6.3 Flood risk analysis

EA Flood Zone mapping and SFRA Flood Zone mapping show that the majority of the site is located within Flood Zone 2 'Medium Probability' with small sections along the northern boundary of the site located within Flood Zone 3 'High Probability'.

The proposed development includes residential use which is classified as 'More Vulnerable'. PPG Table 3 confirms that such development is appropriate within Flood Zone 2 subject to the Sequential Test being carried out.

The western part of the site has a 'Very Low' risk of surface water flooding and the northern and eastern part of the site has a 'Low' risk of surface water flooding.

The proposed mitigation strategy demonstrates the development is safe through a number of measures as follows:

Habitable ground floor levels are set at a minimum of 29.65m AOD to mitigate the potential residual risk of a canal breach. This is approximately 450mm above existing typical ground and also ensures the building is unaffected in the extreme 1 in 100 (1%) annual probability +70% allowance for climate change scenario or the 1 in 1000 (0.1%) annual probability event;

The design of the scheme will ensure that any flood storage losses at the design event due to non-floodable footprint at ground level will be compensated by creating additional flood storage within the site in areas of open space on a level for level basis with an overall net gain of 340m3.

Continuous pedestrian dry access is available at the 1 in 100 (1%) annual probability + 35% climate change allowance towards the High Street in accordance with the requirements of the London Borough of Hillingdon Strategic Flood Risk Assessment.

6.3.1 Surface Water Drainage

The proposed surface water drainage strategy consists of green roofs, permeable pavements and underground cellular attenuation storage. Surface water runoff has been split across two outfalls to the River Pinn based on the proposed site topography with controlled runoff rates from each outfall to a maximum of 3.9 l/s. This provides a significant reduction in comparison to the calculated existing runoff rates for the site and is close as reasonably practicable to the equivalent greenfield runoff rates.

The proposed surface water drainage system has been designed with no flooding up to and including the 1 in 100 (1.0% annual probability rainfall event with surcharged outfalls. Flooded volumes in exceedance of this design event when the outfalls to the River Pinn are surcharged would pond within the parking and landscaping areas to depths of less than 100mm.

The drainage system will be maintained by a Management Company in accordance with an Operational and Maintenance Plan for the site.

