



Detailed Construction Environment Management Plan The Christie Hospital TIF Wards Project

By VINCI Construction Ltd

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Client

The Christie NHS Foundation Trust

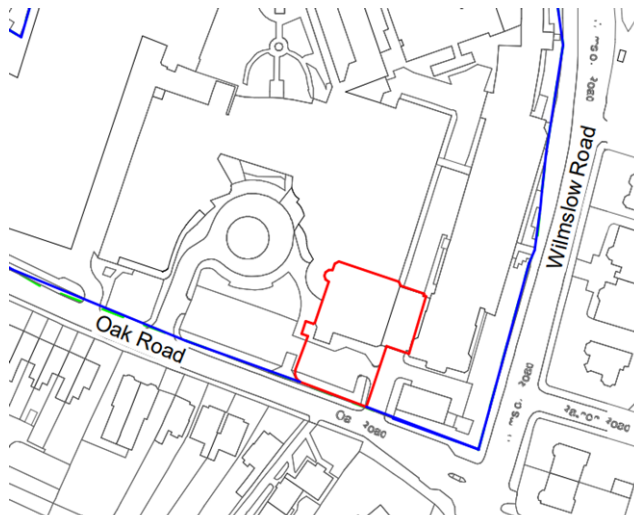
1. Introduction

- 1.1 This document is the detailed Construction Environment Management Plan ('CEMP') and has been prepared by Vinci Construction Ltd to support the development proposals for the TIF Wards ('the Project') at Oak Road in Manchester.
- 1.2 The purpose of the CEMP is to provide the details, to describe the methods by which the Project will be constructed and the means by which construction activities will be controlled to prevent adverse effects on day to day operations at The Christie, the amenities of nearby residential properties and the environment more generally.

2. The Site.

Project Site Location

- 2.1 The Project Site is identified in red below and is located adjacent to the Christie Main Entrance on Oak Road:



Project Site Description

- 2.2 The site is narrow in shape. Its topography is flat with little variation across the site.
- 2.3 The primary access to the site will be via an existing service road off Oak Road.

Surrounding Area

- 2.4 The northern boundary is The Christie Hospital Building (CCU Ward).
- 2.5 The western boundary is The Christie Hospital Main Entrance & Drop-Off point.
- 2.6 The east boundary is The Christie Hospital Service Road and PRP Service Yard.
- 2.7 The south boundary is Oak Road, with residential dwellings beyond.
- 2.8 Beyond its immediate boundaries, the site is located within a predominately residential area. The majority of dwellings along Oak Road comprise three storey detached villas, a two-storey apartment building known as Rutland Court and a three-storey villa consisting of multiple apartments.

Policy and Environmental Designations

- 2.9 We are not aware of any site-specific Development Plan policies, or any statutory or non-statutory environmental designations associated with the site. Therefore, we have utilised the following:

- According to MAGIC Map, there are no statutory designated sites for nature conservation within the site or in close-proximity.
- There are no listed buildings immediately adjacent or proximate to the site; however, two Grade II listed buildings are located approximately 300m to the north of the site (The Red Lion Inn and Milestone adjacent to Withington Fire Station).
- The site is not located within a Conservation Area; however, the Withington Conservation Area is approximately 500m to the west and Ballbrook Conservation Area and Old Broadway Conservation Area are approximately 600m to the south.
- According to the Environment Agency Flood Risk Maps, the site is within Flood Zone 1, which indicates that the site has a low risk of flooding.
- The site is not located within an Air Quality Management Area (AQMA), as defined by the 'GreatAir Manchester' interactive map (which shows the AQMA's for Greater Manchester).

3. Description of the Project

- 3.1 The development is described as an extension to the south elevation of the Christie Hospital to provide two new stair and lift cores, external alterations, and provision of plant equipment and screening on the roof of the Christie Hospital in Withington and adjacent to Oak Road (the “Proposed Development”).
- 3.2 The circulation core would improve vertical movement and access for bedded patients in the event of an emergency evacuation, enhancing of the building’s fire strategy and bringing the building in line with current guidance and regulations.

