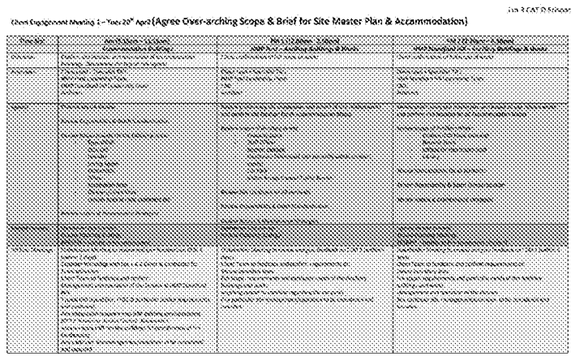
MoJ Project Sponsors & Operational Team

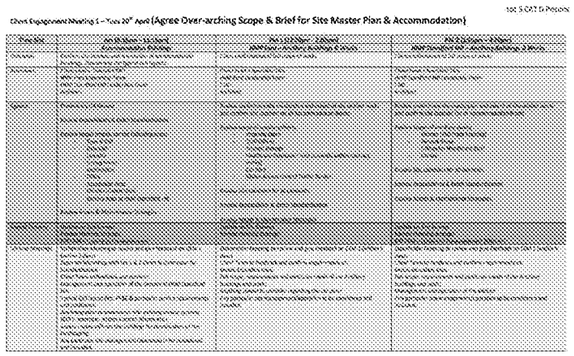
Stephen Sumitomo-Wyatt, Dawn Mauldon, Alistair Davidson, Paul Rogers, Ramzi Bahrawy, Melody Thomas, Andrew Hudson, Sarah Beckingham, Phil Schoenenberger, Samantha Walsgrove, Pauline Womack, Abu Nazir, Gilment Ballhysa, Kamlesh Dass, Chris Ball

Due to COVID restrictions, consultation has taken place via Microsoft teams and the use of an interactive screen to demonstrate design development, prepare sketches and note all Client commentary. Meetings have been held weekly with all comments recorded for auditable purposes.

The examples below demonstrate how these meetings were facilitated, the multidisciplinary design presented, and comments captured. In addition, all relevant RFIs to enable development were recorded and presented to the wider team to ensure that all Employer requirements were discussed, agreed and incorporated.

Figure 13: Examples of the CEM programmes



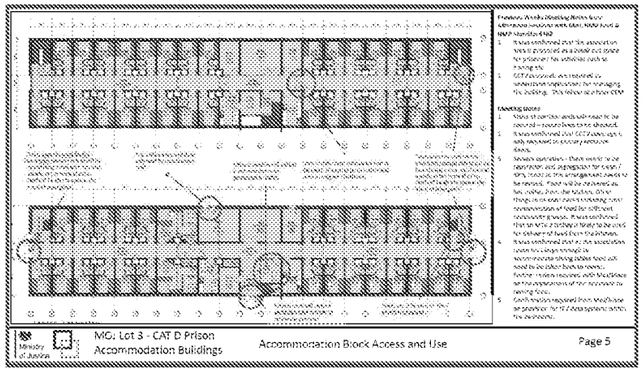


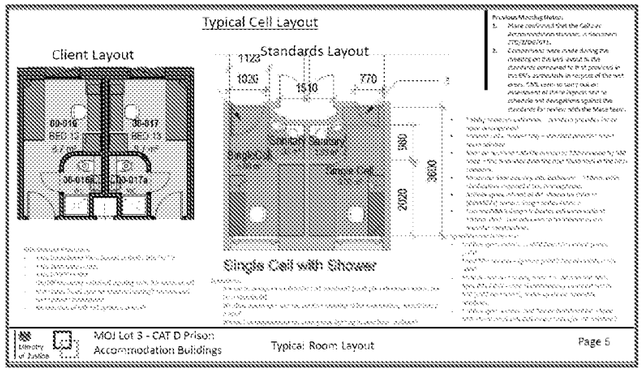
Lot 3 CAT D Prisons

Client Engagement Meeting 7 – Tues 1st June **(Agreed Finishes)**

Time Slot	Am (9:15am – 11:15am)	PM 1 (12:00pm – 2:00pm)	PM 2 (2:30pm – 4:30pm)
	Accommodation Buildings	*HMP Ford – Ancillary Buildings & Works*	*HMP Standford Hill – Ancillary Buildings & Works*
Outcomes	Review finalised scheme proposals	Review finalised scheme proposals	Review finalised scheme proposals
Attendees	Client Lead + Specialist TA's HMP Ford Leadership Team HMP Standford Hill Leadership Team Architect MEP Structural Engineer	Client Lead + Specialist TA's HMP Ford Leadership Team CNL Architect MEP Structural Engineer	Client Lead + Specialist TA's HMP Standford Hill Leadership Team CNL Architect MEP Structural Engineer
Agenda	Review of Stakeholder feedback and updates from CEM 6 Confirm design details Cladding & Façade Details Roof RWP's Internal Finishes Further Review Repeatability & Batch Standardisation	Review of Stakeholder feedback and updates from CEM 6 Confirm developed design details Cladding & Façade Details Roof RWP's Internal Finishes Further Review Repeatability & Batch Standardisation	Review of Stakeholder feedback and updates from CEM 6 Confirm developed design details Cladding & Façade Details Roof RWP's Internal Finishes Further Review Repeatability & Batch Standardisation
Project Delivery	Update on Site Surveys Review Progress on Planning Strategy Review Key Design Targets/Programme RIBA Plan – Update to Pre Application	Update on Site Surveys Review Progress on Planning Strategy Review Key Design Targets/Programme RIBA Plan – Update to Pre Application (Written)	Update on Site Surveys Review Progress on Planning Strategy Review Key Design Targets/Programme RIBA Plan – Update to Pre Application (Written)
Off Line Meetings	Stakeholder Meeting to review and give feedback on CEM 7 (within 5 days)	Stakeholder Meeting to review and give feedback on CEM 7 (within 5 days)	Stakeholder Meeting to review and give feedback on CEM 7 (within 5 days)

Figure 14: Examples of the CEM Stakeholder interaction





ARCHITECTURE

Appearance & Materials

Offsite fabricated modular construction

All buildings are to comprise factory produced, pre engineered modular units that are delivered to site and assembled as large volumetric components to form a self-supporting structure, supported on a prepared foundation/ substructure designed to suit local ground conditions.

The structure has been designed to support an external cladding system comprising of brick slips, ground to first floor and insulated cladding first floor to eaves.

Building services will be integrated during the factory build , including small power and data points, cable trays, ducts, wall hung radiators and pipework

Integrated shower and wet room modules will be integrated into the cell units of the accommodation blocks, incorporating completely water sealed wall, floor and ceiling linings, factory applied floor and wall finishes and integrated small power, drainage and hot & cold-water services in accessible ducts.

External walls

The external walls of the modular units are to be clad as follows:

Ground to First Floor

A brick tile cladding system, comprising longitudinally interlocking steel backing sections, profiled to allow 15mm thick brick tiles to be easily clipped into it. Once the brick tiles have been installed and adjusted, the joints will be pointed.

First Floor to Eaves

A composite polyester powder coated (PPC) aluminium panelling system with a flat outer sheet and recessed top hat joints. The outer (flat) face of the composite panels is to project 100mm from the face of the brick façade below. An insulated PPC aluminium flashing will demark the junction between the brickwork and the projecting insulated cladding. No combustible products have been incorporated within the insulated external façade system.

The external wall construction is to achieve an air tightness to comply with the current requirements of Approved Document L of the Building Regulations, and any enhanced standard required as part of the BREEAM scoring.

Removeable Louvres to accommodation block Elevations and Roof Dormer

Double banked, twin flow, polyester powder coated (PPC) extruded louvres, to provide ventilation to ground, first floor and roof level plant areas where indicated on the elevation drawings. The louvres have been designed to be demountable to facilitate access for the servicing and replacement of mechanical plant.

