Outline Demolition and Construction Management Plan

The Christie Advanced Scanning and Imaging Centre Development (CASICD)

By IHP

Revision 02
September 2023

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Client
The Christie NHS Foundation Trust

Our reference
CASICD-IHP-XXX-XXX-RP-W-000010

Rev 01 - 31 August 2023

1. Introduction

1.1 Document Introduction

This Outline Demolition and Construction Management Plan ('DCMP') and has been prepared by Integrated Health Projects Ltd ('IHP') to support an application for Full Planning Permission for the Christie Advanced Scanning and Imaging Centre Development, CASICD ('the Project') at The Christie Withington Site in Manchester. A full DCMP and a Demolition Management Plan will be submitted to Manchester City Council as part of the discharge process.

1.2 Document Purpose

The purpose of this document is to outline the principles of the demolition and construction methodology and site logistics for the proposed demolition and construction of the facilities. It also describes the proposed outline programme and key activities involved with the demolition and construction and installation works and is subject to refinement as the Project evolves.

1.3 Description of works

The description of the works comprises a new state of the art clinical facility; to support the new Radiology and CT Department. Located next to the new Paterson Building on Wilmslow Road, this new development will be sited on the footprint of the existing Block 19 & 20 and part of Block 21 following demolition. The development will be home to a new CT and Radiology Department at Ground Floor with critical links to the existing hospital and the new Paterson Building. Whilst the upper floors will provide ward accommodation to support the future decant of other existing accommodation at the Christie Hospital in Withington.

2. Site Location

2.1 Project Site Location

The proposed site sits to the northeast of the existing Christie's Withington hospital site. It is bordered on three sides by the existing hospital estate. To the north is the workshops, to the south is the new Paterson development and to the west is the existing clinical accommodation. On the east of the site is Wilmslow Road as shown in the local site plan below:



Figure 1 – Local Site Plan

2.2 Project Site Description

The site is long and narrow in shape. Its topography is flat with little variation across the site.

The former Block 19 & 20 and part of Block 21 building is to be demolished, including the removal of all basements and underground services prior to construction of the new building.

2.3 The Christie Withington Site

The Christie Withington Site has evolved over recent years with the adopted Strategic Planning Framework (2014) being instrumental in providing an effective framework to guide and shape the development. In doing so, there have been several transformational projects delivered across the site over recent years. Such as the Paterson building and the multi-tiered car park.

2.4 Surrounding Area

Beyond its immediate boundaries, the site is located within a predominately residential area. Most dwellings located on Wilmslow Road opposite to the site consist of larger 2.5/3-storey detached villas, some of which have been sub-divided into apartments.

Across Wilmslow Road lies the Oglesby Cancer Research Building, see Figure 2. This is a three-storey building on the corner of Wilmslow Road and Cotton Lane, which is a research centre run in partnership by the University of Manchester, Cancer Research UK, and The Christie. The multi-tiered car park and Cuthbert's Primary School are located further along Cotton Lane.



Figure 2 - Photograph of the Oglesby Cancer Research Building

3. Outline programme

3.1 Key Milestones of Construction

The construction phase of the Project will follow a decant of the present facilities, diversion of current underground services and finally the demolition of the existing building. The total duration of the construction phase of the Project is estimated to start January 2025 and complete September 2026. The key milestones of construction of the development are summarised in Table 1 below:

Activity	Date
Demolition Complete	Q4 2024
Foundations and groundworks	Q1 2025 – Q2 2025
Frame Construction	Q2 2025 – Q4 2025
Façade Construction	Q3 2025 – Q3 2026
Internal Fit-Out	Q4 2025 – Q3 2027
Commissioning	Q2 2027 – Q3 2027
External Works/Landscaping	Q2 2026 – Q3 2027

Table 1 - Key Milestones of Construction

4. Site Establishment

4.1 Temporary Footway / Cycleway Closures & Bus Stop Relocation

To facilitate the redevelopment, there will be a requirement to:

- Relocate an existing bus stop.
- Stop-up a section of cycle way and pavement.
- Stop-up current pedestrian crossing (lading into the Wilmslow Road main entrance). Note – as part of the Paterson Redevelopment a new pedestrian crossing is in place, ensuring access is fully maintained.
- Utilise existing crossing (subject to highways approval).
- Ensure appropriate wayfinding and signage is in place to advise patients, staff, and visitors of alternative entrance route locations.

Pedestrians will be directed over to the other side of Wilmslow Road to continue their journey.

4.2 Site hoarding

A new temporary hoarding line will be erected in the position shown in blue and white on Figure 4. Exact position of hoarding, gates and turnstiles will be agreed and align with any necessary party wall agreements as well as The Christies daily operations.

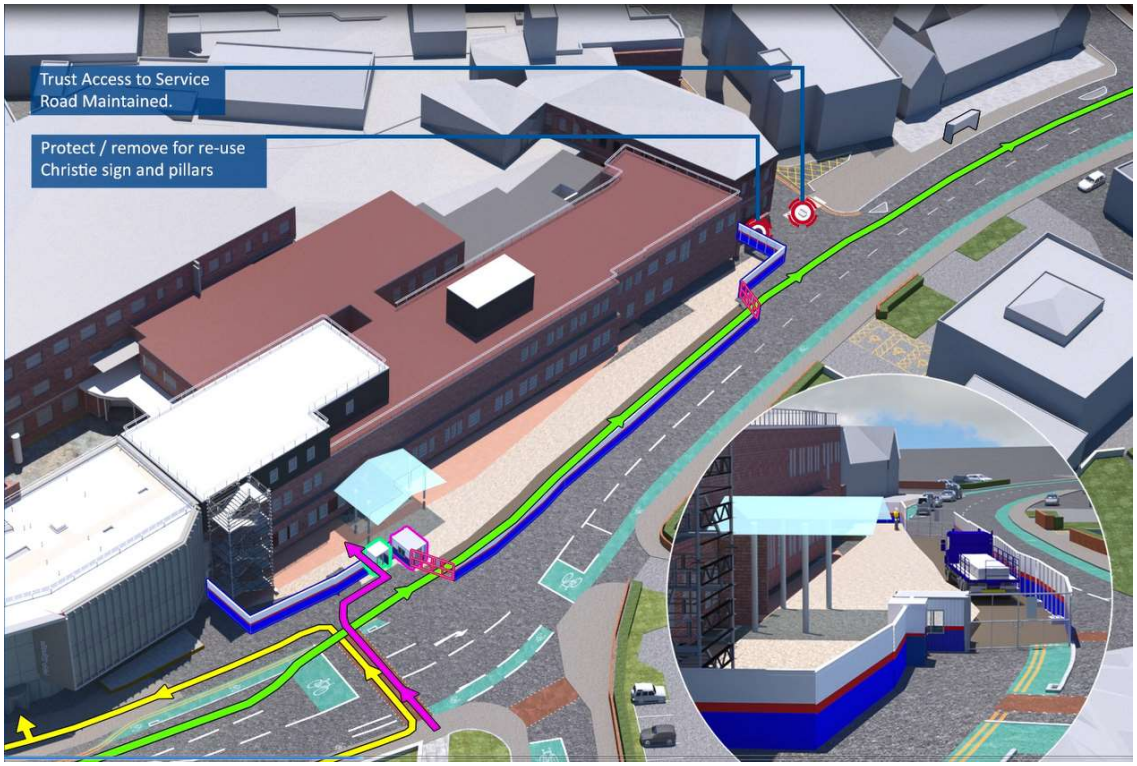


Figure 3 - Site Establishment

4.3 Access and Security

Security of the site and its perimeter fence are the responsibility of the Principal Contractor, IHP. The project will adhere to the recommendations laid out in the GMP Security needs assessment. Site security contractors should be SIA (Security Industry Authority) approved to ensure professional standards are adhered to (please see https://www.gov.uk/government/organisations/security-industry-authority for more details).