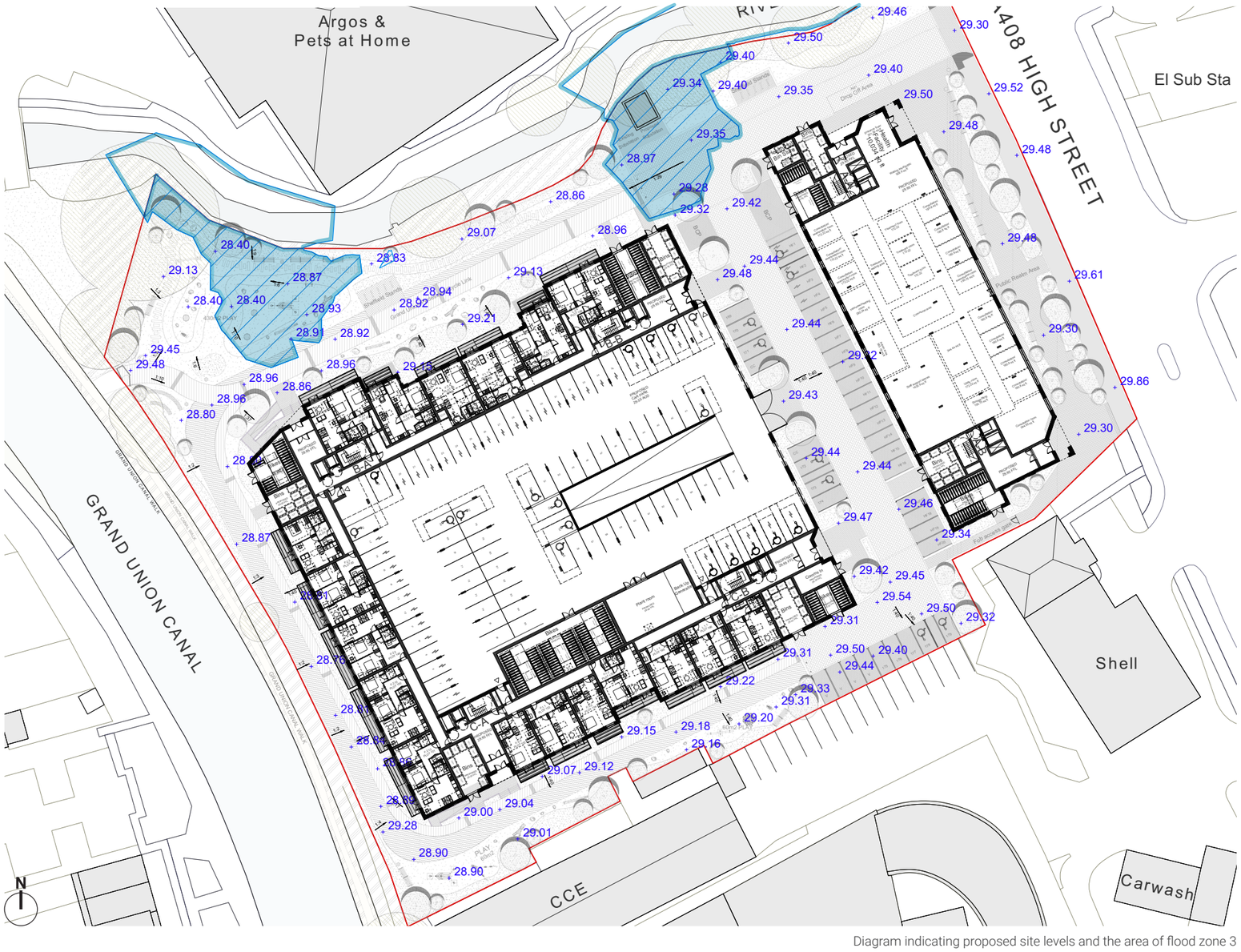


Diagram indicating proposed site levels and the area of flood zone 3

6.4 Signs & way-finding

External signage

The signage strategy for the development will follow good practice guidelines, such as the "Sign Design Guide". All signage will be contrasting and designed for those with learning difficulties or visual impairments. Entrances for both residential areas and Health Facility are highlighted with yellow and green glazed bricks respectively in addition to signage provisions.

Internal signage

All of the buildings, according to their uses are designed to enable clear signposting and a messaging system complying with the Sign Design Society Guidance.

All internal signs to communal areas will be clear, with contrasting symbols, and with braille translations to help the visually impaired. All signage will be located in obvious locations and will be well lit.

The use of differing tactile materials

A palette of tactile handrails/support rails showing directions of travel to the nearest fire exit has been considered through the design of each building.

The layout of the buildings

The clear layout of the building, generally arranged with a sequence of entrance/ lobby/lift/stair core/corridors, allows a simple circulation throughout and between the floors. A readable structure and shape provides an easy indication to distinguish different uses within the site.

6.5 Secured by Design

The scheme has been designed to encourage passive surveillance from surrounding residential buildings to overlook entrances and pedestrian routes within the site.

Through discussions with the local Design Out Crime Officer, the scheme has evolved to allow for the following:

- Adequate buffer and defensible space distances to ground floor dwellings, ensuring privacy for residents
- Lighting design will be sensitive to way-finding and antisocial behaviour and switched off to discourage rough sleeping
- Majority of bike stores accessed off of car parking area
- Recessed entrances of a suitable depth - which does not encourage loitering
- 1.5m high fence to gardens on podiums suggested as a height which allows people to claim ownership from podium
- 1.5m buffer/ defensible space and permeable boundary to ground floor dwellings; planting underneath windows

All design will be carried out with the Secured By Design New Homes 2010 design guide in mind.

6.6 Building & structures

Materials

The proposed materials have been specified (using Part M specifications) to contrast tonally with the ground finishes, enabling people with visual impairments to identify building boundaries.

Construction

The design follows a simple concept based on the clarity of the overall structure of the building. Slab levels have been set to ensure that the structure will not impose restraints upon individuals using and moving through the building, including ensuring obstructions are avoided in pedestrian/common areas and that level access can be provided throughout.

Internal floor surfaces

The floor finishes will contrast tonally with the walls and will be non-slip. Finishes will be contrasting in the vertical and horizontal situations. Floor surfaces will not be overly resistant to wheelchair users, but will aid crutch users in gaining purchase. As well as this, floor finishes will be of a robust and durable nature.

Entrances

Each building provides a correct transition from outer spaces to inner spaces to all users. The approach to the buildings will be well lit and obvious.

Transition to internal

The entrances will have manifestation to identify them, and the frames will be of a strong tone or colour to visually separate them from the surroundings. Entrances will be appropriately lit. The main entrance doors are designed to comply with relevant legislation in terms of minimum width opening and closing and the thresholds will be level.

Opening windows and projections on public routes

Obstructions at head height can be dangerous to the visually impaired. All opening windows and projections have been minimised within the design. Where they cannot be removed completely, vegetation has been provided at ground floor to notify people of the potential for window opening. Where possible, outward swinging doors are avoided and, where required due to fire escapes, they will be marked by blistering, vegetation or bollards.