Figure 15: Brick facade - buff brick slips

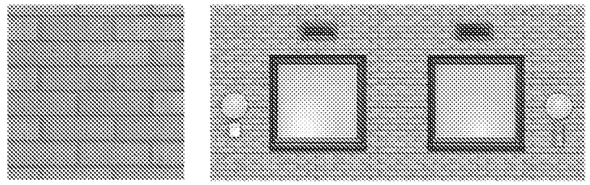


Figure 16: Cladding colour swatches selected by MoJ

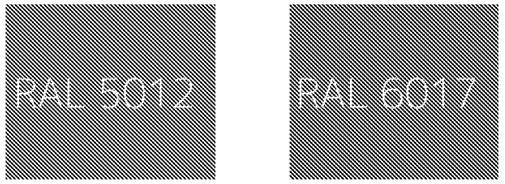
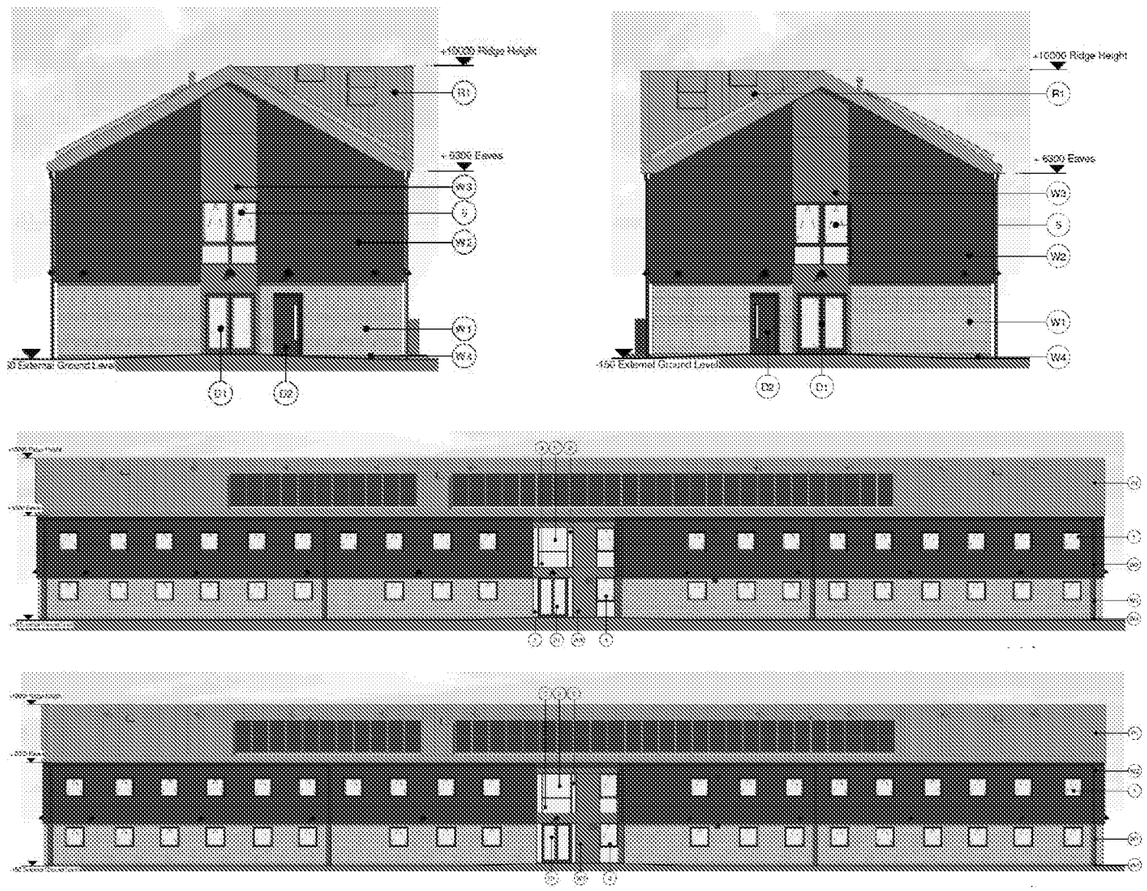


Figure 17: Accommodation block elevations



ARCHITECTURE

Windows

External windows are to be manufactured in aluminium alloy. The finish is to be polyester powder coated (PPC). All powder coated finishes to be to a marine grade, to a minimum of 40 microns and 50 microns on average, to withstand the corrosive atmosphere and salts in a coastal environment. Windows are to be double glazed and thermally broken, complete with security fastenings, internally beaded, window restrictors, trickle vents, and all fittings and accessories as required by Building Regulations. All opening lights to be restricted to 300mm to prevent falls from heights at high level and objects being thrown from windows at all levels. All new windows to meet 'Secured by Design' standards.

External doors

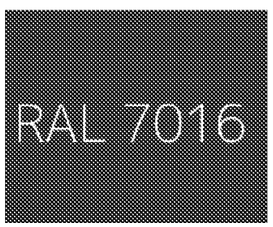
New external doors to be double glazed, manufactured in aluminium alloy. The finish of external doors is to be polyester powder coated (PPC). All powder coated finishes to be to a marine grade, to a minimum of 40 microns and 50 microns on average, to withstand the corrosive atmosphere and salts in a coastal environment.

External doors are to incorporate internally beaded, double glazed units. Framing to incorporate polyamide thermal breaks and seals to jambs, heads and thresholds to be to a heavy-duty rating. Thresholds to be low profile, mill finished aluminium, to provide level access from inside to outside, to comply with Approved Document M of the building regulations.

Louvred doors

Louvred doors to plant rooms to be purposed designed / manufactured to incorporate double banked, twin flow, polyester powder coated (PPC) extruded louvres, to provide ventilation to ground floor plant rooms. Pitch of louvre and free open area will accord with MEPH design / calculation requirements. The louvre blades are to extend the full width of the door, to give a frameless look. Thresholds to plant room doors to be level, utilising durable durbar plate tread, as a suitably robust material for the wheeling of plant and equipment over.

Figure 18: External Doors, Windows & Rainwater Pipes colour swatch



Roofs

Accommodation building & OMU Building

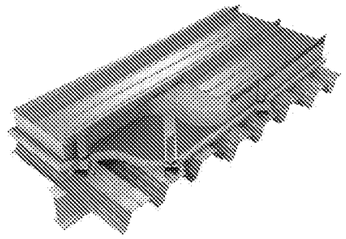
A pitched roof has been designed tor the main accommodation buildings. The make-up of both the roofing types from outside to inside is to be a built-up insulated profiled metal system comprising polyester powder coated profiled aluminium standing seam, insulation, a vapour control layer and aluminium trapezoidal structural liner sheeting on a steel frame. The roof pitches are to be 28 degrees to facilitate transportation of the modules, and the outer standing seam sheeting is to suit the installation of photovoltaic (PV) panel installations. Acoustic insulation will be incorporated within the roof build up to address rain drumming noise.

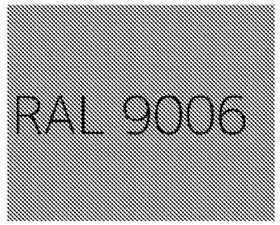
The pitched roof provides an insulated service zone between the insulated flat roof of the modular accommodation units (the inner roof) and the insulated pitched standing seam roof (the outer roof). The roof trusses have been designed to provide a walkable 'gantry' to create an accessible, walkable service zone for plant and services.

Ancillary Buildings (dry goods & property stores)

Of similar construction to the accommodation blocks but of a mono pitch construction.

Figure 19: Standing seam roof





Eaves, Fascia, verges

Combined cladding to soffits, fascia, verges and barge boards to comprise polyester powder coated (PPC) aluminium panelling. All fascia and soffit joints to be stepped, lapped and butt jointed (where appropriate) to create a seamless finish.

All powder coated finishes to be to a marine grade, to a minimum of 40 microns and 50 microns on average, to withstand the corrosive atmosphere and salts in a coastal environment.

ARUN DISTRICT COUNCIL F/16/21/PL

ARCHITECTURE

Rainwater pipework and guttering

Rainwater pipes and guttering are to be polyester powder coated (PPC) aluminium. Gutters are to comprise shaped box gutters, incorporating a bevelled front face. Rainwater pipes to be square aluminium downpipes with internal spigots for flush jointing. Stand-off brackets to be provided to suit projecting first floor cladding. All powder coated finishes to be to a marine grade, to a minimum of 40 microns and 50 microns on average, to withstand the corrosive atmosphere and salts in a coastal environment.

Internal Finishes

Internal walls

Internal walls/partitions to be metal framed walls of the off-site accommodation modules with 2 layers of Siniat board provide high impact resistance and to provide a severe duty rating.

All internal finishes are to receive a washable severe duty decorative paint finish. Wall colours will contrast visually with the floor and ceiling.

All internal partitions will satisfy all fire resistant, thermal, acoustic and structural performance etc. as required by the MOJ and relevant statutory regulations.

Internal walls and partitions to incorporate full height / width plywood patressing, to allow for wall hung fittings (e.g. services, notice boards, shelves, cupboards, blinds, kitchen units etc...). Patressing to be located in en-suite bathrooms to allow for grab handles to toilet and shower area to accommodate ambulant disabled users.

Integrated shower and wet room modules - tiled finish

WCs, Storerooms, Cleaners Stores, Laundry Rooms, Drying Rooms - Ceramic tiled splash backs to wash basins. A washable, humidity rated, severe duty rated decorative emulsion paint finish to plastered finishes.

Cell bedrooms - Washable, severe duty rated decorative emulsion paint finish to plastered finishes.

Corridors, Circulation Spaces, Stairwells, Entrance Lobbies - Washable, severe duty rated decorative emulsion paint finish to plastered finishes.

Figure 20: Cell 3D view

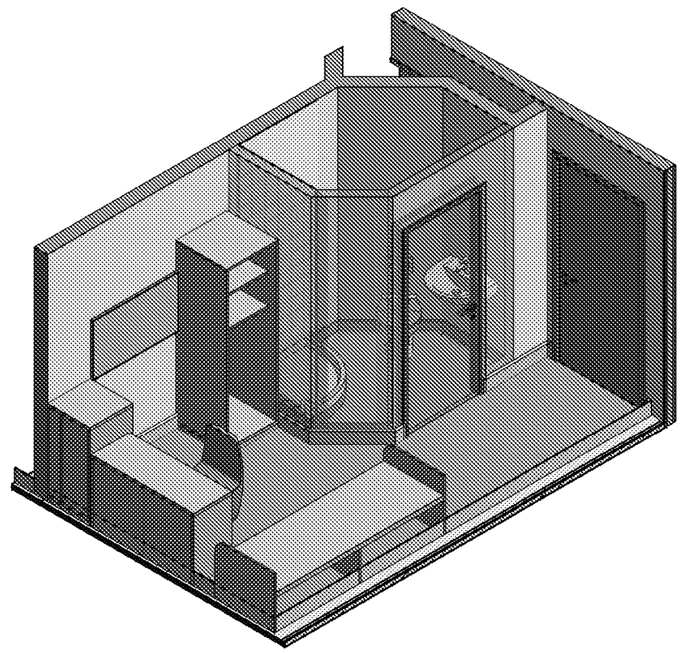
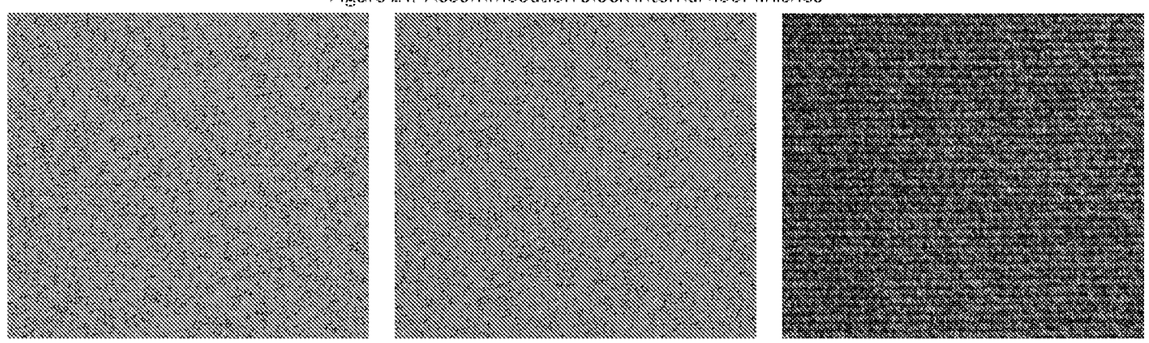


Figure 21: Accommodation block internal floor finishes



Polysafe Standard PUR
Colour: 4110 – Alpine Green

Polysafe Standard PUR
Colour: 4130 – Artic Blue

Heckmondwike's Supacord
Colour: Moonlight

ARCHITECTURE

Floor Finishes

Floor finishes to be in line with the MOJ Room Data Sheets.

