



CONSTRUCTION MANAGEMENT PLAN

North City Family and Fitness Centre



Contract Name:	Low Carbon PSDS Phase 2
Address:	Upper Conran St, Harpurhey, Manchester M9 4DA
Date:	8 th September 2021



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1 Introduction

In the Climate Change Act 2008, the UK Government set legally binding targets to reduce greenhouse gas emissions by at least 34% of 1990 levels by 2020 and at least 80% of 1990 levels by 2050. In 2019, the UK increased its ambition to achieve net-zero carbon emissions by 2050.

Manchester City Council embarked on this Re:fit project. Re:fit is an OJEU compliant framework that delivers guaranteed energy reductions to public and third sectors. Ameresco were selected by MCC following a mini-competition.

In September 2020, the UK government launched the Public Sector Decarbonisation Scheme (PSDS), a new grant funding scheme to encourage green investment. The grant is available to finance up to 100% of the costs of capital energy efficiency and heat decarbonisation projects that meet the scheme criteria. In October 2020, Ameresco delivered the High-Level Appraisal (HLA) meeting the requirements set out by MCC which was used as the basis of the PSDS Application bid.

Greater Manchester has been awarded over £78m in Central Government funding to support energy efficiency upgrades to more than 150 public buildings across the city-region, helping to cut emissions and create new jobs. The award was the result of a successful bid from Greater Manchester Combined Authority (GMCA) and 14 other partners to the Government's Public Sector Decarbonisation Scheme (PSDS).

The Contracting Authority selected Ameresco to work with it closely in order to optimise the energy efficiency of its property portfolio, improve the energy performance of its assets through measured and verified energy efficiency improvements and/or energy generation, reduce CO2 emissions, and save money through substantial guaranteed annual cost savings and/or income generation.

This is the second phase of work that Ameresco and MCC are carrying out together through the Re:fit Framework. The main focus of this Phase is to achieve significant carbon savings and energy savings so that the project is compliant with the Public Sector Decarbonisation Scheme (PSDS) grant application that was awarded to MCC by Salix.

Buildings and organisations across the public estate set to benefit from retrofitting measures include Manchester University NHS Foundation Trust, Greater Manchester Fire and Rescue Service, Transport for Greater Manchester, Greater Manchester Police, the Royal Northern College of Music, the National Cycling Centre, and facilities including leisure centres, schools, and offices.

The measures will include the installation of air and ground source heat pumps for heating, solar panels to generate and create electricity, insulation and LED lighting to improve energy efficiency, and energy monitoring and control systems to ensure these public facilities can accurately measure their energy usage.

The scheme is a discrete part of this wider initiative and aims to deliver renewable energy, thereby helping to lead the carbon neutral agenda in Manchester. The proposed retro-fitting of solar, battery storage and ground source heat pump technology to existing buildings will produce more renewable energy and offer an opportunity to immediately cut emissions.

In total, these 150 projects are expected to support the creation or safeguarding of around 2,000 jobs throughout the city-region, and will support the goals of Greater Manchester's Five Year Environment Plan, including becoming carbon neutral by 2038 – 12 years ahead of the national target.

2 Purpose

This document describes management measures that will be implemented by the Principal Contractor during the implementation and the construction works for the Low Carbon PSDS Phase 2 Works at North City Family and Fitness Centre.

In general, this Construction Management Plan (CMP) sets out:

- A construction management framework to which the Principal Contractor's management systems will apply.
- Environmental management and monitoring measures to be adopted and implemented throughout the infrastructure construction phase.
- Responsibilities for implementation of management and monitoring measures during infrastructure construction phase.

Measures set out in this CMP are assumed to be adopted for the purposes of assessing likely construction and environmental effects of this development.

The CMP applies to installation of the projects and infrastructure works within the boundary of the site and compliance with its content will be a mandatory requirement in all associated construction contracts.

This plan will address the following issues:

- Noise
- Vibration
- Dust
- Smoke
- Emissions
- Engineering measures to mitigate above
- Detailed Scope of Demolition and Infrastructure works
- Contact arrangements
- Routing of site traffic
- Waste Storage, Separation and Disposal
- Tree Protection
- Ecology
- Site security
- Asbestos

2.1 Project Location

The project is located within North City Family and Fitness Centre.