Steps and ramps

All steps, stairs and ramps have been designed to comply with Approved Document Part M 2015 and BS 8300:2009. This includes tread, risers, handrails, lighting and nosings.

Door design

All doors of the scheme, both manually operated or automated, are compliant with Approved Document Part M 2015 and BS 8300:2009 according to different uses and users of the buildings, specifically in relation to vision panels, weight, colour, door ironmongery and use of materials.

To meet the requirements of Approved Document Part M, door closer tensions will be set to a maximum of 20N. The clear opening widths of all doors in common areas are a minimum of 850mm and there will always be 300mm nib on the leading edge of a door.

Movement within buildings

The internal circulation within each building considers the specific needs of disabled people.

The buildings are accessed via horizontal corridors. Vertical circulation is via lifts in the cores, and ambulant disabled stairs.

Provision of lifts

All lifts, in all buildings, are designed to comply with Approved Document Part M and BS 8300:2009, including size, internal materials, door opening width, and operating apparatus.

Stairs

Stairs comply with Approved Document Part M and BS 8300:2009 in terms of widths, treads, risers, hand rails, nosings, top and bottom surfaces, landings and finishes.

They have also been designed for ambulant disabled, including the fire escape stairs.

Corridor and lobby design

All corridors within the buildings comply according with their specific uses and with Approved Document Part M in terms of size, lighting, materials, signings, doors and colours etc.

There are no changes in level to any corridors and width is consistent. Vision panels in corridor doors will be designed to allow people, both seated or standing, to be seen.

Pull handles will only be fitted on the pull side of doors and fingerplates will be fitted on the push side. This assists all users, but especially people with learning difficulties and people with visual impairments. Handles will not extend down to floor level since this type of handle can become caught in the footplates or wheels of a wheelchair.

There is adequate space between lobby doors for a wheelchair user to clear one door before opening the next.

6.7 Accessible & adaptable dwellings

6.6.1 Car parking and drop-off

Parking space

Parking spaces are located within the internal parking court as well as exterior spaces. Disabled parking spaces have a clear access zone of 1200mm to one side.

Drop-off point

The drop off point is close to the principle communal entrance in Building A and is level with a suitable ground surface.

6.6.2 Communal Entrance

Principal Communal Entrances

The principle communal entrance has a level landing 1,500mm x 1,500mm directly outside and clear of any door swing. This will be covered to a minimum of 1200mm width and 900mm depth. Lighting will use fully diffused luminaries that are activated automatically by a dusk to dawn timer or a motion detector. The entrance door (including double doors) has a minimum clear opening width of 850mm, and a 300mm nib is provided to the leading edge of the door, in accordance with diagram 2.2. Door entry controls will be mounted 900-1,000mm above finished ground level, and at least 300mm away from any projecting corner.

Other communal doors

All other communal doors have a minimum clear opening width of 850mm, and a 300mm nib will be provided to the leading edge of the door, in accordance with diagram 2.2. Door entry controls will be mounted 900-1,000mm above finished ground level, and at least 300mm away from any projecting corner.

6.6.3 Communal lifts & stairs

Communal lifts

2no. 13 person lifts (of which 1no. is a fire fighting lift) with a car size of 1,600mm wide and 1,400mm deep inside are provided to buildings B, C, D and E, and 2no. lifts are provided to building A. Each lift has a clear landing of 1,500mm x 1,500mm directly in front of the lift door at every floor level, a door clear opening width of at least 800mm and meet BS EN 81-70:2003. Landing and car controls will be 900-1,200mm above the car floor and a minimum of 400mm from the inside of the front wall.

Communal stairs

Each building is served by one communal stair core which meets the requirements of Approved Document Part K for a general access stair. Additional escape stairs are provided from the podium amenity levels, which will also meet the requirements of Approved Document Part K.

6.6.4 Private entrances

Principal private entrance and alternative entrance

The principle private entrance to each apartment will have a level landing 1,200mm x 1,200mm directly outside. This will be covered to a minimum of 900mm width and 600mm depth. Lighting will use fully diffused luminaries that are activated automatically by a dusk to dawn timer or a motion detector. The entrance door (including double doors) has a minimum clear opening width of 850mm, and a 300mm nib is provided to the leading edge of the door, in accordance with diagram 2.2.

Other external doors

All other doors connected to the dwelling will have a minimum clear opening width of 850mm, and a 300mm nib is provided to the leading edge of the door, in accordance with diagram 2.2.