Shower Rooms & WC's Heavy-duty nonslip vinyl. Durability-Domestic 23 (heavy use). Slip resistance value-36minimum, barefoot slip resistance category B 150mm coved skirting, acoustic underlay.

Storerooms, Cleaners Stores, Laundry Rooms, Drying Rooms - Heavy-duty non slip vinyl. Durability - Commercial 33 (Heavy use), R11 SRV 36 or greater 150mm coved skirting, acoustic underlay

Corridors, Circulation Spaces, Stairwells - Heavy duty fibre bonded carpet tiles. Durability - Commercial 34 (heavy duty) on suitable acoustic underlay.

Bedrooms - Heavy duty -Durability - Domestic 22 (Medium use) resilient acoustic layer to be placed either below the vinyl.

Entrance Areas & Lobbies - 8mm thick ribbed heavy-duty barrier matting, on suitable acoustic underlay.

Ceiling Finishes

Ceilings manufactured as a modular panel, lined in plasterboard in bedrooms modules and underdrawn with a lay in grid suspended ceiling system in the corridors and circulation spaces, to create a service zone for ventilation ductwork and cable trays.

Ceilings to meet the acoustic and fire requirements highlighted in the applicable sections within this document.

Ceilings in all toilets, kitchens, laundry and drying rooms to be moisture resistant.

MOJ Design Standards

The design has been developed with reference to the following:

- Cellular Accommodation – STD/Z/DG/071
- Core requirements for all projects - STD/Z/DG/053
- Custodial Living accommodation - STD/Z/DG/080
- Physical and Special Security - STD/Z/DG/068

Figure 22: Accommodation block internal finishes drawing

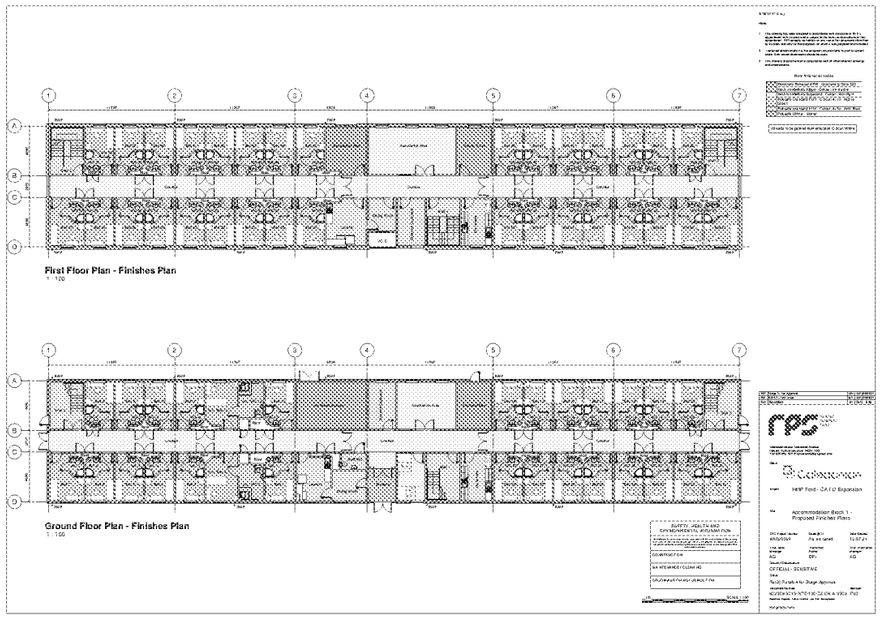
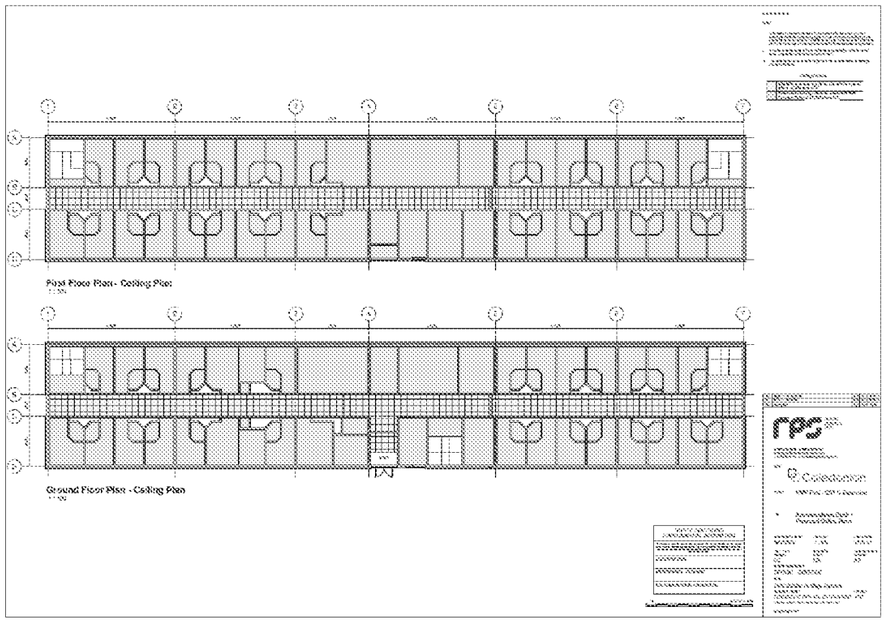


Figure 23: Accommodation block ceiling finishes drawing



DESIGN PHILOSOPHY / PROPOSALS

CIVILS DESIGN

CIVILS DESIGN

Site Levels & Topography

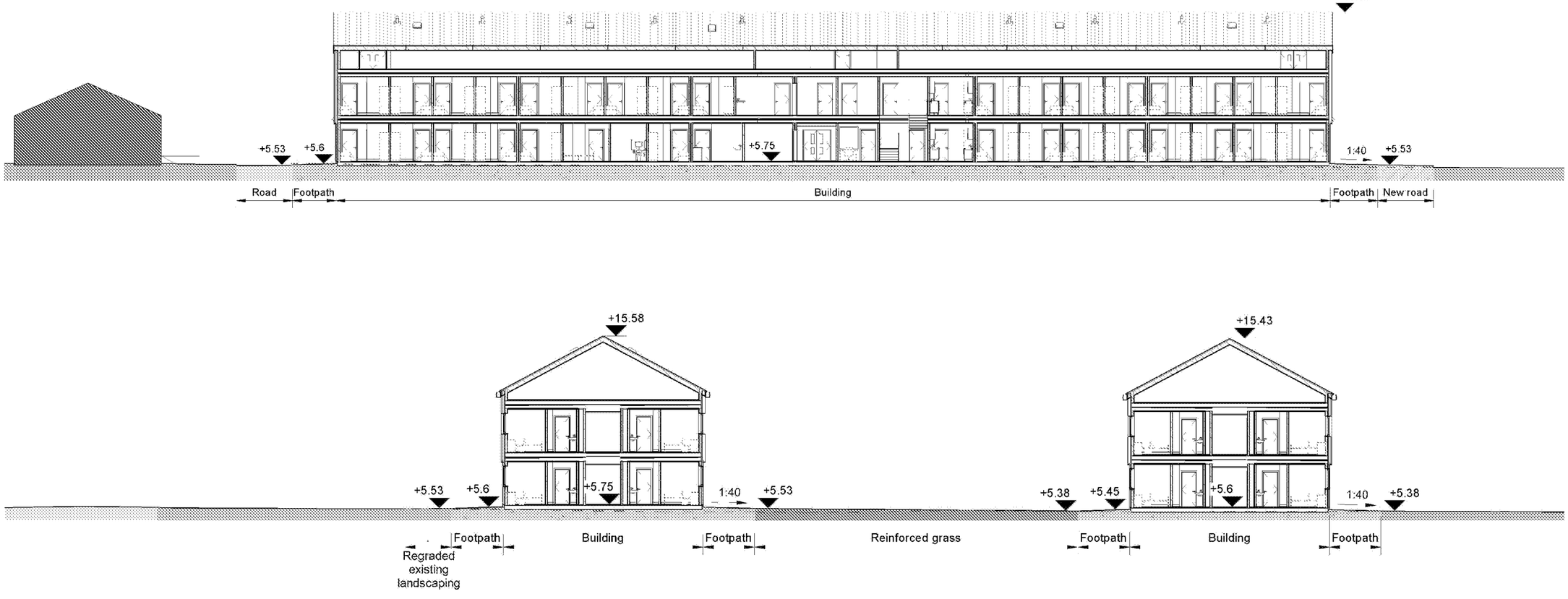
HMP Ford is split into two different sites due to the site being bisected by a public highway.

The eastern site has a crossfall from the southwest down to northeast. The site falls from the main entrance at the north end of the site towards the northeast as it gets closer to the River Arun and rises up to the southwest part of the site. The eastern site has a height differential of ~3m, with the north eastern side ~1m below the highway level and the south western side ~2m above highway level.

The western half of the site has a gentle gradient up from the public highway with an overall height difference of ~2.5m above highway level.