4. General Provisions

4.1 Hours of Works

Hours of work will be restricted to the following times;¹

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

4.2 Extended Hours of Works

There are occasional activities where it will be necessary to work outside of the above stated working hours. These include concreting activities for the superstructure, lifting of large plant, 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 extended hours of hour work (e.g. 24-hour concrete activities) will only go ahead once there is a prior consent in place for that work from MCC. Any extension to hours of work on construction sites will be applied via s.61 of CoPA 1974 on the MCC Website

Once approved, Vinci will engage with The Christie and Deloitte to ensure that communications are sent out to the relevant parties/stakeholders in good time (usually two weeks' notice).

4.3 Extended Hours of Works for Concreting Activities:

It is anticipated that casting of the concrete slabs may 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-time. No concrete or other deliveries will be received out of normal working hours to achieve this, except in exceptional or unforeseen circumstances.

As stated above extended hours of work for concrete activities will only go ahead once prior consent has been obtain from MCC.

4.4 Extended Hours of Works for Installation of Plant:

In order to install large roof top plant and equipment in the proposed building, mobile cranes may be required to lift them into place. Due to the limited curtilage on the

¹ The site would open 30 minutes prior to the specified times.

construction site, it is likely that mobile cranes will be sited on The Christie Service Road or Oak Road, necessitating a weekend road closure. Prior to any temporary road closures for activities that cannot be undertaken within the approved site boundary, Vinci will contact Manchester City Council to agree times and dates for this activity. Once received, Vinci will engage with the Christie and Deloitte to ensure that communications are sent out to the relevant parties/stakeholders in good time (usually two weeks' notice).

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

Should emergency work or repairs be required to make the site safe Vinci 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.

4.6 Access and Security

Security of the site and its perimeter fence are the responsibility of the Principal Contractor, Vinci Construction Ltd

A new temporary hoarding line will be erected in the positions shown in blue below. (Exact position of hoarding will be agreed and align with any necessary party wall agreements). Pedestrian / Delivery access (red arrow) will be via the service road off Oak Road. turnstiles. (Exact position of turnstiles & gates will be agreed and align with The Christies daily operations)



Unless otherwise stated Vinci are responsible for ensuring:

- 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 is immobilised out of working hours

- The movement of people in and out of the site is controlled with the use of site passes 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 local residents
- The security of neighbouring sites will be taken into consideration. Scaffolding, ladders or any other site equipment is not left in areas that may cause a nuisance to neighbouring properties.

4.7 Delivery of Construction Materials

Delivery routes to the site for vehicles will be via Wilmslow Road and then Oak Road.

Hours of delivery and removal will be planned to minimise disruption to staff, patients' & visitors, local residents, schools, user of the local highway network and the hospital.

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.

A Banksman will be present at all times to manage the delivery & removal of construction materials, plant, and equipment. The Banksman 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 Banksman will ensure the safe delivery of plant and safeguard road users and pedestrians.

Delivery vehicles will be required to maintain contact with the site Banksman to ensure ease of access to the site. Delivery vehicles will not be permitted to queue at the site entrance or adjacent roads.

The Banksman will be made aware of the estimated time of arrival of large plant delivery.

4.8 Vehicular Access into and Within the Site

There will be one access/egress point for vehicles to enter and leave the site as identified with the red arrow in figure 1 below:

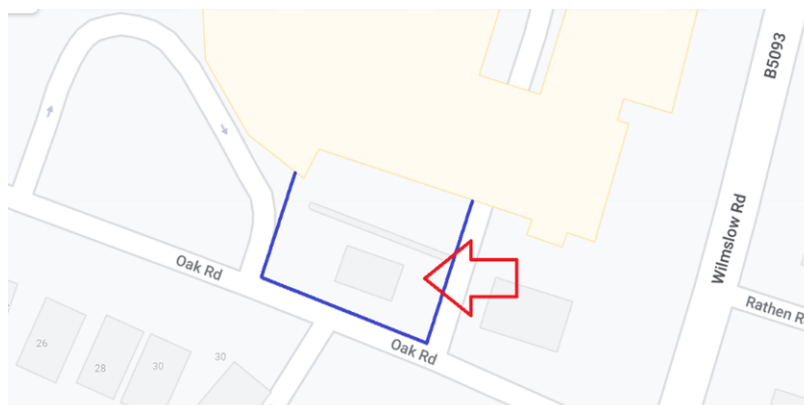


Figure 1.