6.6.5 Circulation areas & doorways

Door and hall widths

The minimum clear width of every hall or landing is 900mm. Localised obstructions will not occur opposite or close to a doorway and the corridor will not be reduced below 750mm width at any point. The clear opening widths will conform to those set by Approved Document M and a 300mm nib will be provided to the leading edge of every door within the entrance storey.

Private stairs and changes of level within the dwelling

Access to all rooms and facilities within the entrance storey will be step-free, with no level changes. The stair from the entrance storey to the storey above will have a minimum clear width of 850mm when measured above the pitch line of the treads. All stairs meet the provisions of Part K for private stairs.

6.6.6 Habitable rooms

Living, kitchen and eating areas

Within the entrance storey of all dwellings there is a living area. A minimum of 1,200mm clear space is provided in front and between all kitchen units and appliances.

Bedrooms

Every bedroom has a clear access route, minimum of 750mm wide from the doorway to the window, and at least one double bedroom will provide a clear access zone a minimum of 750mm wide to both sides and the foot of the bed. Other double bedrooms have a clear access zone minimum of 750mm wide to one side and the foot of the bed.

6.6.7 Sanitary facilities

General provisions

All walls, ducts and boxing to the WC/Cloakroom, bathroom and shower rooms will be strong enough to support adaptations that could impose a load of up to 1.5N/m2.

WC facilities on the entrance storey

Every dwelling will have a room that provides a WC and basin on the entrance storey. In two storey dwellings, with one or two bedrooms, the WC meets the provisions of diagram 1.3 and the basin does not impede access to the WC.

The door to the WC will open outwards.

Bathrooms

Every dwelling has a bathroom that contains a WC, a basin and a bath, that is located on the same floor as the double bedroom.

6.6.8 Services and controls

Consumer units will be mounted so that the switches are between 1,350mm and 1,450mm above floor level. Switches, sockets and controls will have their centre line between 450mm and 1,200mm above floor level and a minimum of 300mm from an inside corner.

The handle to at least one window in the principle living area is located between 450mm and 1,200mm, or a remote opening device will be fitted. Handles to other windows will be located between 450mm and 1,400mm above floor level, or a remote opening device will be fitted.

Boiler controller will be mounted in an accessible location between 900mm - 1,200mm above finished floor level.

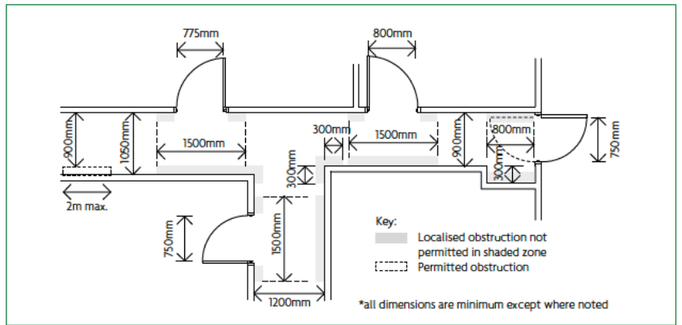


Diagram 2.3 Minimum door and hall widths and restrictions on localised obstructions