Untidy sites and surroundings can be littered with debris accessible to vandals who often use loose materials as missiles to commit crime. IHP will take appropriate measures to secure the site during demolition and construction, and control pedestrian and vehicular access in to and out of the site curtilage. The site will be made secure with a 2.5m high solid painted timber hoarding system. Pedestrian access for construction workers will be via turnstiles.

Unless otherwise stated IHP are responsible for ensuring:

- Unattended valuable items are removed from public view and stored in locked areas
- Site boundaries are secured when not in use using fencing and locks on gates
- Potentially hazardous materials are secured (e.g., fuel outlets will be locked)
- Plant and equipment immobilised out of working hours
- The movement of people in and out of the site is controlled with the use of biometric turnstiles and numbered vests
- The site is staffed for security on a 24-hour basis once the superstructure is substantially complete
- Site security cameras are used in locations which minimise disturbance to residents
- The security of neighbouring sites will be taken into consideration. Scaffolding, ladders, or any other site access equipment is not left in areas that may cause a nuisance to neighbouring properties.

4.4 Site Office & Welfare Facility

There are currently 3 options for the site welfare facilities. See plan below:

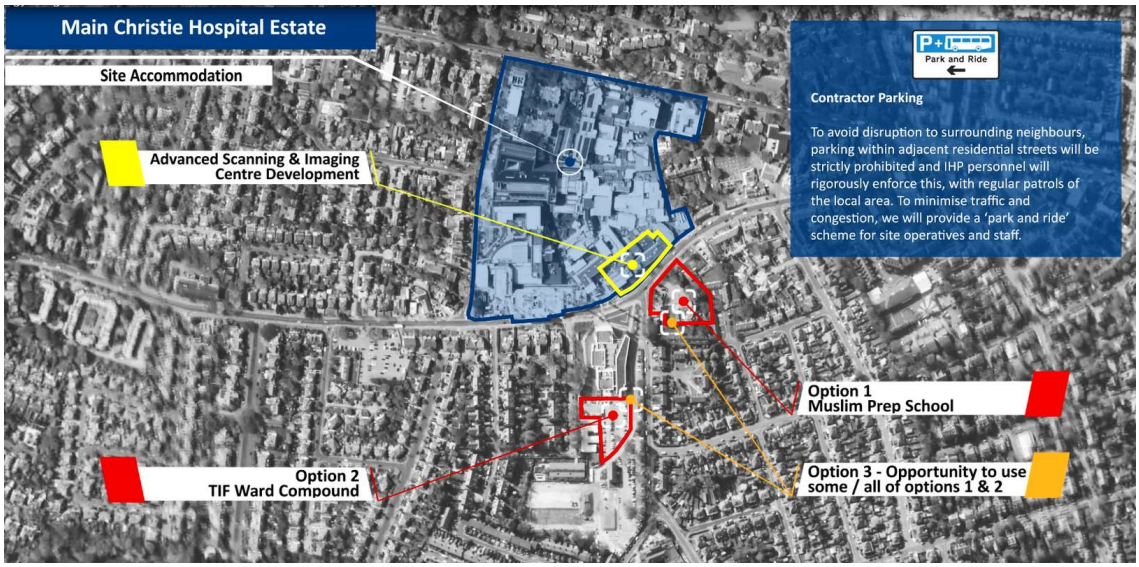


Figure 4 - Welfare Options

The welfare provision provided will be in accordance with CDM Regulations 2015 and shall comprise as a minimum:

- Toilets (Male and Female)
- Hand washing facilities
- Facilities to rest and eat
- Drinking Water
- Hot and Cold running water
- Facility to heat food

The site offices and welfare facility will ideally be serviced from mains electricity and water. Temporary generators will be avoided where possible. The site office and welfare facility will be locked (and the internal lights switched off) at the end of the working day and opened at the beginning of the working day.

5. Ingress & Egress for Personnel & Vehicles

5.1 Personnel Ingress and Egress

There will be a biometric personnel turnstile located on Wilmslow Road. This will be secured overnight.

Personnel routes to and from the site will be via the existing footpath and pedestrian crossing on Wilmslow Road as shown in pink on the below plan:

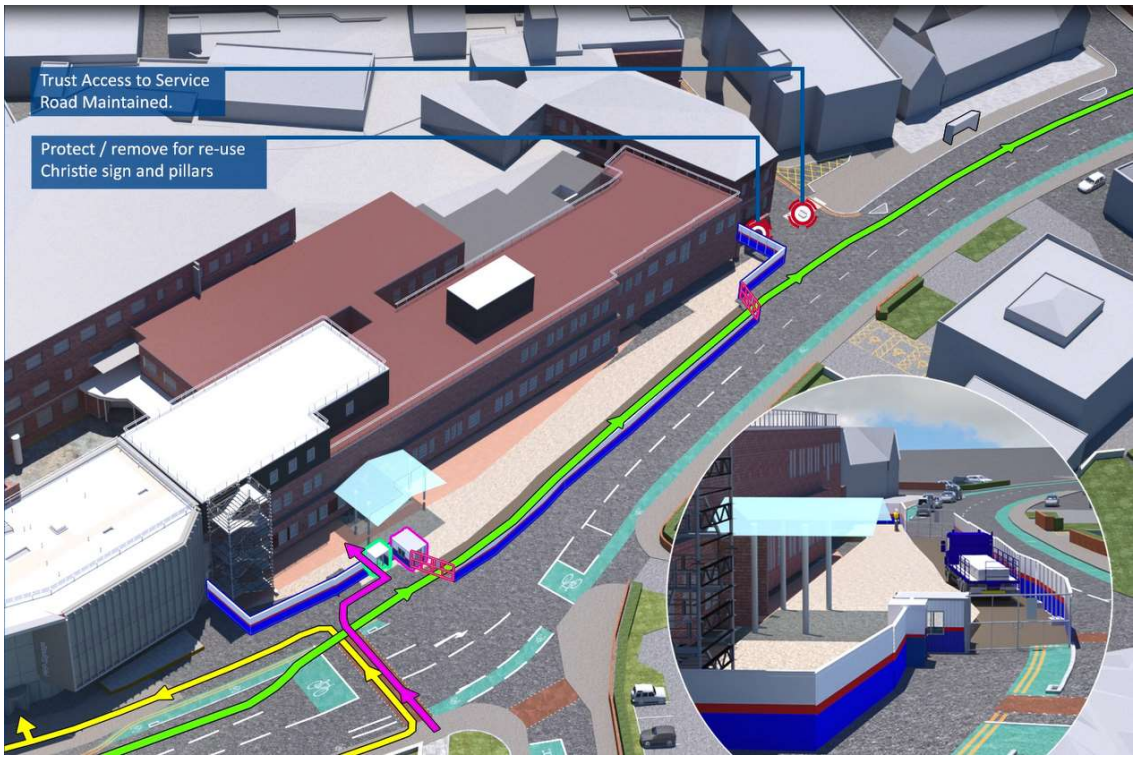


Figure 5 - Site Establishment

All access and egress routes within the hospital site will continue to be suitably signposted, having been agreed with the Christie.