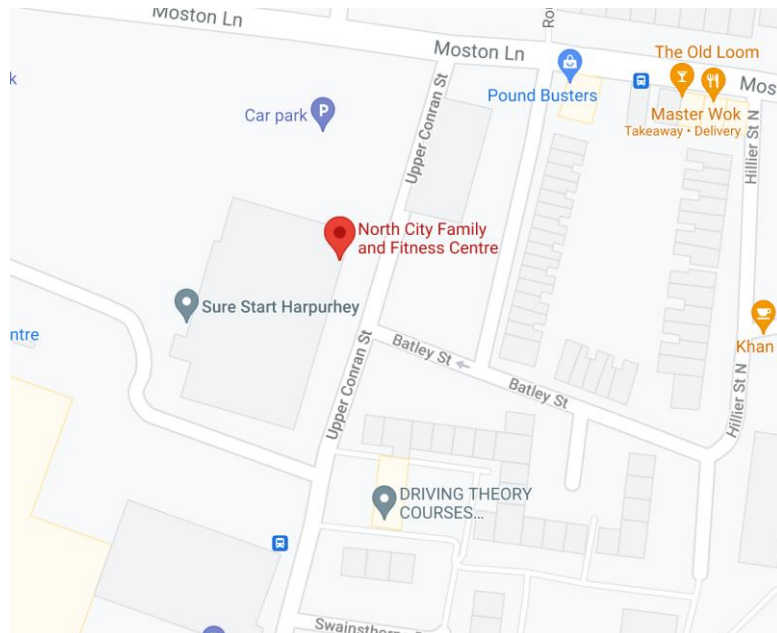


Figure 1 - North City Family and Fitness Centre Location

North City Family and Fitness Centre is located just off Rochdale Road, next to the Shopping Centre and Market in Harpurhey. The North City Family and Fitness Centre attracts visitors to a wide variety of facilities including, gym, swimming pool, fitness classes, sauna, steam room and jacuzzi. It is also the home to a Sure Start Children's Centre. It is a two storey building constructed in a steel frame with red brick and blue cladding under a flat roof accommodating 3,194 m² of floorspace.

The building is open 7 days a week: Monday to Friday from 06:30-22:00hrs, 08:00-18:00 on Saturdays and Sundays. The building is not nationally listed or locally listed. The building is not in a Conservation Area. The site lies within the designated boundary of Harpurhey District Centre where retail and complementary community facilities are encouraged to locate.

No other specific land use designations have been identified which relate to the premises.

Premises	Address	Premises type	Floor area (m ²)
North City Family and Fitness Centre	Upper Conran Street, Manchester, M9 4DA	Leisure centre	3,190

Table 1 - North City Family and Fitness Summary of Site Information

2.2 Existing Building and Services

2.2.1 Building Fabric

The centre resides within a 2-storey building. It has a steel frame with brick and cladding and a flat roof.

2.2.2 Existing Services

A Ground Penetrating Radar (GPR) and Topographical Survey (GPR) has identified several services within and near the site location.

2.2.3 Energy Meter Technology

The site is supplied by 1 main gas meters and 1 main incoming MPAN electric meter with various electrical distribution boards. Various electric sub-meters are also present.

2.2.4 Heating Systems

Heating is provided by 2 Remeha boilers located in the main plant room at the rear of the building. Flow and return temperature setpoints at 75 °C and 69°C respectively. The boilers serve DHW and pool heating via plate heat exchangers (PHEs) and the AHUs via CT circuit and wet radiator system and underfloor heating via VT circuit.

2.2.5 Ventilation Systems

Ventilation is provided by 2x air handling units (AHUs) to the general area and pool area. These units are currently running at full fixed speed and operating according to the BMS time schedule. Various small, packaged toilet extract fans area also present.

2.2.6 Cooling and Air Conditioning Systems

The main cooling is provided by various Mitsubishi and Daikin wall-mounted air conditioning units and Daikin VRV systems located in a separate plant room and controlled via local panels and is not believed to be linked to the BMS.

2.2.7 Building Controls and Management Systems

Heating plant is controlled via a localised Trend IQ2 BMS installed on the MCC panel in the main plant room and is password protected.

2.2.8 Lighting and Lighting Controls

Over 70% of Lighting in North City Leisure Centre will be predominantly LED light once phase 1 work are completed. There approximately 85 fittings are yet to be replace and they made up of twin18W downlights, 28W 2D bulkhead and twin 58W fluorescent in storerooms and boiler/plant rooms. The existing lighting is mainly controlled via manual switches with some controls installed.

2.2.9 Other information

UV Lamp Installation on pool plant means a reduction in pool chemical usage. Redevelopment of the upper landing and gym area to increase capacity of the gym has been planned according to the site duty manager. This has been taken into consideration in our ECM proposals.

2.2.10 Phase 1 ECMs already Installed

MCC have already invested into energy efficiency measures which are currently being installed through the Re:fit framework that optimise energy consumption on sites.