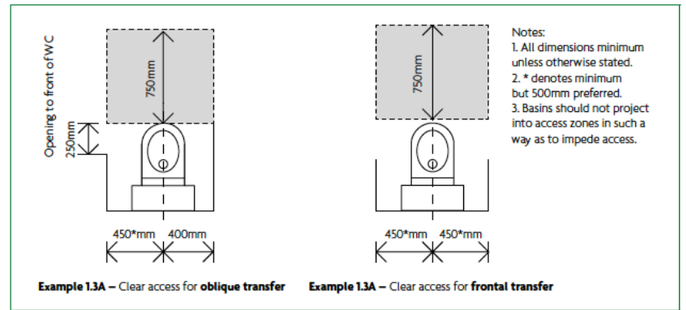


Diagram 1.3 WC access zones

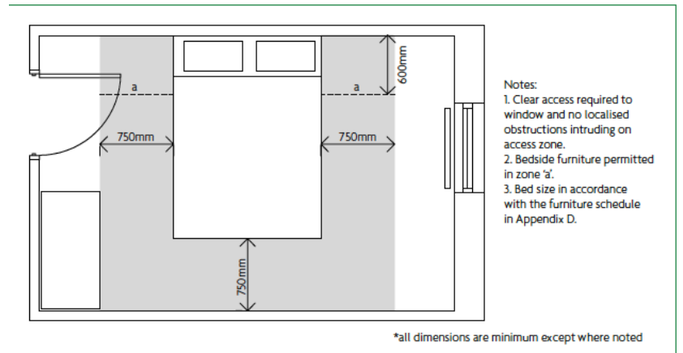
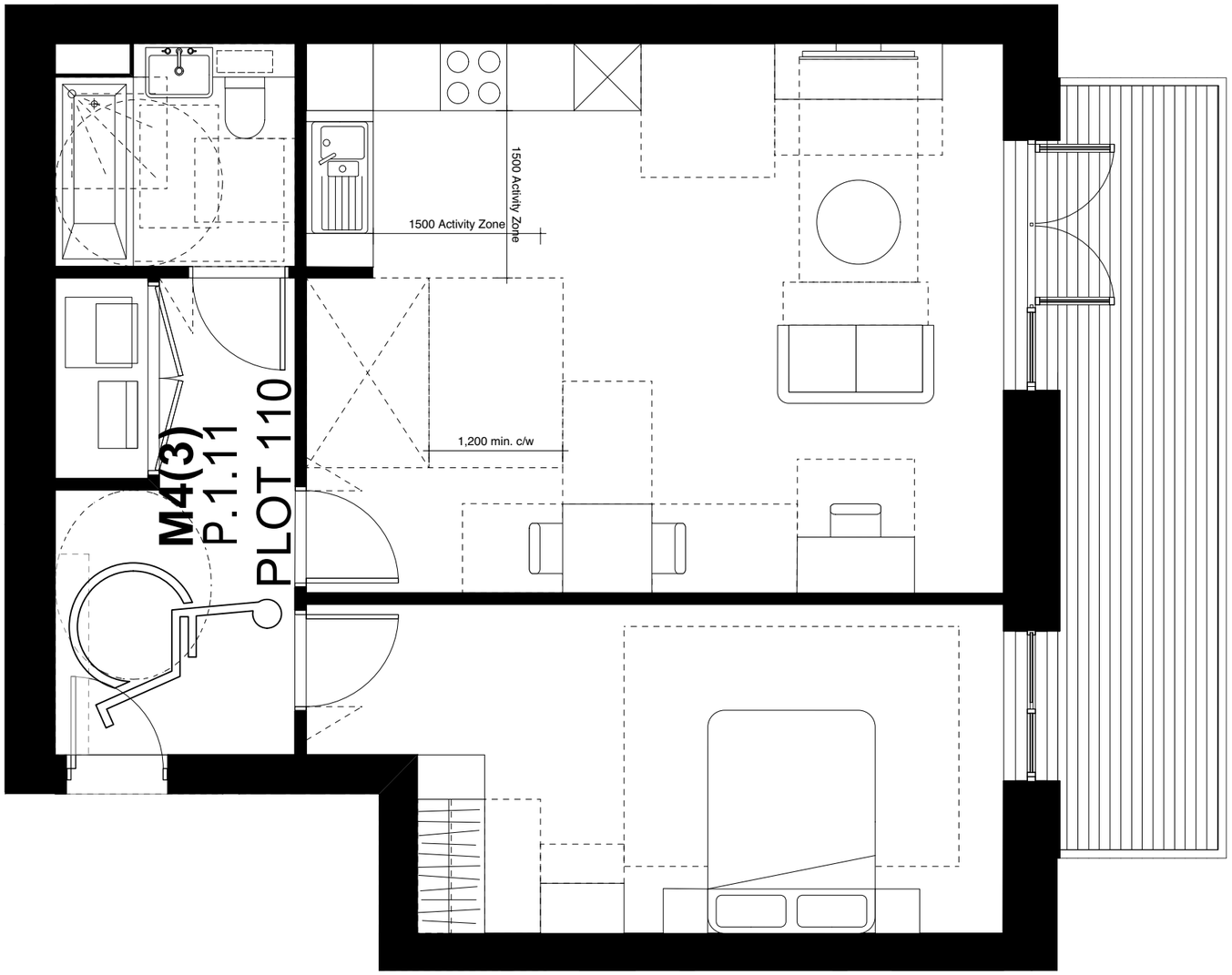