Existing pedestrian access and egress points from existing buildings that conflict with the proposed building site will be secured and diversion routes implemented.

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.

During the build process there may be times that require the Service Road and Oak Road temporarily closed off, for example the installation of plant & equipment. Prior to any temporary road closures for activities that cannot be undertaken within the approved site boundary or Service Road, Vinci will contact Manchester City Council to agree times and dates for this activity. Once received, Vinci will engage with the Christie and Deloitte to ensure that communications are sent out to the relevant parties/stakeholders in good time (usually two weeks' notice).

4.9 Site Welfare

An additional construction compound and site welfare area will be established as shown on the below Plan. (The scale / position of welfare will be agreed and align with any necessary party wall / right of lights agreements and will be sympathetic to the neighbouring properties on Kinnaird Road).



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

In addition to the above facilities, 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.

4.10 Parking for Construction Workers & Visitors during the Construction Period

Vinci recognises the difficulties which contractor parking can cause in the surrounding area. It is therefore instructing workers and visitors to travel to site by public transport and walking/cycling where appropriate. 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 the individual involved, which could culminate in a ban from the site.

Vinci also recognises that commuting by public transport is not viable for all workers/visitors and via agreement with The Christie, construction workers will park at the rear of the Manchester Cancer Research Centre (Oglesby Building) off Wilmslow Road / Cotton Lane as below:



The car parking will also be adjacent to the Construction Site Welfare & Compound.

Vinci will also use sections of the site at times during the construction phase to park staff/contractor vehicles to minimise the impact on surrounding carparking facilities.

5. Construction Method Statement

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

5.2 The TIF Wards comprise of a steel frame extension and refurbishment of existing office space to accommodate new wards. Works will progress in a logical and orderly manner and some overlap of activities will occur. The general sequence of works will comprise:

- Demolition & reconfiguration of existing internal office space.
- Removal of the existing paving material / Paterson Site Welfare Accommodation.
- The existing ground will be reduced to its new formation level and existing services located (proof dig).
- Excavation of foundations & drainage will commence
- Erect the steel frame and position the metal decking sheets that will ultimately support the new floors.
- Position precast staircase units with cranes as steel frame progresses
- Mobile cranes will be positioned within the construction site for the extension works. However, there may be occasion where mobile cranes will be sited outside of the site to accommodate the lifting of large plant onto the roof.
- Concrete to floors
- Progress lift shafts in blockwork (potential for lift shafts to be pre-cast and installed with the steel frame)
- Commence external elevational treatments
- Install new internal partitions
- Install M&E services to the various floor levels
- Install finishes to the various levels
- Complete hard and soft landscaping works.

Installation of Foundations

5.3 The foundations will either be piled or pad. Area will be excavated to suit and any concrete will be directly discharged from the back of the concrete wagon.

5.4 Any reinforcement cages will be formed in-situ or assembled adjacent and then lowered by the excavator into the excavation.

5.5 Once the concrete has been poured and is still wet the holding down bolts will be floated by the Site Engineer to the correct line and level.

5.6 This method will be repeated until all foundations are complete

Steelwork and metal decking

5.7 Having completed the foundations, the steel frame/metal decking will commence

5.8 The activity will commence with one crane starting from one side and work its way along the new extension structure.

5.9 Throughout the erection process bundles of metal decking and pre-cast stairs will be lifted to the required floor areas.

5.10 Once edge protection and safety netting has been installed, the decking will be laid out and fixed into position.

5.11 Mesh reinforcement will be installed and then the concrete poured by means of a mobile pump as per the example below:



Internal Services & Refurbishment Works

5.12 Once the building or parts of the building are watertight, the interior fit out of the new extension build can commence. The overall 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
- Ward fit out
- Plant rooms

5.13 All materials for the building fit out will adhere to the construction site logistics plan and stored in allocated areas on site / compound or next to the point of installation within the building.