Access and egress routes within the site will be communicated to all team members during induction and early morning daily activity briefings (DAB's) carried out by the Site Manager prior to any activity taking place.

During the DAB's all team members will be made aware of each other team's location, activity, exclusion zones and access/egress routes.

Specific access/exit points will be identified for localised areas of work within the site. These will be communicated to the team conducting work in the area and to the rest of the team during early morning DABS.

5.2 Vehicle Access and Egress

Access and egress points for vehicles to enter and leave the site will installed in the perimeter fencing, as shown on the vehicle access and egress plan below:



Figure 6 - Vehicle Access and Egress

All vehicle access will be from the south via the northern carriage of Wilmslow Road, entering and exiting via manned gates. Once vehicles are within the site hoarding, they will be always banked. On exit, all vehicles will be marshalled and instructed to turn left to prevent crossing the Wilmslow Road main carriageway.

5.3 Delivery of Construction Materials

The Traffic Management and Logistics Plan considers the Hospital's requirements and peak times. Hours of delivery and removal will be planned to minimise disruption to residents, users of the local highway network and the hospital.

All deliveries will be booked using the site booking system. Where possible, the use of just in time deliveries will be used to minimise the need for on-site storage areas and reduce the amount of plant required. Holding points for major vehicles will be established away from the site and the potential for off-site storage is being investigated.

Delivery vehicles will be required to maintain radio contact with the site Banksmen to ensure ease of access to the site. Delivery vehicles will not be permitted to queue at the site entrance.

The Banksmen will not only consider the movement of the materials / plant being delivered but they will be mindful of road users and pedestrians. At all times the Banksmen will ensure the safe delivery of plant and safeguard road users and pedestrians.

During delivery, off-loading and final driving away the Banksman will ensure the safe delivery of materials / plant and safeguard road users and pedestrians.

See also the Outline Construction Traffic Management Plan prepared by WSP.

6. Car Parking for the Site Workforce

6.1 Parking for Construction Workers & Visitors during the Demolition and Construction Period

To avoid disruption to surrounding neighbours, parking within adjacent residential streets will be strictly prohibited and IHP personnel will rigorously enforce this, with regular patrols of the local area. It will be made clear during procurement and at site induction that parking in the Controlled Parking Zone or surrounding area is not acceptable, with failure to comply leading to sanctions against individuals involved, which could culminate in a ban from the site. To minimise traffic and congestion, we will investigate the possibility of providing a 'park and ride' scheme for site operatives and staff. We will also liaise with The Christie to investigate the possibility of continued contractor parking, currently provided for the TIFF Wards Construction Site, to the rear of the Manchester Cancer Research Centre (Oglesby Building) off Wilmslow Road / Cotton Lane.

6.2 Public Transport

IHP will instruct workers and visitors to travel to site by public transport and walking/cycling where appropriate. Regular bus services pass along Wilmslow Road and Palatine Road adjacent to the site, and West Didsbury tram stop is a short walk to the south off the site, at the junction of Lapwing Lane and Palatine Rd. Burnage railway station is on Fog Lane to the Southeast of the site, Figure 9 shows the location of public transport locations near the site:

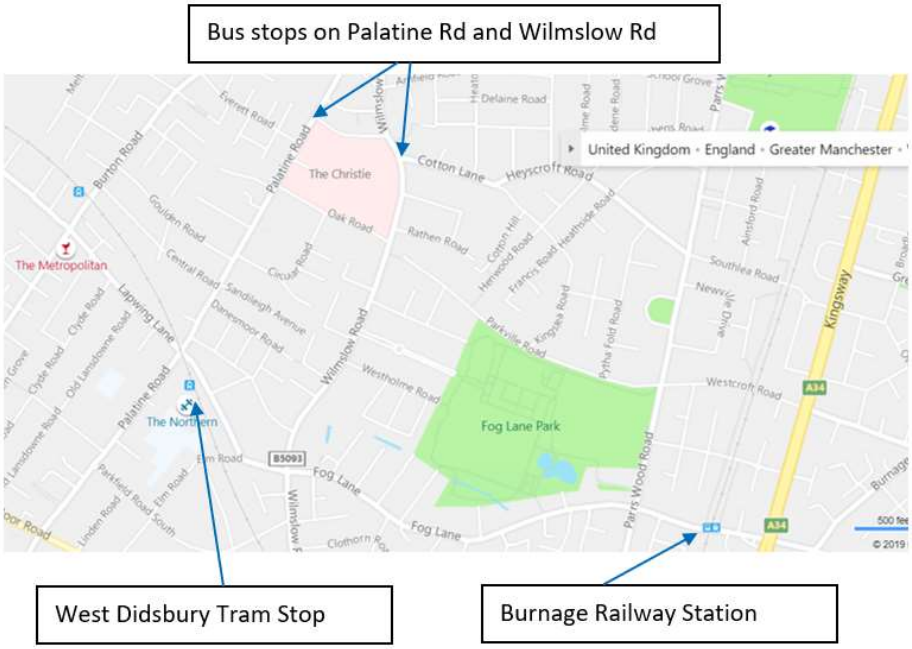


Figure 7 - Local Public Transport

7. Hours of Site Working

7.1 Hours of Works

Hours of work will be restricted to the following times:

- Monday to Friday: 08:00 to 18:00
- Saturday 08:30 to 14:00
- Sunday and Bank Holidays: No work

The site will open 30 minutes prior to these times.

7.2 Extended Hours of Works

There are certain activities where it will be required to work outside of the above stated working hours. These include concreting activities for the superstructure, erection of cranes, installation of large pieces of plant, the use of mobile cranes which require the closure of Wilmslow Road, and emergency works. Where extended working is required, this will be kept to the minimum duration to complete the work safely, and noise and vibration will be kept to a minimum for the activity taking place. Where appropriate, additional noise and vibration attenuation measures will be employed and where possible deliveries will be made during normal working hours, to minimise disruption due to transportation.

Any proposal to implement the extended hours of works will be by prior agreement with the Local Planning Authority, unless in an emergency.

Prior to any proposed extended hours of working, IHP will contact Manchester City Council to agree times and dates for those activities. Once approved, IHP will engage with the Christie to ensure that communications are sent out to the relevant parties/stakeholders in good time (usually two weeks' notice).

Extended Hours of Works for Concreting Activities:

- 24 hours a day from Monday 08:00 until Saturday 23:00
- Sunday and Bank Holidays: No work

It is anticipated that casting of the concrete slabs on several floors will require power-floating to achieve the required surface finish. Power-floating is temperature dependent and can take over 12 hours to complete after the final batch of fresh concrete is delivered to the area of pour, hence works could potentially extend into the evening and night. No concrete or other deliveries will be received out of normal working hours to achieve this, except in exceptional or unforeseen circumstances.