- The new accommodation blocks are to be located on the eastern site at the north western side ~2m above the highway level. There is a minimal fall to the area around the accommodation blocks resulting in a gentle gradient between the two buildings.
- The property store located to the north of the entrance ~0.5m above the highway level in an area with minimal level difference.
- The dry goods store is to the north eastern side of the site on a raised embankment to raise the building out of the flood plain. The top of which is ~0.5m above the highway level.
- The OMU is situated on the western part of the site ~2m above the highway level in an area with minimal level difference.

Figure 24 & 25: Accommodation block site sections



CIVILS DESIGN

Floor Risk Assessment

Flood Zone

The Environment Agency Flood Map (Figure 26) confirms that the majority of the site is shown to lie in Flood Zone 1, (low probability of flooding), with a less than 1 in 1000 annual probability of flooding in any year.
One small area of site is shown to lie in Flood Zone 3, (high probability of flooding), comprising land assessed as having a 1 in 100 or greater annual probability of river flooding or a 1 in 200 year or greater annual probability of flooding from the sea.

Fluvial Flooding

The River Arun, which is the main potential source of fluvial flooding in the region is located to the east of the development site, lying approximately 300m from the new development at it's nearest location.
There is a small open watercourse located to the north and west of the site which lies approximately 1.8km from the development at it's nearest location.
The Environment Agency map dated July 2021 (Figure 27) indicates that the areas of the new development lie in an area where the risk of surface water flooding to the development is 'very low'.

The risk of flooding from this potential flood source is therefore considered to be low and acceptable.

Flooding from Open Drainage Ditches

There are a number of open drainage ditches in the vicinity of the development which drain the low-lying land towards the River Arun and the coastline.
Due to the scale of the ditches and their distance from the areas of new development, they are not considered to pose a risk of flooding to the development.

The risk of flooding from this potential flood source is therefore considered to be low and acceptable.

Flood Risk from Existing Water Mains

There are existing water mains located within the vicinity of the development site serving the existing prison buildings.
There are no known issues regarding the condition of any such water mains.

The risk of flooding to the development from this potential flood source is low and acceptable.

Figure 26 : Environment Agency Flood Map for Planning dated July 2021

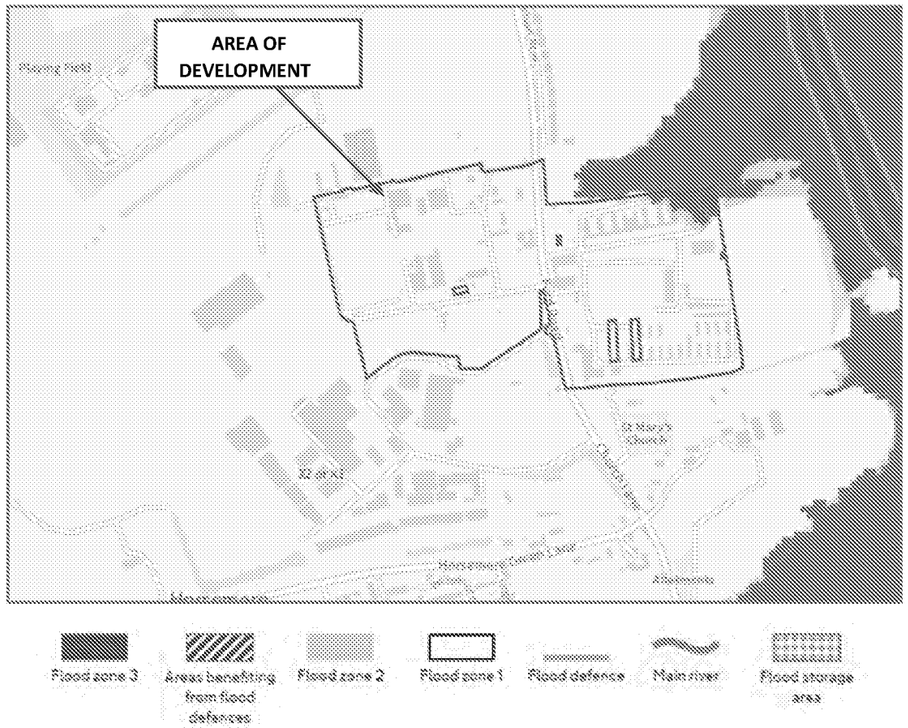
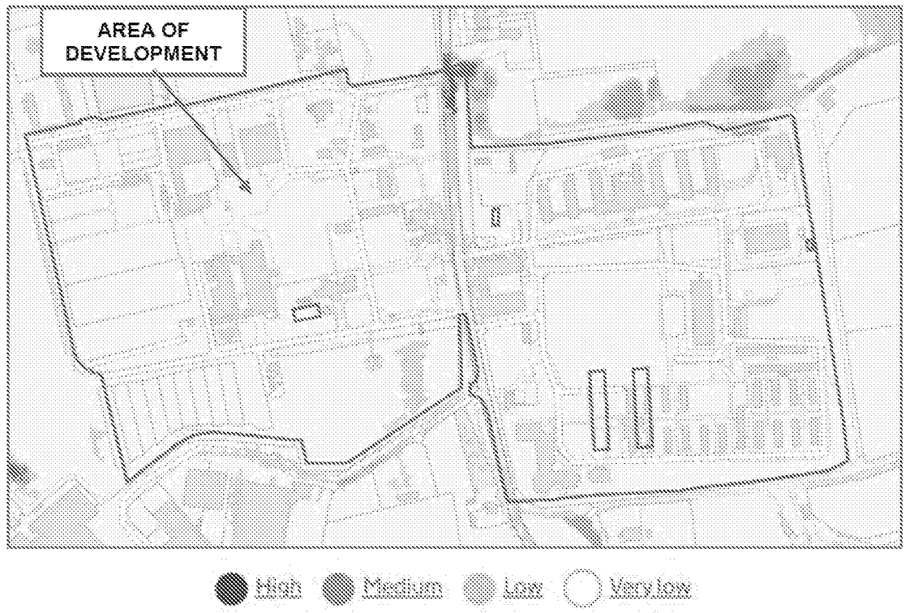


Figure 27 : Environment Agency map dated July 2021 showing the Extent of Flooding from Surface Water



Existing Drainage Services

There are existing drainage services located within the vicinity of the development site serving the existing prison buildings.
There are no known issues regarding the condition or capacity of any such drainage services.

The risk of flooding to the development from this potential flood source is low and acceptable.

Proposed Drainage Services

The risk of flooding to the development from this potential flood source is low and acceptable.

Groundwater Flooding

Groundwater flooding can occur when the sub-surface water levels are high and emerge above ground level.

It is not anticipated that the construction works will involve deep excavation works and consequently the risk to the development from this potential flood source is considered to be low and acceptable.

Flood Risk from Reservoirs, Canals and Other Artificial Sources

A study of the local area shows that there are a number of small ponds and fishing lakes in the local area. However, due to their small scale and distance from the areas of new development, they are not considered to pose any risk of flooding to the development.

Flood mitigation measures

In conclusion:

- The majority of the development is shown to lie within an area at 'low probability of flooding' on the Environment Agency maps.
- One small area of the site is shown to lie in Flood Zone 2 (medium probability of flooding).
- The development is not shown to be at risk of flooding from surface water or from reservoir flooding on the Environment Agency maps.
- Due to the proposed method of construction the new modular buildings will be elevated above the existing ground levels, which will prevent the risk of flood waters or any minor overland surface water flooding entering the buildings.
- There should be no requirement to incorporate any flood resilient construction methods into the new buildings.
- Access routes are shown to lie in Flood Zone 1 (low probability of flooding) and consequently access to the development would not be affected during a flood situation.

The findings of the report have not identified any other specific flood mitigation measures which need to be provided.

Summary

The majority of the site falls in Flood Zone 1 (low probability of flooding) on the Environment Agency maps, with one small area shown to lie in Flood Zone 2 (medium probability of flooding).
The prepared flood risk report has considered potential sources of flooding to the site, including groundwater, surface water, existing sewers, water mains and other artificial sources.
However, overall, this report demonstrates that the flood risk to the site is reasonable and acceptable.

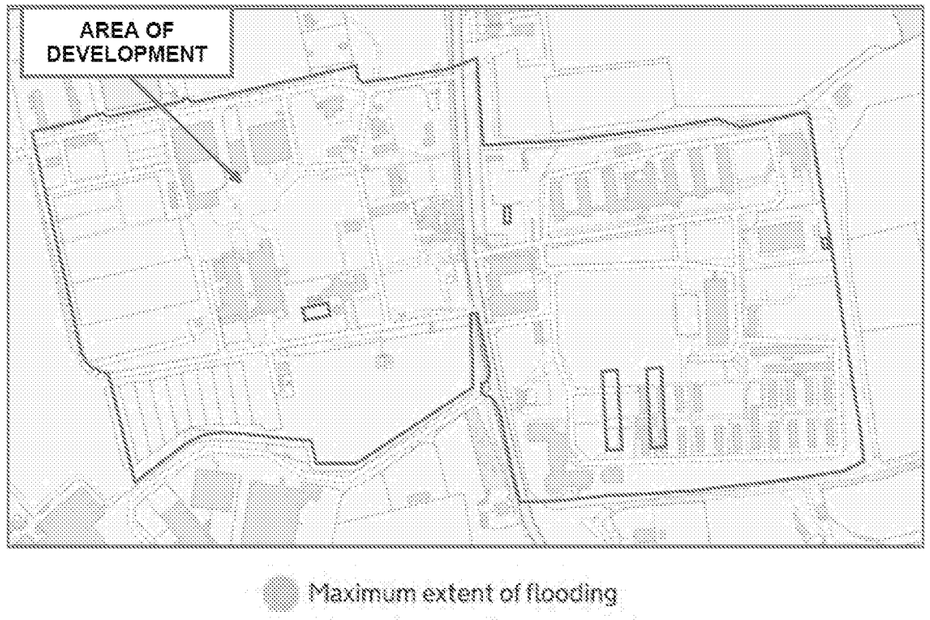
The report also demonstrates that the site can be suitably drained, with the development being designed to the required standards.