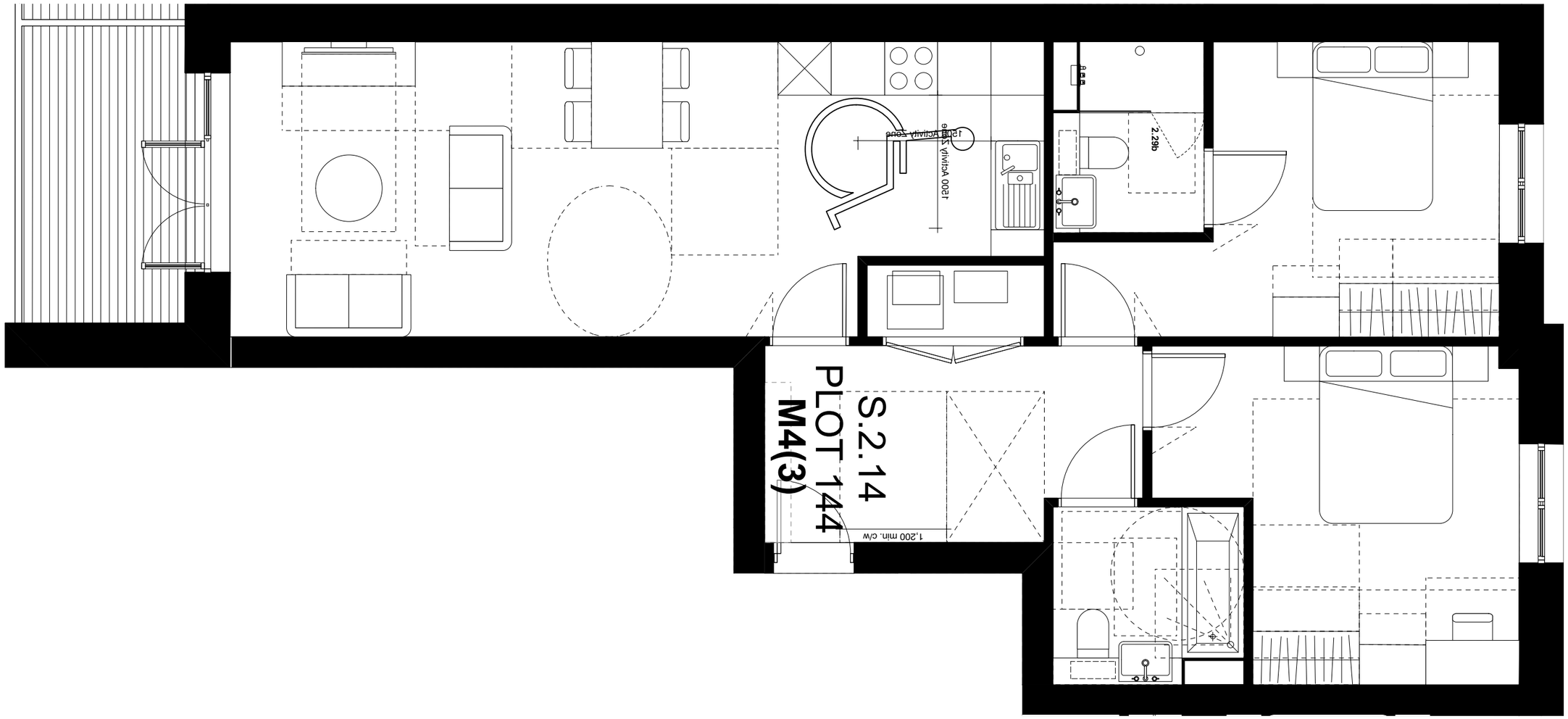
Diagram 2.4 Clear access zones to principal bedroom