Extended Hours of Works for Erection and Dismantling of Tower Cranes:

- 24 hours a day from Friday 18:00 until Monday 08:00

It is required to construct tower cranes to enable the structure to be built, one at either end of the proposed building within the footprint. The tower cranes will be erected using mobile cranes. It is likely that the mobile cranes will be sited on Wilmslow Road, necessitating a road

closure. Therefore, the erection and dismantling of the cranes will need to take place during the weekend. Extended hours are required for this operation over a maximum period of two weekends to erect the cranes before the superstructure commences, and two weekends after the frame and envelope/cladding works are completed to dismantle the cranes.

Extended Hours of Works for Installation of Plant:

- 24 hours a day from Friday 18:00 until Monday 08:00

To install various pieces of plant and equipment in the proposed building, mobile cranes will be required to lift them into place. As there will be no space within the site curtilage to locate mobile cranes, it is likely that mobile cranes will be sited on Wilmslow Road, necessitating a road closure. Therefore, the installation works will need to take place during the weekend. Extended hours are required for this operation once the superstructure is completed.

Extended Hours of Works for Emergency Works or to make the site safe:

- 24 hours a day, 7 days a week

Should emergency work or repairs be required to make the site safe IHP will work whatever hours necessary to do this. Examples of emergency works could be the making good of scaffolding, ground support, temporary works etc, responding to extreme weather events or other unforeseen events.

8. Demolition and Construction Sequencing

8.1 Introduction

This section of the DCMP is to provide an overview of the methods by which the proposed building will be constructed.

The construction work described below will follow the demolition of the existing Blocks 19 & 20 (and part of Block 21) and associated works to be depicted in the Demolition Management Plan that will be submitted prior to commencement.

Works will progress in a logical and orderly manner and some overlap of activities will occur. The general sequence of works will comprise:

- Service diversions.
- Demolition of existing building.
- Installation of reinforced concrete piles.
- Installation of reinforced concrete pile caps including cropping of reinforced concrete piles below ground level.
- Construction of below ground drainage.
- Installation of tower cranes.
- Construction of reinforced concrete ground floor slab.
- Construction of reinforced concrete columns and walls.
- Construction of subsequent reinforced concrete floors, to roof level.
- Installation of building envelop.
- Drainage Connections.
- Installation of building services systems.
- Building fit out and Services Installations.
- Hard and soft landscaping works.

8.2 Service Diversions

As part of enabling works diversions of services will be required – if any diversions are required outside of the hospital red line a separate plan will need to be submitted.

These works are subject to further surveys which are currently ongoing.

8.3 Demolition

The development site consists of existing Blocks 19 & 20 which are to be demolished as well as part of the existing Block 21 (see demolition plan below). These works will be undertaken by specialist demolition contractors and will be subject to a detailed Demolition and Environmental Plan to be submitted prior to commencement.

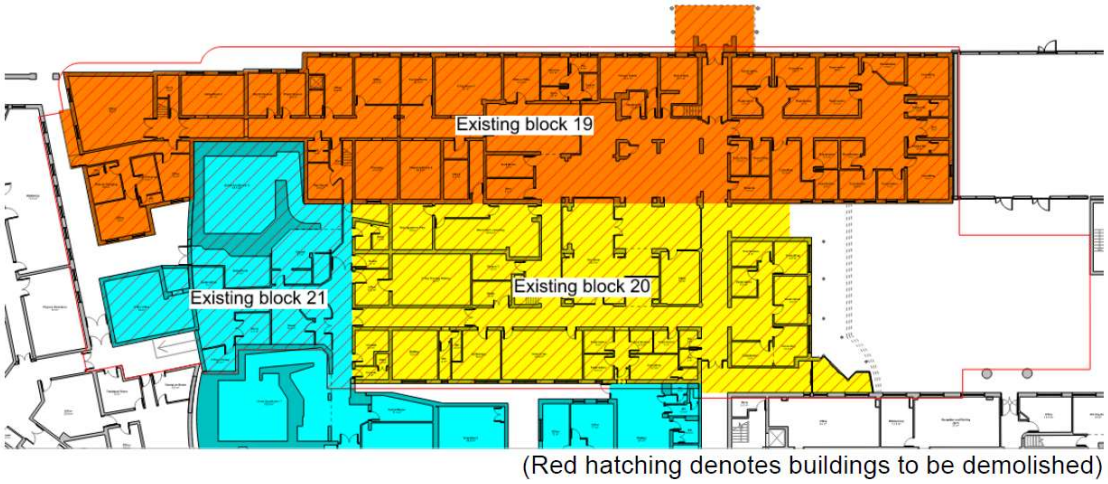


Figure 8 - Demolition Plan

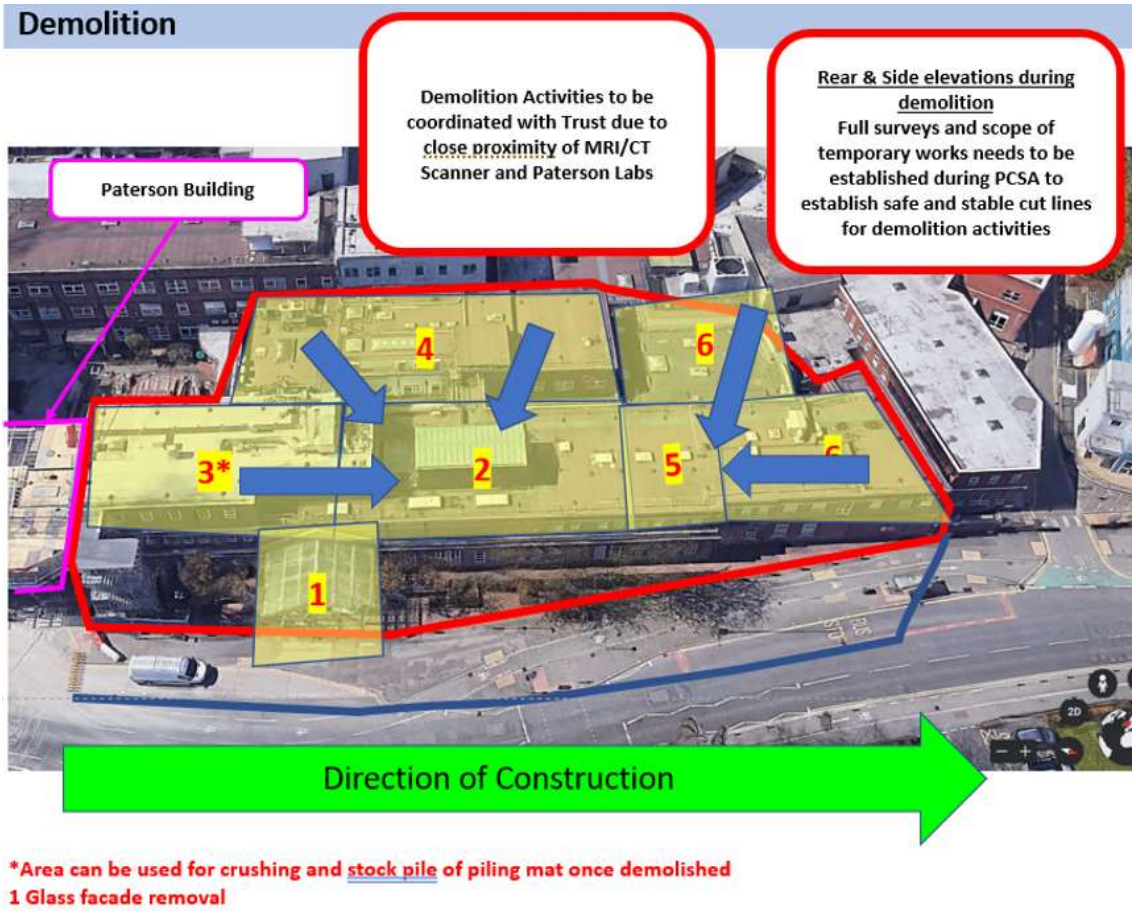


Figure 9 – Demolition Sequence and Key Considerations

8.4 Sub-Structure

Subject to the detailed sequencing the envisaged general construction sequence will typically be CFA piles forming the foundations. The following substructure activities are anticipated:

- Form piling mat for installation of CFA piling using CFA piling rig to form foundations
- Excavate the pile caps and crop the top of the piles, install the foundation formwork and steel reinforcement, and pour the concrete pile caps
- Install below ground drainage, ductwork, and form any below ground builders work for cable routes

8.5 Super-Structure

The Exact nature of the superstructure will be confirmed at detailed design stage. It is likely that the building will comprise a reinforced concrete with flat slabs forming the suspended floors. Reinforced concrete columns arranged in a regular grid pattern along with reinforced concrete cores to support the slabs. The following superstructure activities are envisioned:

- Fix vertical elements reinforcement, install formwork system and pour concrete to form the cores and columns
- Install falsework for lowest suspended slab, fix reinforcement and cast
- Continue moving up the floors, installing vertical elements and floor slabs. Falsework to be struck when concrete has cured and slabs to be propped until sufficient strength gain to span independently

8.6 Building Envelope

The building façade is made up of brickwork cladding with elements of glazing such as windows and curtain walling and screening to plant on the roof. The façade system can be installed using MEWPS, scaffolding, mast climbers and mobile and tower cranes for lifting of materials. The roof is predominantly a blue roof system that will be installed by specialist subcontractor.

8.7 Building Services and Internal Finishes

Once the building or parts of the building are watertight, the interior fit out and finishing in that part of the building can commence. The building fit out will include the following:

- Internal walls, partitions, doors and ceilings
- Mechanical and Electrical systems ‘first fix’
- Mechanical and Electrical systems main installations
- Lift installations
- Plastering and decorating
- Office clinical space fit out
- Plant rooms

All deliveries of materials for the building fit out will adhere to the construction site logistics plan and be stored in allocated stores on site or next to the point of installation within the building.

On completion of the building fit out, the final components and equipment will be installed to complete each area. These will be delivered just in time to ensure deliveries are controlled and no excessive damage occurs to products and components.

8.8 Final Stages of the Works

The final element of the works will be the completion of the public realm works. Some of these works will have to be undertaken outside the site hoarding line. In these situations, a herras fenced area will be required to safeguard the public from the work areas.

Testing and commissioning of the building services and snagging of the works will be ongoing up until the practical completion of the Project.

The site establishment will be de-mobilised following the practical completion of the building and the external works.

9. Pollution and Public Relations

9.1 Introduction

The purpose of this section is to set out the environmental measures that will be adopted during the demolition and construction of the Project to prevent or minimise the potential environmental effects associated with demolition and construction activities.

This sets out:

- An environmental management framework to which IHP's management systems will comply
- Environmental management and monitoring measures to be adopted and implemented throughout the demolition and construction phases; and,
- Responsibilities for implementation of management and monitoring measures during demolition and construction.

9.2 Responsibility for Environmental Measures

IHP take their environmental responsibilities seriously and only select sub-contractors who are suitably qualified, competent, and experienced in terms of environmental management for the works they are contracted to undertake.

As part of IHP's works, IHP are required to:

- Regularly review environmental requirements on site (including legal and other requirements) and update/revise as appropriate
- Define the environmental responsibilities of relevant personnel within the site management structure and raise awareness of key environmental issues
- Identify environmental risks and opportunities particular to the site by reviewing relevant documentation; consulting regulatory agencies; and liaising with clients and designers;
- Establish the process for monitoring, reporting (see below), auditing and management review with the aim to ensure environmental compliance.

Unless stated otherwise, all requirements set out above and, in the sections, below will be the responsibility of IHP.

9.3 Environment Incident Response

IHP will establish and implement an environmental incident procedure which is designed to respond accordingly to the anticipated environmental hazards and risks presented at the site. This will include emergency control procedures which incorporate the Environment Agency's Pollution Prevention Guidelines, including:

- The development of an environmental incident/pollution reporting and response plan
- Measures to mitigate the adverse effects of an environmental incident
- Measures to be adopted to investigate and prevent the recurrence of an environmental incident.

9.4 General Control Measures

Construction Site Hoarding

Site hoarding to the construction site will be of timber construction and located as show in Section 4 above. Site hoarding to Construction Site Welfare & Compound and Contractor Parking will be agreed with The Christie and align with any party wall agreements or boundary conditions.

Materials Handling and Storage / General housing keeping

Construction materials will be stored within the Project Site or Site Compound, typically at the edges of the site, or within the building as the structure progresses.

The stockpile of excavated materials will be temporary and sprayed with water or if appropriate sprayed with an appropriate chemical dust suppressant.

Good housekeeping will be maintained on-site and on access routes. Measures will include but are not limited to:

- Clear access routes with appropriate signposting and site marshalling.
- Segregation and regular removal of waste
- Keeping the site clean and tidy
- Inspecting hoarding frequently, repairing and repainting as necessary
- Visual inspections of plant, equipment and material storage areas for leaks or spills
- Welfare facilities will be kept clean
- Open fires will be prohibited.

Temporary Lighting

Lighting will be provided at site boundaries with illumination sufficient for the safety of the passing public at locations where, because of the works, lighting has been removed. Precautions will be taken to avoid shadows cast by site hoarding on the surrounding public highways, footpaths, and amenity areas.

For all lighting on, or adjacent to, the Public Highway prior approval will be obtained from the Highway Authority.

Lighting will be positioned and directed so as not to unnecessarily intrude on adjacent buildings and land uses and prevent any unnecessary interference with residents and passing motorists.

Temporary lighting within the site will be kept at a minimum level out of hours to ensure the safety and security of the works.

9.5 Specific Measures to Avoid / Minimise Adverse Effects to Environmental Receptors

Presented below are measures which are intended to prevent or minimise adverse effects of demolition and construction activities on various environmental receptors. Measures are presented in relation to:

- The control of dust emissions
- The control of emissions to air from plant and equipment (air pollution)
- The control of noise emissions
- Investigation of ground conditions and investigation of contaminants
- The prevention of water pollution
- The handling of hazardous substances
- The management, segregation, and removal of general waste
- The protection of site workers

9.6 The Control of Dust Emissions

Dust emissions will be controlled during all demolition and construction operations and periods of dry weather and prevailing winds. Demolition and construction operations will take into consideration the local sensitive receptors including Hospice patients, Hospital staff, residents, schools, occupiers and pedestrians.

The mitigation of dust emissions is critical not only because of the potential nuisance it may cause to the identified sensitive receptors but also because of the potential health risks posed to hospital & hospice patients.