Surface water will be attenuated by restricting the discharge to an agreed discharge rate and the required volume of storage provided on site. The outfall will be discharged to the existing site drainage network via gravity outfalls and will not increase the overall discharge rate from the existing prison complex.

Foul water will be discharged to the public sewer network via existing site connections.

To conclude, no significant flood risk to the development has been identified.

Figure 28: Environment Agency map dated July 2021 showing the Extent of Flooding from Reservoirs



DESIGN PHILOSOPHY / PROPOSALS

MEP DESIGN

MEP DESIGN

Lighting

General Approach

A lighting installation will be provided generally in accordance with the Estates Directorate Technical for low voltage installations and relevant CIBSE lighting guidance.

Lighting will be LED type.

Lighting control will be provided comprising local area presence detectors, Daylight sensing and manual switches as appropriate for the space.

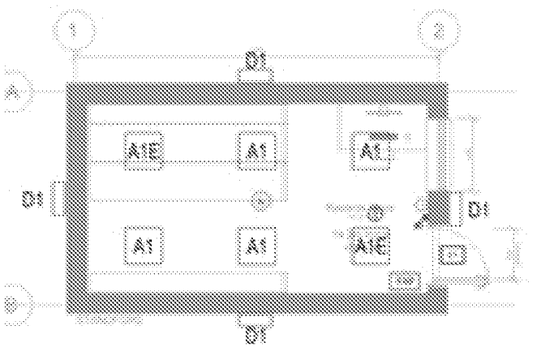
Typically, all occupied spaces such as offices, interview rooms, prisoner cells etc will have local manual switches and absence detection i.e. MAN ON / AUTO OFF. Where glazing is present daylight sensing/compensation will be provided to utilise natural light.

Transient spaces such as general circulation routes, WC's etc will have presence detection i.e. AUTO ON /AUTO OFF.

Emergency Lighting

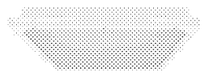
Emergency lighting to be provided to comply with BS 5266-1 with local manual testing facilities.

Figure 29: Record Store lighting layout

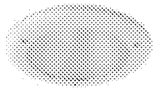


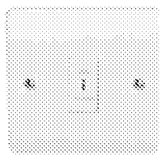
RECORD STORE - STANDFORD HILL - LIGHTING & FIRE ALARM LAYOUT
1:50

Figure 30: Example light fittings









Photovoltaics

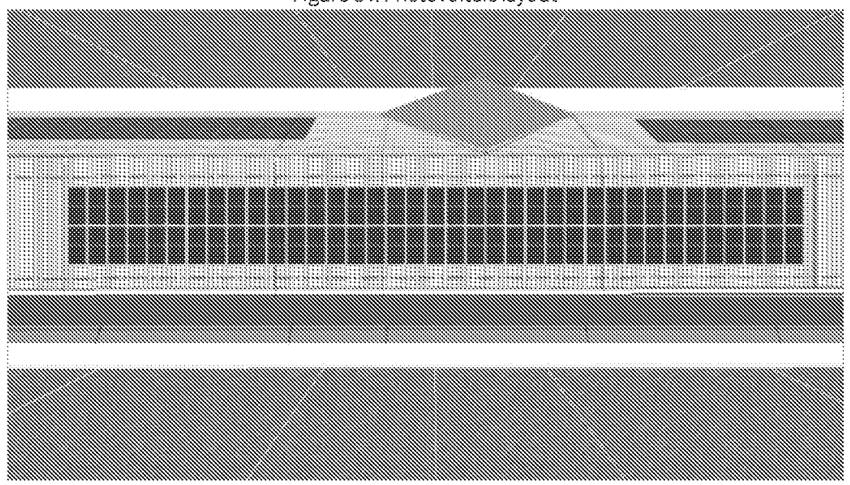
The PV system is to be installed on each accommodation building roof and wired to the PV DC inverters located in the battery room at roof level.

Each system shall provide a minimum 34kWp output and the LV distribution infrastructure shall be designed to withstand 50kW of power plus 25% additional capacity.

The electricity generated by the photovoltaic system shall be fed into the accommodations switchboard via a dedicated distribution board located the battery room.

The photovoltaic system shall be grid connected to enable excess energy to be exported to the grid at instances when it cannot be used by the building. Additionally, the excess power shall be used to power the PV's batteries.

Figure 31: Photovoltaic layout



ARUN DISTRICT COUNCIL F/16/21/PL

MEP DESIGN

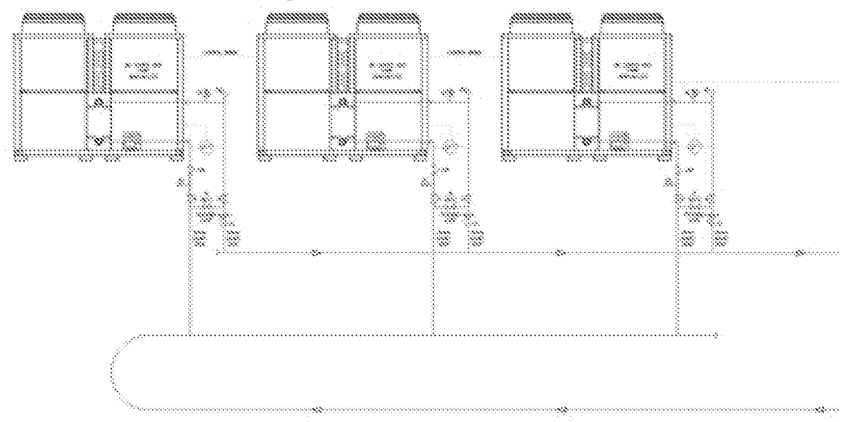
Air Source Heat Pumps

Air Source Heat Pumps (ASHPs) are to be installed for all space heating and domestic hot water generation, delivering a low carbon heating and hot water solution via a renewable technology to the Accommodation Blocks.

The Governments Renewable Heat Incentive (RHI) scheme and associated guidance includes the use of ASHP, for heating purposes, as a renewable source of energy. As the electrical grid has been decarbonising the use of ASHP will start to increase substantially, and as such this is deemed suitable for inclusion to provide heating and hot water generation for this scheme.

No fossil fuel is to be employed in these all-electric buildings, offering the opportunity for all energy to be via low carbon electricity sources.

Figure 32: Air Source Heat Pumps



Ventilation

Accommodation Blocks

Cell en-suites are to have independent ducted extract systems via roof mounted extract fans. Control will be via the BMS. Bedrooms will be naturally ventilated via openable windows.

Laundry rooms at ground and first floor will be serviced via a packaged roof mounted heat recovery unit controlled via the local light switch. Supply air will be ducted into the roof via wall mounted grille c/w fire damper, extract air will then be transferred via transfer grille to drying room where a ducted extract with wall mounted grille will remove air back to MVHR unit. Also, a dedicated 250dia exhaust duct for connection to commercial dryers will be provided at high level and rise to atmosphere.

Ground and first floor kitchenettes to the accommodation blocks are to have a wall mounted inline kitchen extract fan directly connected to the external air. Control of the system will be via local PIR.

The Office to the ground floor will be naturally ventilated via openable windows. The First-floor cleaner's cupboard to have wall mounted inline extract fan directly to outside. Control of the system will be via local light switch.

Property Store & Kitchen Dry Goods Store

The Property store & kitchen dry goods store are to be provided with dedicated inline extract fans ducted too outside. Extract rate based on 2 ACH.

OMU Office

The OMU office ventilation will be provided by 2No MVHR units mounted within the ceiling void to provide tempered outside air to air conditioning units. Ventilation rates based on 10 l/s/p. Control of the system via local PIR. Extract fan provided to pick up two WCs.

ARUN DISTRICT COUNCIL F/16/21/PL

MEP DESIGN

Plant Room Provision

Ground Floor

The Ground floor plantroom will provide for a new 6000 Litre potable water storage tank with cold water booster set for water distribution around the accommodation block. Mechanical control panels will also be situated within water tank room.

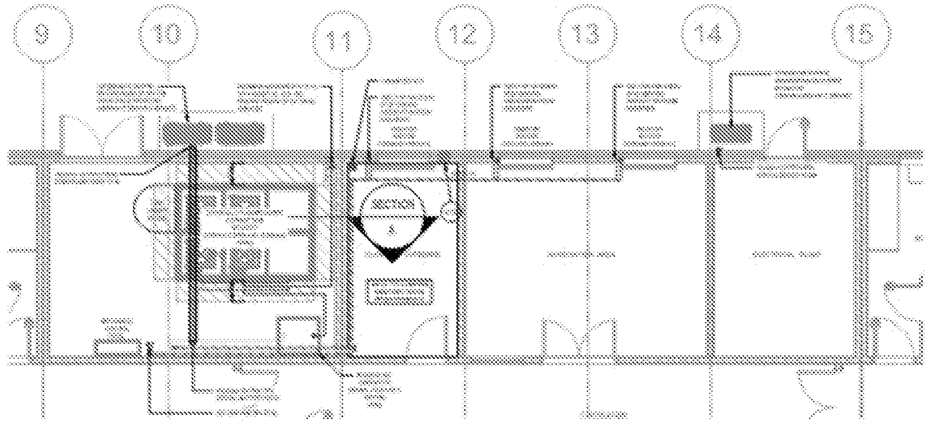
First Floor

At first floor, Domestic hot water calorifiers and plate heat exchanger packaged skid will be provided. Hate exchangers will be fed by LTHW pipework dropping from Air source heat pumps at roof level. Domestic how water flow and return pipework will then be fed around accommodation block.