6.7.1 M4(3) - 1B2P apartment 1:50 @ A3



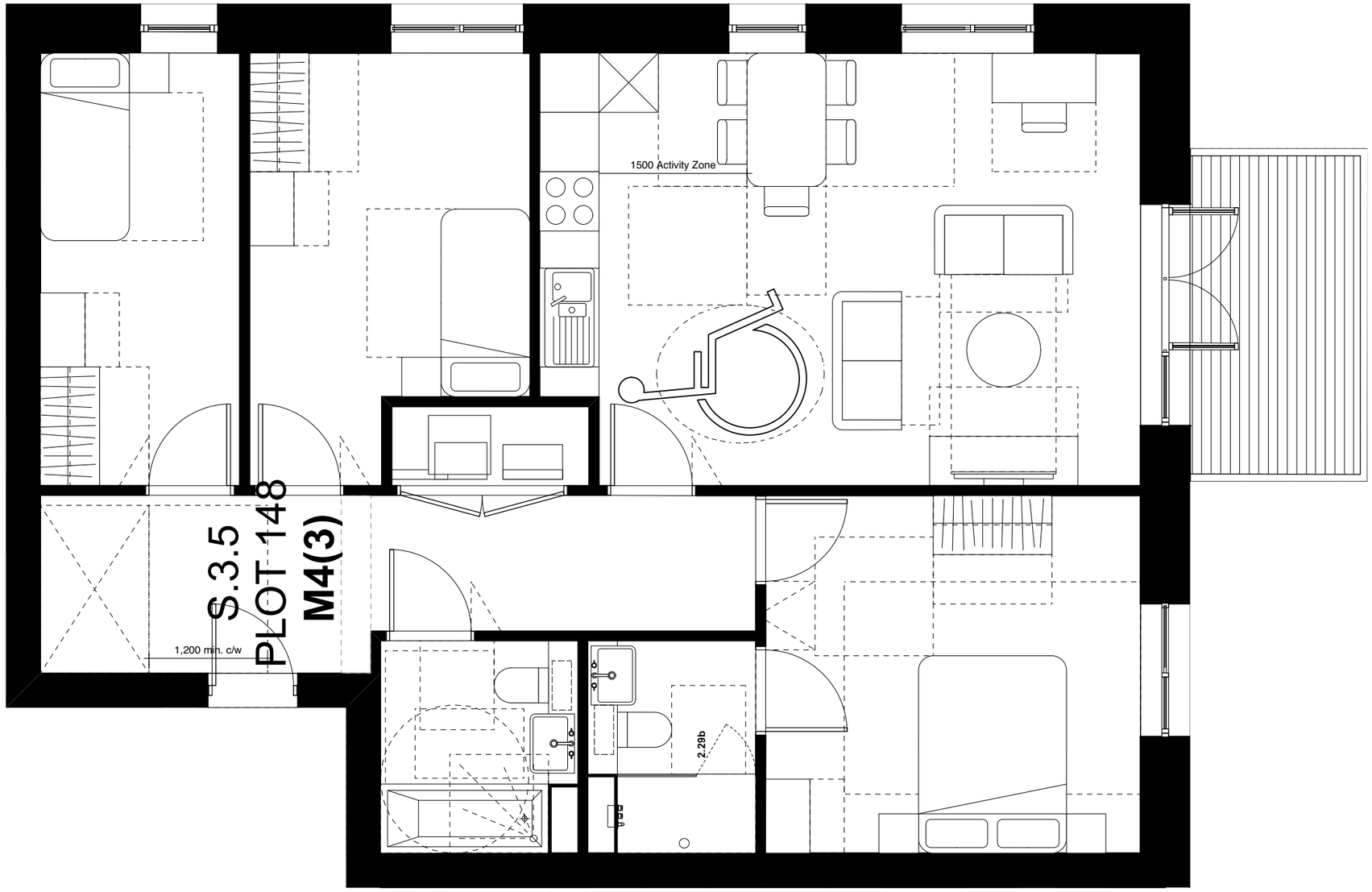
0m 2m
1m 5m

6.7.2 M4(3) - 2B4P apartment 1:50 @ A3



0m 2m
1m 5m

6.7.3 M4(3) - 3B4P apartment 1:50 @ A3



Introduction

Context

Design process

Design response

Landscape

Access

7.0 Appendices

7.1 Sustainability checkpoint assessment

Stage 0
Guidance
Obtain information about the site and / or structures for constraints and opportunities
.'Awareness' stage and setting the sustainability context for the project.
Review client requirements to distill their sustainability aspirations and the expected building lifespan against which capital costs should be balanced against costs in use.
Identify potential for cost effective enhancement of client aspirations.
Review options for formal assessment of aspects of sustainability and/or energy performance (e.g. BREEAM, LEED, Passivhaus). If the project is a component of a larger scheme, ensure that targets support and are consistent with any overarching sustainability assessment methodologies. Establish timetable for associated assessor appointment and early stage actions.
Client to consider appointing or identifying a client sustainability advocate (in senior management position) and/or appointing a sustainability champion in the design team.
Assess environmental opportunities and constraints of potential sites and building assets including sufficient iterative modelling to support conclusions of feasibility studies.
Initial consultation with stakeholders, identification of local planning sustainability requirements and appraisal of existing building, social, transportation, water, energy, ecological and renewable resources, including the need for pre-construction or seasonal monitoring or surveys.
Commission surveys of existing buildings to be retained (including condition, historic/ townscape significance, materials and components for recycling), services, noise, vibration, renewable energy resources, ecology, geology, etc. as required) to inform the brief.
Identify potential funding sources and their eligibility criteria.
Review relevant current and emerging EU, national and local sustainability policy and legislation and analyse implications on build, environmental and performance targets.
Identify and understand final occupants' needs to help to establish user patterns, energy profile and performance standards required.
Client to consider the formal adoption of a Soft Landings approach to the project (www.bsria.co.uk/services/design/soft-landings/).
Client to consider appointing a Soft Landings champion.
Client to consider merits and protocols of using a building information model (BIM) to help deliver sustainability aims.