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

External Elevations

5.15 The external envelope will commence following completion of the structure.

5.16 The overall treatment of the TIFF Ward has a number of different materials that will give the final appearance.

5.17 The method of installation will be by Mobile Elevational Working Platforms (MEWP) or Scaffold.

5.18 The ground will be prepared using hardcore to enable the MEWP or Scaffold load to be accommodated and utilised safely:



Hard & Soft Landscaping

- 5.19 Once areas of external cladding are complete the external hard and soft landscaping will commence.
- 5.20 The major use for the external area is the reinstatement of existing hard & soft landscaping previously occupied by Site Welfare serving the PRP Scheme.
- 5.21 Soft landscaping will also be reinstated along the existing Oak Road boundary where landscaping will be undertaken to replace the trees that were required to be removed to enable the Paterson Site Welfare to be accommodated.
- 5.22 In the final stages before the building is completed, the external areas will be prepared to receive the hard and soft landscaping finishes.
- 5.23 All areas will be excavated to the formation level of the receiving construction build up and paving/topsoil. Surplus material will be removed off site to a suitably licensed facility.
- 5.24 Planting of vegetation and installation of hard landscaping will complete the works.

Removal of Site Hoarding and Site Compound

- 5.25 Once construction has been completed, the temporary accommodation will be removed, associated services terminated, and the affected areas made good.
- 5.26 The construction site hoardings will be removed from site.

Utilities Connections

New Utilities Connections

- 5.27 New utilities connections are not required to the existing public utilities network to service the new building.

Electrical Power Supply

- 5.28 Electrical power will be via an existing internal supply.

Gas supply

- 5.29 Gas will be via an existing internal supply.

Potable water supply

- 5.30 Potable water will be via an existing internal supply.

Surface water drainage

- 5.31 Surface water run-off is to be attenuated before a restricted, controlled flow is discharged into the public sewers, using existing connections, in accordance with the drainage strategy, as agreed with the network operator United Utilities.

Foul drainage

- 5.32 Foul water is to discharge at unrestricted rates into the existing public sewers, using existing connections, in accordance with the drainage strategy and as agreed with the network operator, United Utilities.

6. Construction Programme and Sequencing

6.1 The key milestones of construction of the development are summarised in **Table 6.1 below:**

Table 6.1: Key milestones of construction

Activity	Date
Refurbishment	Q2 2023 – Q4 2023 (31 weeks approx.)
Foundations and groundworks	Q2 2023 – Q3 2023 (9 weeks approx.)
Frame Construction	Q3 2023 – Q4 2021 (11 weeks approx.)
Façade Construction	Q4 2023 – Q1 2024(15 weeks approx.)
Internal Services	Q4 2023 – Q1 2024 (11 weeks approx.)
Commissioning	Q1 2024 (6 weeks approx.)
External Works/Landscaping	Q1 2024 (3 weeks approx.)

6.2 The total duration of the construction phase of the project is estimated to be approx 47 weeks.

7. Forecast Construction Traffic Movements

HGV

- 7.1 The construction works will be the one main element that will generate HGV movements.
- 7.2 The indicative construction programme is expected to start in Q2 2023 and run for a period of approximately 47 weeks.
- 7.3 The site will operate Monday to Friday: between 08:00 to 18:00 and on Saturdays between 08:30 to 14:00, except where extended hours are required and subject to prior approval and notification, as detailed in **Section 4**. (The site will open 30 minutes prior to these times).
- 7.4 HGV movements to/from the site will be planned to arrive outside of highway network peak periods where possible to reduce any adverse impact on the operation of the local road network.
- 7.5 In addition, HGVs access will be planned outside of the local school drop-off / pick-up periods where possible.

Forecast Peak HGV Movements

- 7.6 The peak forecast number of HGV movements during the construction programme will be experienced during the construction of the steel frame and concreting the floors. Up to 80% of these will comprise HGV's as follows:
 - Piling Rig (HGV)
 - Tipper wagon (HGV)
 - Concrete wagon (HGV)
 - Steel Wagon, including pre-cast (HGV)
 - Materials (HGV)
 - PPE (Non-HGV)
 - Small Tools (Non-HGV)

Traffic Management

- 7.7 A phased construction with timed deliveries to avoid peak hours to limit the impact on the surrounding roads will be implemented. Deliveries will access and egress the site via Oak Road and The Christie Service Road. The vehicles will be able to drive straight on to the site.