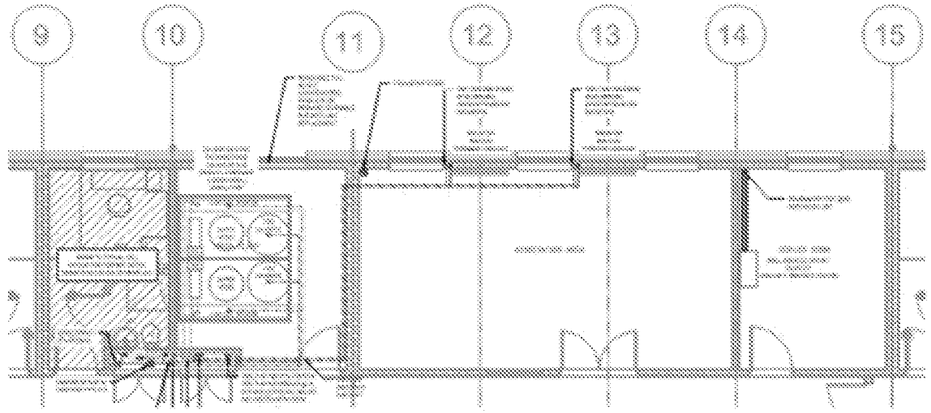
Roof Level

At roof level, 8No En-suite extract fans will be situated across the roof within the dedicated external plant space areas, adjacent to the risers they are serving. 3No air source heat pumps will be situated within the dedicated internal plant compound to serve the domestic hot water and heating systems. ASHPs will be ducted to exhaust through roof. Primary and secondary pumps c/w buffer vessel will be located next to the ASHP plant space with all associated pipework dropping down riser space to floors below. MVHR unit serving the laundry rooms also mounted at roof level.

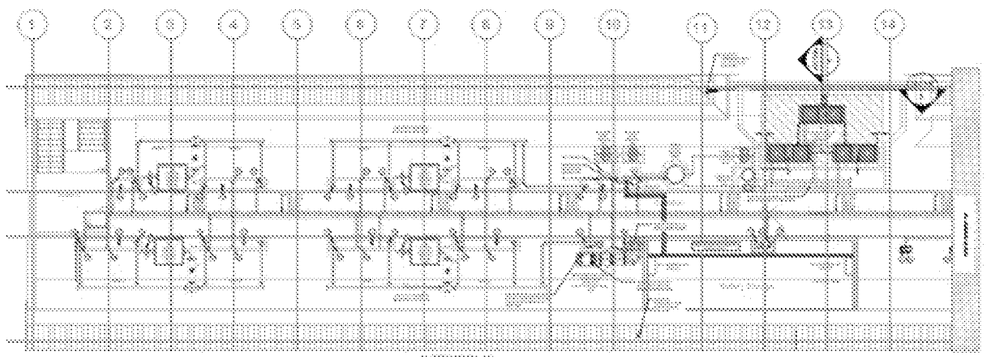
Ground Floor Plantroom



First Floor Plantroom



Roof Level Plantroom



ARUN DISTRICT COUNCIL F/16/21/PL

DESIGN PHILOSOPHY / PROPOSALS

UTILITIES & SERVICES

UTILITIES & SERVICES

Existing Underground Services

Water

All water infrastructure on site is in the ownership of the MoJ, not utilities. An existing private 180dia water main runs around the perimeter of the site. New mains connections are to be taken into each accommodation block. A New connection into the OMU office block will be supplied from the existing main. The existing water main potentially runs beneath proposed accommodation block and OMU office. Diversions are therefore to be considered.

Gas Services

There are no gas services proposed as part of this project.

LV Electrical Supplies

A new UKPN sub-station is to be provided as part of a separate scheme and will be used to serve the accommodation blocks for the site.

New 225kVA 3 phase 4 wire LV supply connections will be provided for the accommodation blocks. The supplies will be taken from the new UKPN sub-station.

New LV supply connections for the OMU office and property stores will be supplied from the existing MoJ LV network.

Communications & BT Services

The site is currently provided with BT Openreach and private telephony systems. It is proposed to extend the current provision to service the accommodation block, OMU office and property store.

New underground ducts are to be provided from the Gatehouse to the OMU office, property store and the accommodation blocks.

Figure 33: Connections to existing services



ARUN DISTRICT COUNCIL F/16/21/PL

UTILITIES & SERVICES

Drainage Strategy

Above Ground Foul Water Drainage

New UPVC pipework and fittings will be installed to collect wastewater from all new sanitary ware locations within accommodation block & OMU office. The installation will be compliant to BS EN 12056 with pipework laid to fall and routed to the nearest Soil Vent Stacks. All soil vent stacks will be vented to atmosphere.

Underground Drainage Strategy

The proposed development involves the following additional buildings to the existing Prison complex:

- The construction of 2 new two-storey accommodation blocks with servery annexes.
- The construction of a single storey storage building (for kitchen dry goods).
- The construction of a single storey extension to the existing Healthcare building (OMU Office).
- The construction of a single storey storage building (Personal Property Store).
- The construction of a new car park to provide 80 car parking spaces.

Surface Water Drainage Strategy

There is currently an established positive drainage system for both surface water and foul serving the prison complex. from the areas of the new development.

Site investigation showed that infiltration was a viable option for drainage of the surface water, therefore the new buildings are each drained to ground via various infiltration components including cellular crated soakaway tanks, gravel filled infiltration trenches and permeable paving for the car parking area. The new infiltration components have been designed for no flooding during the 100 year plus climate change event.

It is therefore initially proposed that the surface water runoff from the development is discharged to ground. Preliminary designs have been based on a low infiltration rate of 1 x 10-5 m/s. These designs are indicative at this stage and will be finalized during detailed design stage.

For new developments, the current design criteria required for the surface water drainage will need to be based upon a 1 in 100-year storm event, with an additional allowance to account for climate change resulting from global warming. There should be no above ground flooding for the 1 in 30-year return period and no property flooding or off site flooding from the critical 1 in 100 year storm event, with the additional allowance to account for climate change.

Climate change

An additional allowance of 40% to account for climate change has been included in the design of the surface water drainage network in accordance with current SuDS guidelines.

Urban Creep

As the development is under the control of a single body (HMP), there should be no requirement to incorporate an additional 10% to allow for urban creep.

Peak Flow Control

Because the surface water discharge will be to ground via infiltration in each case there will be no discharge to the existing internal positive drainage system. The increase in impermeable area due to the development of the new additions to the prison complex are shown in Figure XX.

Figure 34 : New Impermeable Areas

New Building	Area (m^2)
Staff OMU Offices	252
Personal Property Storage Unit	90
Dry Goods Storage Unit	60
Accommodation Blocks	1800
Car Parking Area	1850

A summary of the infiltration systems to be installed at each unit is set out in Figure XX.

Figure 35 : Proposed Infiltration Systems

New Building	Infiltration System	
	Type	Dimensions
Staff OMU Offices	Soakaway Trench	1.5m x 20m x 1.5m deep
Personal Property Storage Unit	Soakaway Trench	1m x 12m x 1.2m deep
Dry Goods Storage Unit	Soakaway Trench	1m x 15m x 1.2m deep
Accommodation Blocks	Cellular Soakaway Tank	5m x 50m x 0.8m deep
Car Parking Area	Permeable Paving Parking	902m^2 of paving with 380mm of porous media under