These additional projects are now able to address further decarbonisation on heat projects that did not make the 10-year payback requirement of Phase 1

As this site was included in Phase 1 of the Manchester City Council Re:fit retrofit programme, , the previous phase captured the energy efficiency upgrades to the site which fitted in a EPC financing model, including:



- Upgrade of BMS controllers including replacement of faulty control valves/actuators
- Inverter and Co2 control on the AHUs
- Insulation

3 Description of project

3.1 Project Summary

This is the second phase of work that Ameresco and MCC are carrying out together through the Re:fit Framework. The main focus of this Phase is to achieve significant carbon savings and energy savings so that the project is compliant with the Public Sector Decarbonisation Scheme (PSDS) grant application that was awarded to MCC by Salix.

Ameresco are the Principal Contractor for implementing various Energy Conservation Measures (ECM) at the Sites including Heat Pumps, Solar PV, Battery Storage and Metering/Monitoring Projects.

The following ECMs have been selected, based on their maximum value to the site, including capital cost and energy savings.

Energy Conservation Measures (ECMs)	Solar Photovoltaic	VSD Installation/Optimisation	Ground Source Heat Pump (GSHP)	Air Source Heat Pump (ASHP)	Battery Storage	Metering and Monitoring
ECM No	4	5	6	7	8	9
North City Family and Fitness Centre	✓	✓	✓		✓	✓

Table 2 - Proposed ECMs

Impact of the proposed Projects at North City Family and Fitness Centre

This proposal is fully compliant with MCC's PSDS funding offer, meeting all the requirements. The suite of identified ECMs will deliver:

- ✓ *Significant reduction in annual gas energy use*
- ✓ *Upgrades to ageing energy infrastructure*
- ✓ *Extended life and optimised operation of existing equipment*
- ✓ *Improved comfort levels for staff and building users*
- ✓ *Carbon savings at a lower cost of £500/teCO₂LT (meeting the PSDS funding requirement)*

It is considered that the proposed projects will deliver the highest level of energy efficiency improvement and carbon footprint reduction whilst not detrimentally affecting local environmental impacts as a consequence of the plant operation.



3.2 Project Scope

3.2.1 ECM 4 – Solar Photovoltaic

Solar panel electricity systems, known as Solar photovoltaics (PV), capture the sun's energy using photovoltaic cells. While efficiency is highest with direct sunlight, these cells don't need direct sunlight to work - they can still generate some electricity on a cloudy day.

PV cells are made from layers of semi-conducting material, usually silicon. When light shines on the cell it creates an electric field across the layers. The stronger the sunshine, the more electricity is produced. Groups of cells are mounted together in panels/modules, strings of which form arrays, that can either be mounted on your roof or on the ground. This established renewable generation technology displaces the requirement to import electricity from the grid.

Ameresco will install roof mounted solar PV in one location at North City Family and Fitness Centre. The system is designed to optimise all the feasible roof space and sized according to the site electricity demand.