Other Construction Vehicles

- 7.8 It is anticipated that the number of site operatives and other staff present on-site at any one time will vary throughout the course of the construction programme, with the peak number of approx. 50-80 operatives corresponding with the fit-out. Section 4 presents details of arrangements for parking of contractor vehicles and access to the site.

8. Environmental Management

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

8.2 This sets out:

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

Responsibility for Environmental Measures

8.3 Vinci 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.

8.4 As part of Vinci's works, Vinci 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.

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

Environment Incident Response

8.6 Vinci 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

24-hour emergency contact details below for the duration of the works will be:
Peter Dodd (Project Director) 07979705534

- Measures to be adopted to investigate and prevent the recurrence of an environmental incident.

General Control Measures

Construction Site Hoarding

- 8.7 Site hoarding to the construction site will be of timber construction and located as show in 4.6 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

- 8.8 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.
- 8.9 The stockpile of excavated materials will be temporary and sprayed with water or if appropriate sprayed with an appropriate chemical dust suppressant.
- 8.10 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 at all times.

Temporary Lighting

- 8.11 Lighting will be provided at site boundaries with illumination sufficient for the safety of the passing public at locations where as a consequence 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.
- 8.12 For all lighting on, or adjacent to, the Public Highway prior approval will be obtained from the Highway Authority.

- 8.13 Lighting will be positioned and directed so as not to unnecessarily intrude on adjacent buildings and land uses and prevent any unnecessary interference with local residents and passing motorists.
- 8.14 Temporary lighting within the site will be kept at a minimum level out of hours to ensure the safety and security of the works.

Specific Measures to Avoid / Minimise Adverse Effects to Environmental Receptors

- 8.15 Presented below are measures which are intended to prevent or minimise adverse effects of 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 trees to be retained on site / on adjacent sites
- The protection of site workers

The Control of Dust Emissions

- 8.16 Dust emissions will be controlled during all construction operations and periods of dry weather and prevailing winds. Construction operations will take into consideration the local sensitive receptors including Hospice patients, Hospital staff, local residents, schools, occupiers and pedestrians.
- 8.17 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.
- 8.18 Therefore, best available measures shall be implemented to prevent dust, or where this is not practicable, reduce dust emissions from the 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.
- 8.19 Standard working practices that shall be implemented for all 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.

8.20 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.

8.21 Further details of measures for the prevention and management of dust are presented in **Table 8.1** below.

Table 8.1: 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.	Periodic maintenance of construction vehicles. In addition, excessive or consistently black exhaust	Replace worn or malfunctioning equipment.

Source Description	Primary Dust Control Measures	Thresholds / Triggers for Management	Contingency Dust Control Measures
	Ensure construction fleet vehicles are maintained 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.	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.

The Control of Emissions to Air

8.22 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 CO₂ 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 CO₂ 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 CO₂ 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.

8.23 In order 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

The Control of Noise and Vibration

8.24 In order to minimise noisy works and vibratory works throughout the 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 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 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.
- 8.25 In the event that 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.

8.26 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 construction method;
- 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 CEMP. 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 construction, works that have already been given consent;
- Details of a monitoring programme for the noise and plant
- Regular liaison with the 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

Monitoring of Noise, Vibration and Air Quality

8.27 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

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

8.29 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-Storey Car Park, taking account of the background levels and predicted construction activity levels.

Threshold Levels

8.30 The following threshold levels will be used for noise (extracted from Table 8.12 of the Paterson ES located immediately adjacent to the site):

- 8.84 The established thresholds for significant construction noise effects at the identified noise sensitive receptors are presented in **Table 8.12**.

Table 8.12: Established thresholds for significant construction noise effects at the identified noise sensitive receptors

Assessed category and threshold value period (T)	Threshold values in decibels (dB) ($L_{Aeq,T}$)	
	Wilmslow Road residential receptor facades	Oak Road residential receptor facades
Night-time (23.00 – 07.00)	57	55
Evenings and weekends ^(Note1)	65	55
Daytime (07.00 – 19.00) and Saturdays (07.00 – 13.00)	70	65
Note 1: 19.00-23.00 weekdays, 13.00-23.00 Saturdays and 07.00-23.00 Sundays.		