ARUN DISTRICT COUNCIL F/16/21/PL

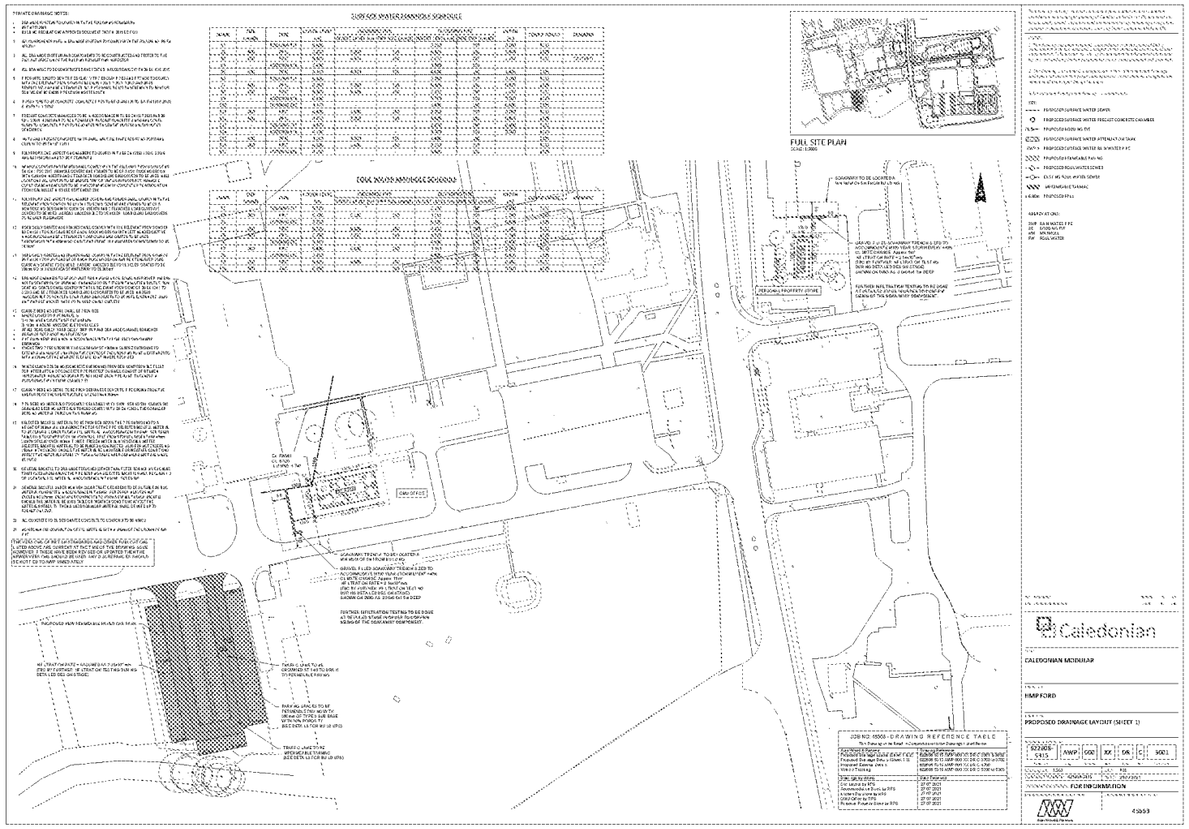
Foul Water Strategy

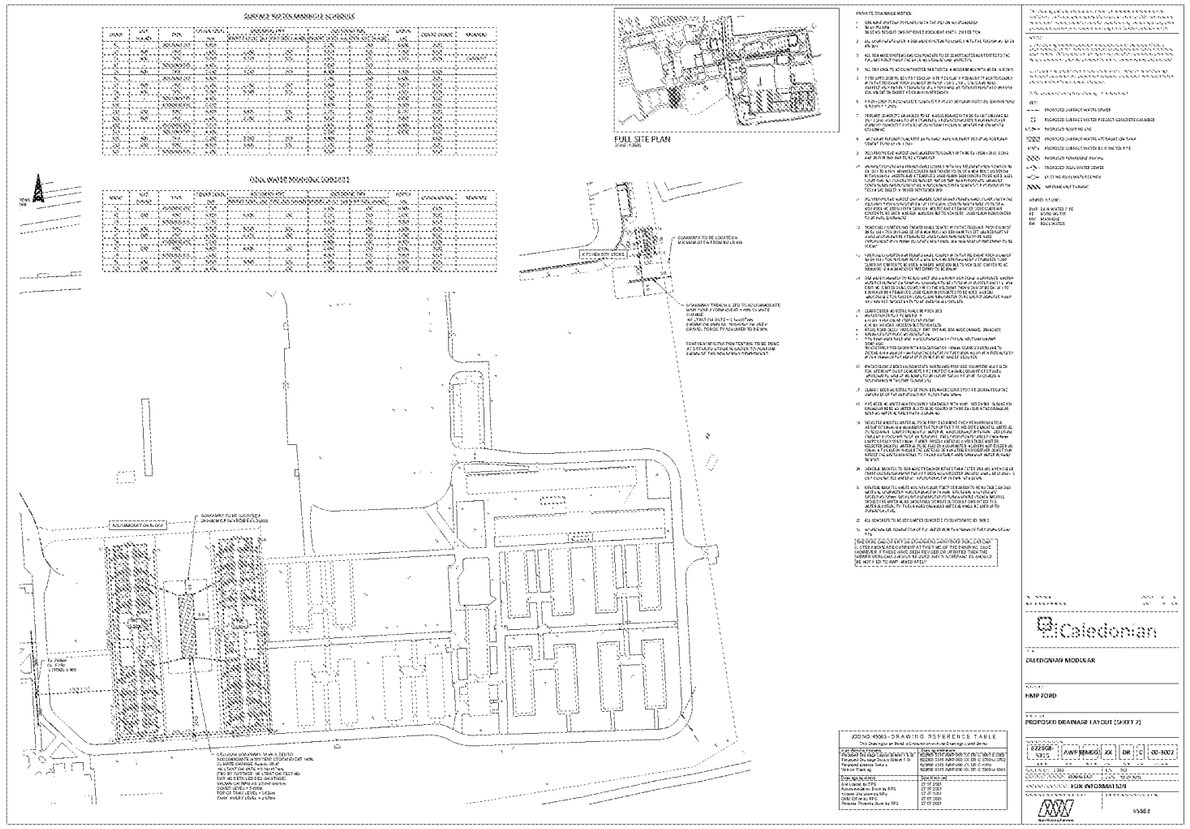
A separate foul sewer network will be designed and built to meet Building Regulations standards.

It is proposed that foul water domestic waste from the development will be discharged to the existing site drainage network which outfalls to the public sewer network, for which formal approval will be required. No new connection will be required to the public sewer network.

If a gravity connection proves to be unachievable at the detailed design stage, then a pumped discharge will be required.

Figure 36 & 37: Site Wide Drainage Strategy





DESIGN PHILOSOPHY / PROPOSALS

ACCESS & MOVEMENT PROVISION

ACCESS & MOVEMENT PROVISION

Existing External Site Access

HMP Ford is accessed via Ford Rd. The eastern part of the site comprising the amenities and housing is accessed via gated access to the north end the site alongside the gatehouse. The primary access to the western part of the site is via a barrier-controlled access road north of the gatehouse via Ford Rd.

Figure 38: Primary access routes



Internal Access Routes

The primary internal access and pedestrian access routes to the various new buildings is maintained, with new connections to the existing infrastructure where needed. The new accommodation blocks have a new road access with adjacent footpath. The new road is to allow for fire tender access to the fire escape stairs. A new footpath has been introduced from the slip road to the new property store to allow pedestrian access. The dry goods store has a new hardstanding area to the front of the building to allow deliveries to be unloaded and goods transferred between the store and kitchen. The OMU has a new footpath connecting the building to the main OMU side entrance as well as the front of the main OMU building

Car Parking Provision

A new car park has been introduced to the western part of the site for staff parking. There is no other provision of parking being included within the scheme proposal. The new staff carpark will accommodate 80 staff spaces 5 of which are DDA compliant spaces. It will have restricted entry and exit via a barrier system. The new provision of car parking is to allow the existing parking to the OMU to be for visitors only.

Figure 39: Proposed car parking provision



ACCESS & MOVEMENT PROVISION

Access & Use of Buildings (DDA Compliance)

Access to all the new buildings being provided will be level access and DDA compliant. Any new footpaths introduced to facilitate access around or to the site will be DDA compliant. The various buildings have been designed to allow access to all with suitable facilities to each building to suit the buildings intended purpose.

Access for Maintenance Purposes

The new accommodation buildings have a 3m wide dedicated hardstanding footpath to the full perimeter of the buildings to allow pedestrian and maintenance access. The high-level windows will be cleaned via telescopic pole. Routine inspection and cleaning of the photovoltaics will be via MEWP. Any extensive maintenance to the roof will either be undertaken via MEWP or scaffolding.

The property store has a 3m deep strip of reinforced grass to front of the building to allow stable access to the gutter for maintenance. The roof is mono pitched with the gutter to the front.

The dry goods store is maintained from the front via the new hardstanding. The roof is mono pitched with the gutter to the front.

The OMU has a 3m deep strip of reinforced grass to the perimeter of the building to allow stable access to the gutter and services for maintenance. Any maintenance to the roof will be via MEWP or scaffold access.

Figure 40: Accommodation block access routes

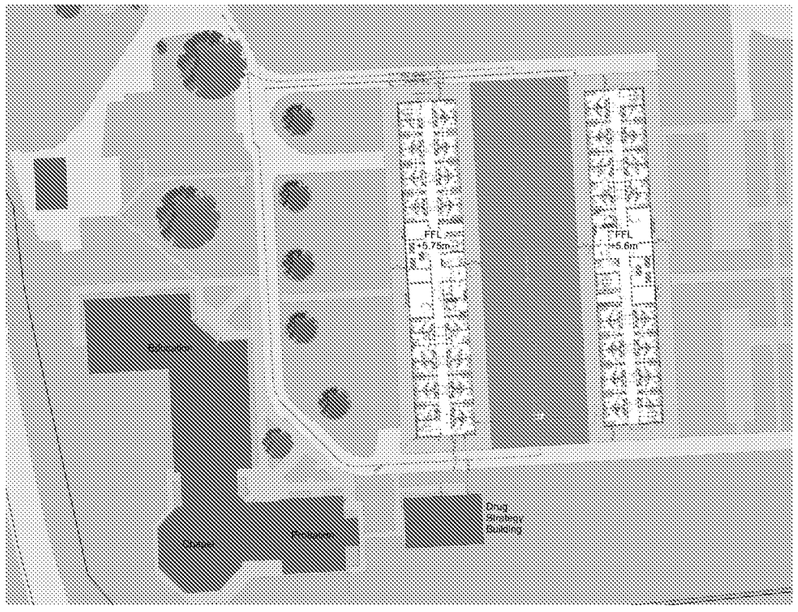
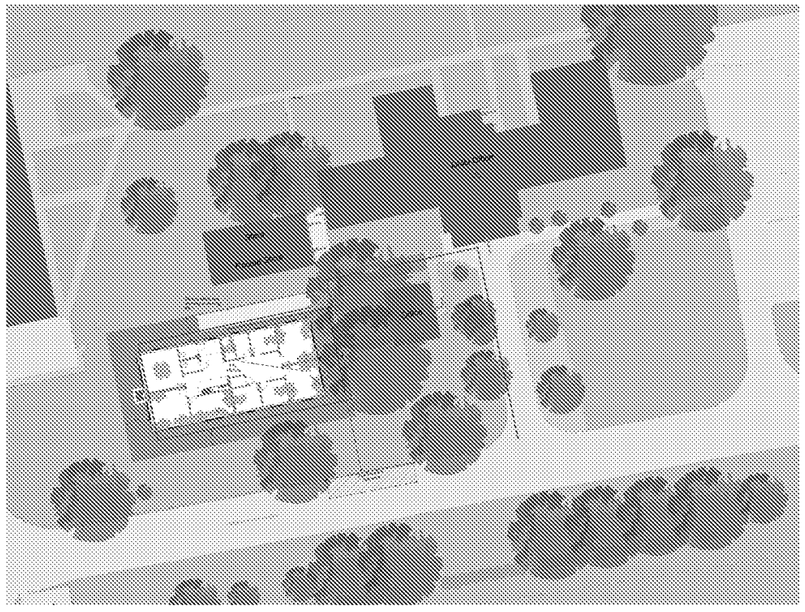


Figure 41: Personal property store access routes



Figure 42: OMU Office access routes



ARUN DISTRICT COUNCIL F/16/21/PL

DESIGN PHILOSOPHY / PROPOSALS

ECOLOGY

ECOLOGY

A phase 1 ecological survey of the site has been undertaken by Ecological Planning & Research ltd. The habitats within the site (primarily buildings with associated hardstanding and areas of species poor grasslands) are considered to have no inherent ecological value and present limited opportunities to support notable or protected species.