Therefore, best available measures shall be implemented to prevent dust, or where this is not practicable, reduce dust emissions from the demolition and construction processes. Monitoring of particulate distribution shall be undertaken by installing monitoring stations around the perimeter of the site and visual observations prior to the commencement of operations and periodically thereafter and recorded on a site monitoring sheet. Should the visible particulate matter be emitted beyond the site boundary operations will cease and working practices adjusted and/or control measures shall be implemented.

Standard working practices that shall be implemented for all demolition and construction operations as relevant to the scope/area of works are as follows:

- Damping down the site and stockpiled aggregate using water sprays;
- Water-spray dampening of areas to be undertaken to prevent dust blow;
- Cleaning access roads by means of a road sweeper;
- Adhering to the temporary site speed limit of 5 mph on site;
- No fires will be allowed on the site at any time;
- Consideration will be given to the installation of additional filters to surrounding building ventilation to keep particulates out of the ductwork. Should this be required, further monitoring will be undertaken to monitor particulate intrusion.
- If the building ventilation is in contact with the work area, consideration will be given to the installation of additional filters to keep particulates out of the ductwork. All filters will be changed at the conclusion of the Project.

Mud on the public highway is a statutory nuisance and health and safety hazard. Therefore, it will be minimised and prevented on the Project by keeping the access roads free from mud by road cleaning to be carried out by a road sweeper.

Further details of measures for the prevention and management of dust are presented in Table 1 below.

Table 2 - Dust Management

Source Description	Primary Dust Control Measures	Thresholds / Triggers for Management	Contingency Dust Control Measures
Tipper wagons and Vehicle Traffic	Add water to unpaved road surfaces if necessary. Implement a speed limit of 5mph to slow vehicles and therefore reduce fugitive dust emissions. Where access roads adjoin public highways, there is the potential for material to be tracked onto the paved public highway. If material is tracked onto public highways, and is creating dust, the road will be cleaned (ie. tracked material will be removed from the road surface using a road sweeper). All tipper wagons will be covered.	If tipper wagons or vehicle traffic emissions are occurring that may impact air quality beyond the property boundary: If visible dust is being generated from tipper wagons or vehicle traffic; and/or If the weather forecast indicates dry conditions and strong winds are likely. Visual cues would be the primary trigger for mitigate action to be taken with respect to fugitive dust emissions. If the weather forecast indicates dry weather and strong winds are likely, this is also a trigger for preventative dust management action to be taken. Visual monitoring during site activities will be conducted by the site manager/ environmental officer to determine if contingency control measures should be implemented. Complaints by nearby residents Install dust monitoring stations to the perimeter of the site and record readings daily	Apply water to roadways that are being used and producing dust. Ensure covers for tipper loads are intact. Apply gravel to roadways approaching access points. Cease activities during high wind events or when dust emissions cannot be adequately controlled.
Vehicle Fleet Operation	Avoid engine idling. Ensure demolition and construction fleet vehicles are maintained	Periodic maintenance of demolition and construction vehicles. In addition, excessive or	Replace worn or malfunctioning equipment.

Source Description	Primary Dust Control Measures	Thresholds / Triggers for Management	Contingency Dust Control Measures
	according to manufacturers' guidelines. Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. Implement a wheel jet washing system. Adhere to site speed limits and designated roads.	consistently black exhaust fumes are a signal that an engine is not operating optimally. Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits. Inspect on-site traffic routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable. Record all inspections of traffic routes and any subsequent action in a site log book.	Consider different scheduling and routing options
Loading and Unloading	Keep drop height onto stockpiles and tipper wagons to a minimum. Empty loader bucket and tipper wagons at rate to limit dust emissions. Tipper wagons will not be loaded above the sides of the tipper wagons.	If the weather forecast indicates dry conditions and strong winds are likely. Visual cues will be the primary trigger for mitigative action to be taken with respect to fugitive dust emissions. If the weather forecast indicates dry weather and strong winds are likely, this is also a trigger for preventative dust management action to be taken.	Increase frequency of water spray usage. Installation of engineered controls such as dust covers or collection mechanisms. Cease activities during high wind events.

Source Description	Primary Dust Control Measures	Thresholds / Triggers for Management	Contingency Dust Control Measures
Stockpiled Materials (including aggregate piles or contaminated soil)	Stockpiles should be located as far away from sensitive receptors e.g. hospice building, residential and educational buildings as practicable. Where possible, ensure stockpiles are kept protected from wind erosion or enclosed or under sheeting. Dusty materials can be damped with water sprays. Wind barriers (protective fences) with a monoflex lining with similar size and height to the stockpile may be used. Keep stockpile height to a minimum. Minimise drop height of conveyor to the stockpile.	If visible dust is being generated from the stockpiles If the weather forecast indicates dry conditions and strong winds are likely Visual cues will be the primary trigger for mitigative action to be taken with respect to fugitive dust emissions. If the weather forecast indicates dry weather and strong winds are likely, this is also a trigger for preventative dust management action to be taken. If measured concentrations are approaching an Environment Air Quality Standard (see dust management plan), contingency control measures will be implemented. Periodic dust monitoring will be carried out during the Project by installation of dust monitoring stations	Wet the stockpiles. Cease activities at the stockpiles during high wind events or when dust emissions cannot be adequately controlled. Cover the temporary stockpiles. Construct a wind barrier if necessary.
Track out Specific	Inspect on-site traffic routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.	Record all inspections of traffic routes and any subsequent action in a site log book.	Ensure Roads are dampened down on a regular basis to prevent dust from arising.

9.7 The Control of Emissions to Air

The emission of pollutants from plant and equipment will be minimised by the implementation of the following measures:

- Site workers will check that machinery is in good working condition before commencing work and that any exhaust emissions are at an acceptable level. This will be achieved by completing a visual check on the smoke that is emitted from the exhaust.
    - No visible haze emitted from the exhaust indicates that C02 levels much lower than 1000ppm 8-hour TWA (time-weighted average). This demonstrates that the plant or machinery poses a very low pollution risk and is in good working order.
    - Occasional white, blue or black smoke emitted from the exhaust indicates C02 levels about 1000ppm 8-hour TWA. This demonstrates that the plant or machinery poses a medium pollution risk and will not be used until it has been serviced.
    - Permanent white, blue or black smoke emitted from the exhaust indicates C02 levels greater than 1000ppm 8-hour TWA. This demonstrates that the plant or machinery poses a high pollution risk, this plant or machinery must not be used until it has been serviced.
- Any item of plant deemed to be a pollution threat will not be granted access onto the site or allowed to operate. Certified plant on site shall be recorded on a Plant Register held on site by the Site Managers.
- Plant and machinery shall be switched off when not in use and the keys removed from the ignition.
- Regular maintenance shall be carried out and recorded.
- Daily checks on plant and machinery will be carried out.

To prevent emissions of fumes from Chemicals and Solvents:

- Containers of solvents will not be left unattended with lids removed.
- Bunded fuel tanks will be used, with 110% spillage capacity.
- Lids on containers will be replaced when not in use to prevent evaporation to the atmosphere.
- COSHH procedures will be followed to prevent leakage when stored

9.8 The Control of Noise and Vibration

To minimise noisy works and vibratory works throughout the demolition and construction period, a strategy has been prepared in accordance with HTM 08-01 Section 3 and specific measures will be implemented, including:

- Erection of site hoardings around the construction site will be solid and will be erected for the duration of the demolition and construction programme.