- 8.31 The threshold levels will be used for vibration will be based on the low level of magnitude extracted from Table 8.40 of the Paterson ES located immediately adjacent to the site:

- 8.40 Based on the guidance in **Table 8.3**, for this assessment, the significance of potential construction vibration impacts has been categorised as presented in **Table 8.4**.

Table 8.4: Level of Magnitude for Construction Vibration

Level of Magnitude	Routinely experienced vibration level, PPV (mm/s) ^{A)}
High	>10
Moderate	Between 1.0 and 10.
Low	Between 0.3 and 1.
Negligible	<0.3

- 8.32 Threshold values from the Paterson ES (located immediately adjacent to the site) has been referenced in assessing whether construction noise would lead to significant effects on the surrounding noise sensitive receptors, rather than setting absolute levels that construction activities cannot exceed. The mitigating measures section of the ES (paragraph 8.111 to 8.113) identify measures that could be undertaken to minimise impact should threshold values be anticipated to be exceeded during the construction period.
- 8.33 The threshold values apply at the nearest or most exposed identified noise sensitive receptors (namely the Hospice and residential properties adjacent to the site boundary)

The Investigation of Ground Conditions and Contaminants

General Measures

- 8.34 A ground investigations report will be prepared and agreed with Manchester City Council prior to commencement of construction and any remediation

identified to be required will be undertaken prior to below ground works commencing.

- 8.35 The following environmental management and monitoring (where necessary) measures will be adopted throughout the construction phase and modified as necessary following completion of the SI.
- 8.36 The possibility that unforeseen contamination be encountered during construction will be taken into account 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.
- 8.37 If ground with significant levels of contamination is encountered during 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.
- 8.38 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

- 8.39 A watching brief for contamination will be maintained during all ground works. If any ground contamination is revealed during construction, by visual or olfactory evidence, 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 construction.
- 8.40 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

- 8.41 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.

The Prevention of Water Pollution

- 8.42 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.

8.43 Therefore, the following environmental management measures will be adopted throughout the construction phase 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.

The Handling and Removal of Waste Hazardous Substances

Risk Assessments

- 8.44 A hazardous materials audit or risk assessment will be carried out during the construction period. 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.
- 8.45 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).
- 8.46 The SSoW will be communicated to all relevant parties prior to commencing works and will be monitored and reviewed accordingly.
- 8.47 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.
- 8.48 Should a variation in task occur, a specific assessment relevant to the variation will be carried out. Necessary additional control measures will be identified.
- 8.49 Any subcontractors associated with the 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.
- 8.50 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

- 8.51 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.

- 8.52 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.
- 8.53 Leaking or empty containers will be removed from the site immediately and disposed of via appropriately licensed waste disposal contractors.

The Management, Segregation and Removal of General Construction Waste

Site Waste Management Plans

- 8.54 Although the Site Waste Management Plans Regulations 2008 were revoked in 2013, and the use of SWMP's is no longer obligatory, Vinci 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 produced for the works.
- 8.55 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.
- 8.56 The following measures will be taken to minimise the quantity of waste produced during the project:
 - (i) All arising's will be segregated on site.
 - (ii) Re-usable materials will be identified on site for processing in licensed facilities.
 - (iii) Recyclable materials will be removed from site for processing in licensed facilities.
 - (iv) Recoverable materials will be removed from site for processing in licensed facilities.

Waste management

- 8.57 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.

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

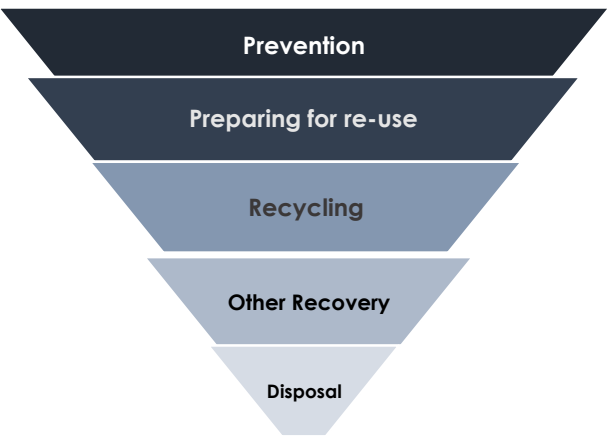
 The diagram is a funnel divided into five horizontal sections, representing the waste hierarchy from top to bottom: Prevention, Preparing for re-use, Recycling, Other Recovery, and Disposal. The sections are shaded in a gradient from dark blue at the top to light blue at the bottom.	Using less material 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.