Bat surveys across the site recorded low level bat activity of common and widespread species. This is likely to be because of the heavily lit nature of the site along with the closely mown management of the grasslands, reducing the sward length and therefore suitability food source for invertebrates. Bat activity was noted around large maiden mature trees on site and all bats recorded were common and widespread species. No other protected species were identified within the site.

While the site has limited existing ecological value there are opportunities as part of the development for integrating several measures to encourage species into the site enhancing the biodiversity and achieve a Biodiversity Net Gain.

The following summarises opportunities for incorporating Biodiversity Net Gains into the scheme:

- Bat and bird boxes integrated or fixed onto the new buildings on site with a particular focus on Starling, as this is listed in the Sussex Biodiversity Action Plan.
- Enhancing the retained grassland by broadcasting a purposely designed grassland seed mix into the current neutral grassland seed bed and a relaxing the current maintenance regime of the retained grassland to encourage diversity in sward height.
- The placement of Hedgehog boxes within retained vegetation on site.

Figure 43: Enhancing the retained grassland by broadcasting a purposely designed grassland seed mix

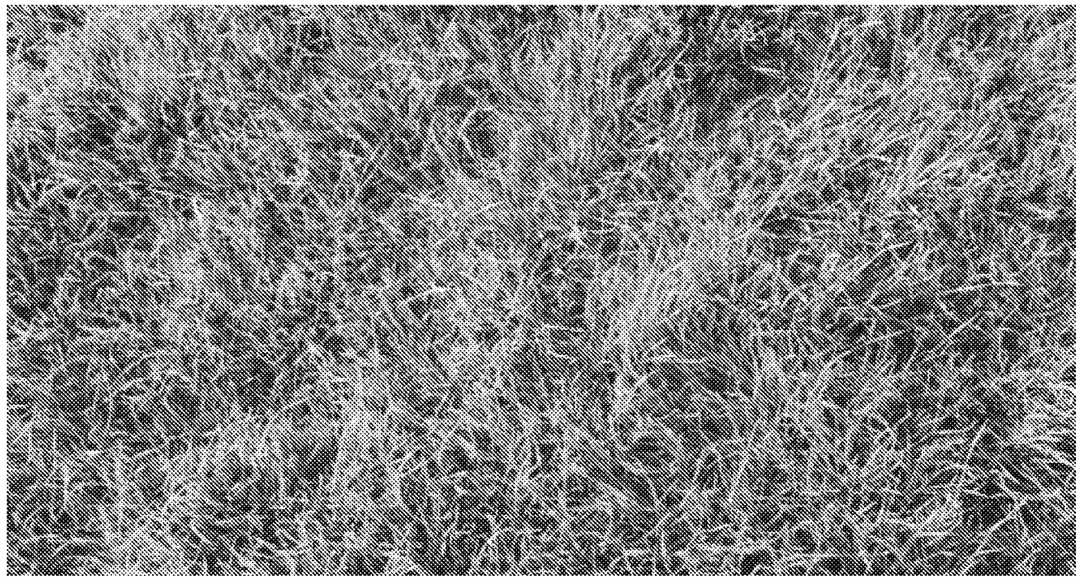




Figure 44: Example bat box



Figure 45: Example bird box



Figure 46: Example hedgehog box

DESIGN PHILOSOPHY / PROPOSALS

SUSTAINABILITY

SUSTAINABILITY

Management

Consultation, collaboration and well managed environmental sustainability processes and procedures which includes continuous improvement are key to a well-managed sustainable development. The development has consulted and incorporate feedback relating to the sustainability of the development.

During the construction phase, it is intended that the main contractor will adopt sustainable construction practices such as operating ISO 14001, monitoring site waste, energy and fuel to allow for continuous improvement.

Prior to handover it is expected that the building services will be tested and commissioned to ensure they are in optimum working order. Following handover, the main contractor will provide aftercare support to ensure operational staff are fully trained and building services are operating accordingly. A Post Occupancy evaluation could be carried out to determine staff satisfaction levels with the building comfort.

Health & Wellbeing

The development will aim to improve health and wellbeing through effective design allowing the occupants health and wellbeing to be maintained through the lifetime of the building. This will include, for example incorporating adequate glare control measures, optimising daylighting and view out and providing adequate internal and external lighting levels, zoning and controls in line with best practice.

The development will aim to produce an air quality plan which considers emissions from materials and construction products. Thermal modelling analysis has been undertaken to determine optimum heating a cooling for the building and accounts for future changes in temperature to ensure continued thermal comfort. Thermal Zoning and Controls will be incorporated to allow for greater occupant comfort.

The Acoustic performance of the development will be assessed and the development will account for best practice sound insulation and internal indoor ambient noise levels.

Energy & CO2 Emissions

The development has incorporated energy efficiency measures to reduce energy use and carbon emissions.

It is expected that external lighting will have an average initial luminous efficacy of no less than 70 luminaire lumens per circuit Watt. P

assive design analysis has been undertaken to determine passive measures to be included reduce energy use. A Low and Zero Carbon Technologies (LZC) Feasibility Study has also been undertaken to determine the most appropriate technologies to include.

During operation, the building operator will procure Energy Efficient Equipment to reduce their unregulated energy. Energy will be monitored during operation and will be sub metered where appropriate.

Transport

A Transport Assessment and Travel Plan has been undertaken as part of the planning application and assesses the sites current and future travel patterns, location, existing amenities and disabled access.

A Travel Plan has been developed which considers the outcome of the Travel Assessment and outlines Sustainable Transport best practices and procedures including the availability of cycling, walking, public transport and EV charging point and how these facilities will be communicated to staff and visitors during the lifetime of the development.

Water Use

The Development will incorporate water efficient components within toilet, kitchen and bathroom facilities to reduce water usage.

Where appropriate leak detection and flow control devices will be fitted.

Water meters will be installed to monitor and improve water usage.

SUSTAINABILITY

Materials

The environmental impact of materials will be considered throughout the design and where feasible materials with a low environmental impact will be procured during construction.
The sourcing of materials will be in line responsible sourcing best practices. The Building has been designed to protect vulnerable parts of the building from damage.
During the development of the design consideration has been given to protect exposed parts of the building from material degradation.

Off-site Manufacture Advantages

Sustainable

Offsite construction provides a highly sustainable method of building and completed projects can achieve high standards of energy efficiency. For its part, Caledonian Modular is committed to reducing waste as part of the design process and to recycling up to 96% of waste from our factories and construction sites. Modular building projects also involve fewer traffic movements. In one project, a 2,000 bed development provided a 1,290 tonne reduction in CO2 – that's the equivalent of planting 5,000 trees.

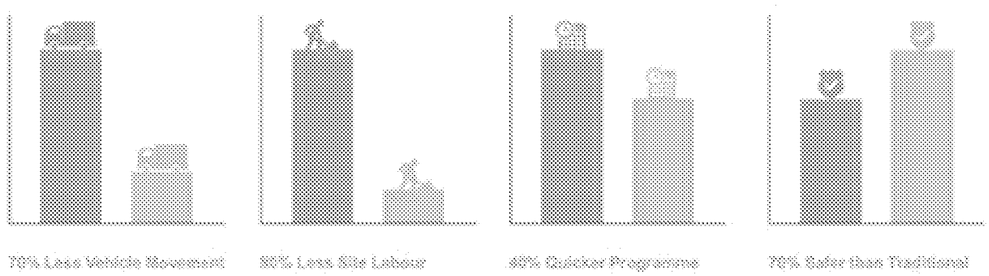
Transport

Buildings are designed to meet site requirements as well as reducing transport. A recent study by WRAP identified an 83% reduction in transport for a modular project compared to a similar traditional build.

Process

The factory has in place full independent accreditation for both ISO9001 (Quality Assurance) and ISO14001 (Environmental Management) as well as full Health and Safety Management,. We also undertake a high degree of waste management within the facilities, achieving 96% waste to recycle levels within both sites.

Figure 47: Off-site manufacture vs on-site manufacture



Waste Management

A Resource Management Plan (RMP) covering non-hazardous waste materials (from on-site construction and dedicated off-site manufacture or fabrication) including demolition and excavation waste will be developed. Included within the RMP will be an aim for the development to generate ≤ 13.3m3 or ≤ 11.1 tonnes of waste generated per 100m² (gross internal floor area). The plan will also aim to meet best practice diversion from landfill benchmarks for demolition and non demolition waste.

Operational waste will be managed by providing dedicated space for the segregation and storage of operational recyclable waste generated. Operational waste will be clearly labelled, to assist with segregation, storage and collection of the recyclable waste streams.

Waste Storage will be of an appropriate capacity to the building type, size, number of units and predicted volumes of waste that will arise from daily or weekly operational activities and occupancy rates.

Land Use & Ecology

The development will be located on previously occupied land. An ecology phase 1 survey has been undertaken and recommendations followed throughout the design and construction.

Noise

A noise mitigation strategy is being developed which will detail how noise levels will be be at least 5dB lower than the background noise throughout the day and night.

The design will follow the acoustic requirements outlined within the Ministry of Justice Client Requirements documents. For the accommodation blocks, the internal sound insulation design is required to follow the requirements of Approved Document E to the Building Regulations, with relevant British Standards, e.g. BS 8233:2014 to be followed in relation to external noise ingress. It is also the intention that the design of the ancillary buildings would follow the principles of relevant best practice guidance, including BS 8233:2014 and British Council for Offices (BCO) guidance. External plant noise emissions will be limited in accordance with BREEAM and Local Authority requirements.

ARUN DISTRICT COUNCIL F/16/21/PL



MAKING
COMPLEX
EASY