- Appropriate screens or enclosures will be provided locally, where practicable, around high noise generating equipment.
- Stationary plant and equipment liable to create noise or vibration will, where practicable, be located away from sensitive receptors or will be controlled using resilient mountings or sealed acoustic covers or enclosures to prevent or reduce the risk of disturbance, and control vibration transfer from demolition and construction areas to occupied areas.
- Designated access and egress points from the site will be utilised.
- Radios will not be permitted to be used anywhere on site.
- All operatives will be issued with hearing protection to be worn if exposed to noise above 85 decibels.
- Hearing protection zones will be put in place using signage in areas suspected to have noise over 85 decibels. These areas will be confirmed by a noise assessment completed by the contractor.
- Only plant and equipment that are in good repair and conforming to the manufacturer/British Standard emissions standards BS 5228-2:2009. + A1:2014 part 2 will be utilised. Any plant or equipment not conforming will be deemed unacceptable.
- Regular maintenance will be undertaken on all plant and equipment in accordance with manufacturer's guidelines. Defect reports shall be held on site in a designated register on site.
- Plant and equipment will be used where practical in a mode of operation that minimises noise. The plant will not be left running when not in use.
- Where possible, plant and equipment will be electrically powered instead of petrol or diesel powered.
- Should vehicles be required to reverse, white noise reversing alarms will be fitted. These reversing alarms are inherently quieter than those of standard manufacture.
- A system will be in place for regular liaison with the healthcare professionals most affected by the works.

If noise levels cannot be sufficiently mitigated to comply with the noise limits, or if works need to extend beyond normal working hours, an application will be submitted to MCC for consent under Section 61 (s.61) of the Control of Pollution Act 1974.

Should this be necessary, environmental management measures will be employed and demonstrated through programming, working hours, method and noise predictions. This will include detail justifications, descriptions and assessments of activities outside normal working hours. S.61 applications will conform to the requirements of the 1974 Act and will include the following:

- An outline of the proposed demolition and construction methods;
- The type and number of the plant to be used;
- Details of the working hours required and, where these differ from the normal working hours detailed in this DCMP. This will be supported by an appropriate justification for the working hours sought;
- A detailed work programme which identifies the appropriate location and duration of each significant noise generating activity;
- Consideration, where necessary, of cumulative noise arising from the works for which consent is being sought and any other demolition or construction works that have already been given consent;

- Details of a monitoring programme for the noise and plant;
- Regular liaison with The Christie to help inform upcoming works and possible increases in noise/vibration from background or control levels;
- Any letter drops to local residents to inform them in advance of potentially noisier works will be done through The Christie PR team.

9.9 Monitoring of Noise, Vibration and Air Quality

Real time Noise, Vibration and Air Quality monitoring will be undertaken during the works via monitoring stations. These stations will be located with the agreement of The Christie.

Each monitoring station will use the Casella Guardian2 monitoring equipment, or an equal equivalent system.

Daily reports will be generated in graphical form to record the noise, vibration and air quality levels recorded in the previous 24 hours. In addition, the monitoring stations will alert site management by email and text message if noise and/or vibration levels reach the threshold level, so that action can be taken before threshold levels are exceeded. The threshold levels have been determined from the Environment Statement prepared at the planning stage for the Paterson Redevelopment and Multi-Tiered Car Park, taking account of the background levels and predicted demolition and construction activity levels.

9.10 The Investigation of Ground Conditions and Contaminants

General Measures

A ground investigations report will be prepared and agreed with Manchester City Council prior to commencement of demolition and any remediation identified to be required will be undertaken prior to below ground works commencing.

The following environmental management and monitoring (where necessary) measures will be adopted throughout the demolition and construction phases and modified as necessary following completion of the SI.

The possibility that unforeseen contamination be encountered during demolition and construction will be considered in the development of relevant health and safety procedures and pollution incident control procedures, as reported in the Foundation Works Risk Assessment and Contamination Risk Assessment.

If ground with significant levels of contamination is encountered during demolition or construction, all works will cease in the affected area until a method detailing how to deal with the contamination is agreed with the local authority.

All personnel working the potentially contaminated areas will wear additional, appropriate personal protection equipment (PPE) and will receive detailed advance briefings on the hazards likely to be encountered and the procedures to be followed.

Monitoring

A watching brief for contamination will be maintained during all ground works. If any ground contamination is revealed during demolition or construction, the affected area will be

investigated, a risk assessment carried out, and remedial action taken as appropriate. The Local Authority/Environment Agency (EA) will be informed in writing of any contamination revealed during demolition or construction.

Chemical testing of soils will be undertaken where contamination is suspected or found. Samples will be sent as soon as practicable to a United Kingdom Accreditation Services accredited laboratory for testing against a suite of contaminants. Where possible, the chemical testing of soils will be carried out to MCerts Standards. The results will be used to inform the risk assessment and determine remediation or waste management requirements.

Reporting

Where any contamination is found and treated, details of the remediation will be provided to the planning authority as required by a planning condition application to this.

9.11 The Prevention of Water Pollution

Water pollution can have a damaging effect on the environment, humans and the habitat of plants and animals. Pollution can occur if discharges of substances into surface watercourses or groundwater without prior treatment or by accident, e.g. after an accidental spill. Possible sources of water pollution are as follows:

- Spills or leaks from oil and chemical containers.
- Trade effluent going into surface water drains instead of foul water drains, or straight into watercourses.
- Removing too much water from surface water and groundwater.
- Run-off containing de-icing materials, such as salt during winter months.
- Silt and soil from construction sites.
- Wash waters and waste products.
- Fuel spills.

Therefore, the following environmental management measures will be adopted throughout the demolition and construction phases of the development:

- All potentially polluting substances will be stored on impermeable surfaces with controlled drainage, away from storm water sewers, grids, channels, watercourses and ditches or adequate measures will be taken to protect against pollution.
- Capping all redundant drains (SW or FW) that leave the building by way of the concrete plug. The drains will be privately owned and not within the ownership of United Utilities. The capping positions will be recorded.
- Using sustainable drainage systems to control diffuse pollution from lightly contaminated run-off.
- Using silt traps, buffer strips and sandbags to prevent run-off containing sediment from polluting surface waters and groundwater.
- All hazardous substances on site will be controlled in accordance with COSHH Regulations. The storage compound will be fenced off and locked when not in use to prevent theft and vandalism.
- Refuelling of plant and machinery will take place with appropriate spillage controls. Vehicles will not be left unattended during refuelling.

- Fuel storage tanks will be locked when not in use to prevent unauthorised access and reduce the risk of vandalism.
- Washing out concrete trucks, hoppers, and mixers will take place in areas away from storm water sewers, grids, channels and watercourses to prevent water pollution.
- Spill kits will be held on site with a variety of absorbent materials to be used in the event of a spill of fuel, oil or chemicals and a spill response team appointed.

9.12 The Handling and Removal of Waste Hazardous Substances

Risk Assessments

A hazardous materials audit or risk assessment will be carried out during the demolition and construction periods. Details of the quantities and types of hazardous materials held at the site will be recorded on the COSHH register. All hazardous substances being delivered to the site shall be accompanied with the relevant COSHH assessment and paperwork. All operatives on site will sign up to these assessments to agree that they have read and understood the assessment. Any hazardous substances that do not have sufficient/complete paperwork will be refused on site.