Sustainability checkpoint	Check	Comments
Has the site information letter been sent, any response entered onto the site information record and disseminated to other consultants?	✓	
Ensure that a strategic sustainability review of client needs and potential sites has been carried out, including reuse of existing facilities, building components or materials.	✓	

Stage 1
Guidance
Obtain screening letter from planning authority to verify sustainability requirements.
Include a simple description in the brief of the internal environmental conditions the client requires.
Involve the client's facilities management team and review past experience (good and bad) in a spirit of openness in order to set environmental and performance targets that are useful, measurable, challenging but achievable and unambiguous. Targets should include both regulated and unregulated energy.
Develop water efficiency strategies to establish similarly robust performance targets.
Agree how to measure performance in use, what incentives there will be to achieve performance objectives and what action is appropriate if anything falls short.
Develop potential energy strategies for the site including iterative estimated energy demand calculations, options for renewables and implications on building/ site design (e.g.sufficient plant space).
Set out SUDS and surface water retention requirements.
Develop a brief for specialist environmental sub-consultants (e.g. wind monitoring consultant, ecologist).
Consider Climate Change Adaptation criteria and future performance standards.
Set out any future uses or reconfiguration to be accommodated.
Ensure that competence of potential design team members matches the client's sustainability aspirations. The team should be balanced, with members of similar competence and commitment and with complementary contracts of engagement.
Client to start the Site Waste Management Plan (SWMP) to enable designers to record decisions made to reduce waste as the project progresses.

Sustainability checkpoint	Check	Comments
Has the site information letter been sent, any response entered onto the site information record and disseminated to other consultants?	✓	
Confirm that formal sustainability targets are stated in the Initial Project Brief.	✓	
Confirm that environmental requirements, building lifespan and future climate parameters are stated in the Initial Project Brief.	✓	
Have early stage consultations, surveys or monitoring been undertaken as necessary to meet sustainability criteria or assessment procedures?	✓	Yes sustainability consultant appointed.
Check that the principles of the Handover Strategy and post-completion services are included in each party's Schedule of Services.	✓	
Confirm that the Site Waste Management Strategy has been considered.	✓	Yes waste consultant appointed.

✓ Completed

– Partially complete (see comments)

✗ Not complete (see comments)

Sustainability checkpoints are from RIBA Plan of Work 2013 and guidance notes originate from the 2011 Green Overlay to the RIBA Outline Plan of Work, supplemented with Assael Architecture's procedural guidance.

Guidance notes and checkpoint assessments are for the attention and implementation of the entire project team, including the client, and should be part of all stage reports.

Stage 2
Guidance
Set out site scale environmental design criteria (e.g. solar orientation, overshadowing, SUDS, waste).
Consider the design of the space between buildings as well as the buildings themselves.
Consider the need for and scale of private, semi-private and public external space.
Establish maximum plan depths to achieve desired levels of natural ventilation, daylight and view.
Design for build-ability, usability and manageability.
Consider the impact of complexity of form on thermal performance, airtightness, and inefficient/wasteful use of materials.
Establish an appropriate glazing proportion and shading strategy for each orientation to provide good levels of daylight while avoiding excessive glare, solar gain or heat loss.
Establish appropriate element thicknesses to achieve U-values required by energy strategy.
Check that materials and construction approach will provide a level of thermal mass that is appropriate to the environmental design strategy.
Refine and review design decisions to minimise quantity of materials used and to minimise construction waste (for guidance, see www.wrap.org.uk/designingoutwaste).
Review the embodied impacts of materials and construction approach in the context of the building's lifespan.
Avoid design solutions that inhibit adaptation and alternative use of the building or its components and materials.
Take particular care to avoid short- and long-term damage to retained traditional building fabric from ill-considered upgrade interventions.
Ensure that design implications of any components essential to the success of a sustainability strategy are understood across the design team (e.g. space for fuel deliveries and waste handling, roof collector area and orientation, location and size of rainwater harvesting tanks, SUDS attenuation, etc.).
Refine energy and servicing strategy, incorporating energy efficient services design and design techniques.
Carry out sufficient compliance or advanced modelling to prove the design concept before freezing the design (e.g. SBEM/SAP/PHPP (Passivhaus Planning Package) or dynamic modelling).
Audit the emerging design against project's sustainability agenda and targets.
Set up a programme of intermediate evaluations and reality checks involving stakeholders and key users as well as the design team.

Sustainability checkpoint	Check	Comments
Confirm that formal sustainability pre-assessment and identification of key areas of design focus have been undertaken and that any deviation from the Sustainability Aspirations has been reported and agreed.	☑	
Has the initial Building Regulations Part L assessment been carried out?		
Have 'plain English' descriptions of internal environmental conditions and seasonal control strategies and systems been prepared?		
Has the environmental impact of key materials and the Construction Strategy been considered?		
Has resilience to future changes in climate been considered?		