Table 8.2: Waste Hierarchy to manage waste

Duty of care

8.59 In accordance with Section 34 of the Environmental Protection Act 1990 and in compliance with the requirements of EN ISO 14001 Environmental Management System, Vinci and all sub-contractors working for and on behalf of Vinci 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

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

The Protection of Trees

- 8.61 There are no existing trees on the construction site or in the immediate vicinity. However, there are existing trees within the vicinity of the Construction Site Welfare & Compound behind the Manchester Cancer Research Centre (Oglesby Building). The temporary site hoarding for the Construction Site Welfare & Compound will be positioned outside the curtilage of the trees and will act as protection.

The Protection of Site Workers

- 8.62 As noted in Section 2, all site workers will be issued with appropriate personal protective equipment free of charge. The following additional measures will be implemented to protect the health and safety of workers on a day to day basis.

Fire risk

- Every activity that involves an element of hot works will be risk assessed prior to commencement.
- Hot works will be kept to a minimum
- A hot works permit will be raised for any activity that generates heat
 - Naked flame (Oxygen/ Propane)
 - Stihl saw activity
- The hot works permit will be raised by the Principal Contractor
- The permit will identify the works to be conducted
- The permit will identify the area of activity
- The permit will have a start time/ date
- The permit will be signed by the issuer and the recipient prior to commencement of works
- The permit will be signed off by the issuer and the recipient following completion of works
- All flammable material in the area of hot works activity will be removed
- Firefighting equipment will be placed at the area of activity
- A fire watch for a minimum of one hour will be enforced following completion of the works

Working at height

- Every activity will be risk assessed prior to engagement. This includes working at height
- Working at height will be avoided where possible
- Working at height regulations 2005 will be observed at all times
- All fixed scaffold will be erected by trained persons
- All fixed scaffold will be inspected every 7 days and a register maintained
- Any alteration to a fixed scaffold will be re inspected and tagged. Details of alteration and inspection will be written in the maintained register.
- All mobile scaffold towers will be erected by PASMA trained persons
- All mobile scaffold towers will be tagged by the PASMA trained person
- All mobile towers will be inspected every 7 days and a register maintained
- Any alteration to a mobile tower will be re inspected and tagged. Details of alteration and inspection will be written in the maintained register.

Hazards to third parties

- All access/ egress routes from the buildings that are to remain and those to be demolished will be physically blockaded prior to any demolition activities commencing.
- The Principal Contractor and the client will notify all hospital staff in advance of the demolition taking place
- Alternative route signage will be posted, directing hospital staff and visitors away from the demolition areas.
- All activities prior to, during and after demolition will be conducted within agreed and physical hoarded/ fenced perimeter exclusion zone
- Access to these zones will be restricted to project working parties only.
- All access and egress points will be secure
- All perimeter hoarding/ fencing will be inspected for damage on a daily basis
- During plant movements on or off site, trained operatives will act as banksmen. They will ensure that the plant is delivered/ up loaded safely and diligently control localised third-party road traffic and pedestrians during such interface activities.

Manual Handling

- Manual handling should be avoided where possible
- All activities undertaken will include a risk assessment for manual handling
- No person will be allowed to lift any item that is beyond their capacity
- Persons conducting any lifting will risk assess the load, position of the load, transit route to be taken and their immediate surroundings

9. Public Relations and Community Consultation

- 9.1 The following public relations and community consultations will be adopted throughout the construction phase.

Stakeholder Communications

- 9.2 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.

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

- Local Authority
- The Christie Neighbourhood Forum
- Local Residents
- Maggie's Centre, Schools, nursing homes and community facilities
- Manchester Cancer Research Centre (Oglesby Building)
- Appropriate statutory agencies (i.e. Environment Agency)
- Local Businesses
- Local Representative Groups (i.e. the Christie Neighbourhood Forum)

Noticeboards

- 9.4 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