Prior to commencement of works, task-specific risk assessments will be carried out and the findings will be used to develop method statements which contribute to formulating the Safe Systems of Work (SSoW).

The SSoW will be communicated to all relevant parties prior to commencing works and will be monitored and reviewed accordingly.

Prior to the start of each day's work, a daily activity briefing will be carried out to discuss the day's activities and the associated hazards and risks and the necessary control measures in place to mitigate them.

Should a variation in task occur, a specific assessment relevant to the variation will be carried out. Necessary additional control measures will be identified.

Any subcontractors associated with the demolition or construction of the Project will be required to produce site-specific assessments that are evaluated and agreed by the site manager prior to works commencing. Should revisions or subsequent amendments be necessary, these will be re-evaluated accordingly. Subcontractors will be advised of any health and safety requirements associated with hazardous substances that may affect their risk assessments and safe systems of work.

A systematic approach to risk will be implemented. This will include:

- Consideration of each aspect of work activities.
- Identification of all the hazards.
- Determining the remaining risk, the likelihood and severity of any injury and who is likely to be affected.
- Implementation of control measures that will eliminate or reduce (to an acceptable level) the identified risk.

Storage of Chemicals

All chemicals will be stored and segregated on spill trays in lockable containers. The containers will have a raised lip at the entrance designed to contain any spills that may occur within. Suitable COSHH boxes may be used for small quantities of materials if necessary.

Spill kit materials appropriate for the volume and type of substances stored shall be kept within the container for use in an emergency along with the current specific incident procedure.

Leaking or empty containers will be removed from the site immediately and disposed of via appropriately licensed waste disposal contractors.

9.13 The Management, Segregation and Removal of General Demolition and Construction Waste

Site Waste Management Plans

Although the Site Waste Management Plans Regulations 2008 were revoked in 2013, and the use of SWMP's is no longer obligatory, IHP recognises their value and continues to employ this as a tool to apply efficient materials management. Where there is potential for reuse of materials on site, this forms the basis of the Materials Management Plan (site of origin) and is registered under the CL:AIRE DoWCoP protocol, therefore a SWMP will be produce for the works.

The purpose of the SWMP will be to maximise the efficient re-use of suitable materials and minimise the quantity of generated waste. This is beneficial to meet the environmental objectives, but the beneficial conservation of resources usually has a positive economic impact.

The following measures will be taken to minimise the quantity of waste produced during the Project:

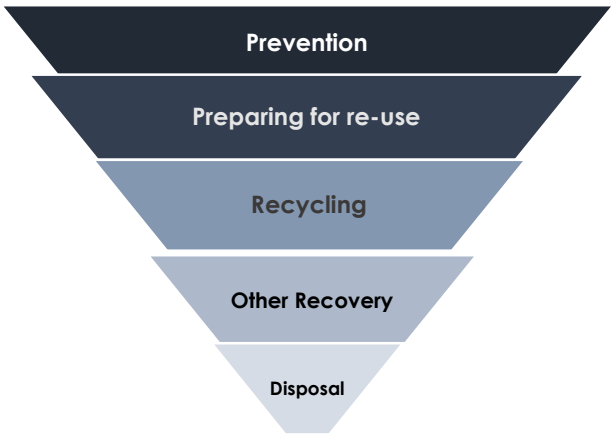
- All arising's will be segregated on site.
- Re-usable materials will be identified on site for processing in licensed facilities.
- Recyclable materials will be removed from site for processing in licensed facilities.
- Recoverable materials will be removed from site for processing in licensed facilities.

Waste management

During works, all material will be segregated into the appropriate waste streams and loaded into skips and removed from site. A duty of care will be produced for all materials being exported from site.

The Waste Hierarchy will be used to manage waste in terms of what is best for the environment. Please see below:

Table 3 - Waste Hierarchy to Manage Waste

	Using less material in design and manufacture. Keeping products for longer; re use. Using less hazardous materials
	Preparing materials to be re-used on site by crushing materials for re-use on site
	Turning uncontaminated waste into a new substance or product e.g. topsoil or 6f2 on site or at one of our recycling yards.
	Using suitable crushed materials for backfilling basements, piling mats, haul roads etc.
	Landfill disposal will only be considered for hazardous waste disposal such as asbestos or insulation.

Duty of care

In accordance with Section 34 of the Environmental Protection Act 1990 and in compliance with the requirements of EN ISO 14001 Environmental Management System, IHP and all sub-contractors working for and on behalf of IHP will be required to ensure waste is controlled and managed in accordance with "The Duty of Care" requirements as follows:

- Prevent the illegal deposit or handling of controlled waste by any other person
- Prevent waste material from escaping our control
- Only transfer controlled waste to an "authorised person" (Waste Collection Authority, the holder of a Waste Management Licence, Registered Waste Carriers or District Council Disposal Authority)
- Ensure that waste is transferred under the control of a Waste Transfer Note that provides a clear description of the waste material

All waste is the responsibility of IHP until it has been fully recovered or finally disposed.

9.14 Stakeholder Communications

A Community Liaison Strategy will be developed to set out the approach for liaison with the local community and the methods for dealing with issues that arise (either planned or unplanned). The Strategy includes the allocation of a Community Liaison Officer.

Direct liaison will take place with the following key stakeholders to maintain effective communication links to and keep them updated on construction matters likely to affect them:

- Local Authority

- Local Residents
- Schools, nursing homes and community facilities
- Appropriate statutory agencies (i.e. Environment Agency)
- Local Businesses
- Local Representative Groups (i.e. the Christie Neighbourhood Forum)

9.15 Noticeboards

Notice boards will be maintained at appropriate locations around the site for the duration of the works. The notice boards will be accessible and clearly visible and will contain:

- A description of the works to be undertaken
- Key Contractors involved in the works
- Contact details

10. Health and Safety

10.1 Construction Health and Safety Plan

A Construction Health and Safety Plan will be developed in detail for the site works prior to any works progressing. Separate Risk Assessments and Method Statements will be required for individual operations carries out as part of the works. All trade contractors are to submit their own health and safety plans, carry out risk assessments / method statements for their works. All site personnel must be suitably qualified for the works they are to undertake and as a minimum by CSCS certified.

The construction works will be legally obligated to comply with the CDM regulations 2015.

10.2 PPE Requirements

All necessary Personal Protective Equipment (PPE) will be provided to site workers and a register of PPE issued will be kept and administrated by the Site Manager. Any damaged, unsuitable and non-conforming PPE will be disposed of and replaced. The minimum PPE to be issued and worn will comprise:

- Safety hard hat
- Light eye protection
- Hi-visibility vest/jackets
- Gloves
- Toe and sole protective boots

Other task-specific PPE will be issued as required.

10.3 Emergency Evacuation Procedure

Contact names and phone numbers will be made available in case of out of hour's emergencies relating to the site. This information will be displayed prominently on the hoarding.

A fire evacuation plan will be drawn up and prominently displayed on site by IHP. The site offices will have their own plans drawn up. Site evacuation routes will be clearly marked on site, as will fire extinguisher points and practice drills will be undertaken and recorded on FieldView. All excavation plans will be agreed with the Christie.