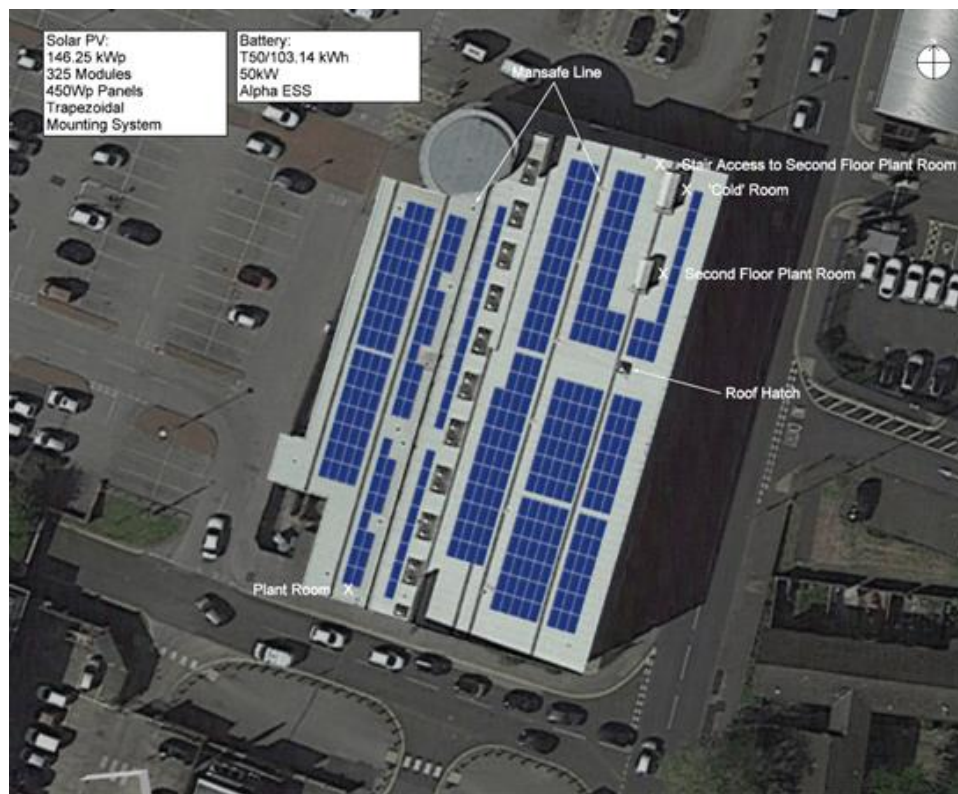


Figure 2 - North City Family and Fitness Centre Solar PV Layout

Solar PV Design

The solar PV system will be designed as a single unit and is proposed to be delivered in a single installation phase in order to minimise disruption and contractor time on site. It will be installed in compliance with all relevant health and safety regulations and designed with the latest editions of the following:

- Photovoltaics in Buildings - Guide to the installation of PV systems. 2nd Edition 2006: as published by the DTI

- BS EN 62548: Installation and Safety Requirements for Photovoltaic (PV) Generators Guide to the Installation of Photovoltaic Systems; as published by the MCS
- BS 7671:2015: Requirements for Electrical Installations: IET Wiring Regulations
- BS EN 62446:2009: Grid connected photovoltaic systems -Minimum requirements for system documentation, commissioning tests and inspection

The roof-mounted solar PV System complete with panels, inverters, and mounting will be supplied and installed as follows:

- Solar PV panels
- Solis Solar inverter(s)
- Appropriate mounting kits required to fix the panels and designed to be compatible with the existing roof type.
- All accessories required for connecting the system to the National Grid
- Cabling between panels and switchgear
- Total Generation kWh meter with remote monitoring capability
- Labour and standard materials required for the complete installation of the system
- Main AC Cables
- Access Equipment and Scaffolding/Edge protection as required to facilitate installation works
- Permanent Edge Protection in the form of a foldable handrail system
- Solar-Log Monitoring System

The solar panels will generate to the local network via a solar PV inverter located in the electrical switch room. The solar PV inverter will connect directly to the main panel board via a 200A MCCB installed in a spare way.

3.2.2 ECM 5 – VSD Installation and Optimisation

Ameresco have identified that the SureStart Kitchen Extract System (two fans) has been linked out and is a safety risk. We were told that if the wind blows in the wrong direction the differential pressure is affected and the gas turns off because it was overridden.

After further investigation it was found that the fans are located within the Boiler house plant room and the local control panel does not work, including the speed control. Ameresco will replace the local interface control panel with fan speed control and flow interlock. We will install gas detections sensors (CO & NG) for safety and possible automatic fan ramping, and then recommission.

The table below details the schedule of equipment to be installed for this ECM:

No	Schedule Item	Existing Equipment Affected	Rating
1	Install sensors to existing fan VSDs and recommission	Kitchen Extract System	2no, 1.5kW

Table 3 - ECM 5 Schedule

3.2.3 ECM 6: Ground Source Heat Pump (GSHP)

A heat pump transforms heat at a lower temperature into heat at a higher temperature, even in winter at temperatures below 0°C. It uses a refrigerant to transfer the heat, by undergoing continual phase change (liquid / gas) in a closed loop cycle. The refrigerant takes in heat energy from a heat source, which can include air, the ground, or a water body, causing the refrigerant to evaporate and turn into a gas. The gas then increases in temperature through the compressor and is sent to a heat exchanger which transfers the high temperature heat to a separate body of water, for circulating round the heating



or DHW system. This heat exchange process in turn causes the refrigerant to condense to a liquid that passes through an expansion valve to reduce the temperature (and pressure), and the cycle repeats. A heat pump's coefficient of performance (COP) indicates how much useful energy is produced from one unit of drive energy (i.e., from the compressor). A COP of 4 means 4kW of heating output is generated from 1kW of electricity. In turn, this means that 3kW was delivered free of charge by the environment (e.g., air). Heat pumps operate most efficiently and are ideally suited to delivering output temperatures of 45 Degrees C or lower, however can be configured to deliver higher temperatures up to 60-65 Degrees C, albeit at lower efficiencies.

A Ground Source Heat Pump (GSHP) is being proposed for this site and will be configured to integrate in a manner to take advantage of low temperature heat requirements on site where available to operate most efficiently year-round.

Borehole Design

The ground geology was initially assessed as part of a desk top study using publicly available information from the BGS on line geological mapping portal. This data identified the bedrock strata under the site. From the strata type thermal conductivity tables were then consulted to match the strata type to a conductivity value. The conductivity value obtained was then assessed against industry standard Ground Heat Exchanger look up tables termed the Microgeneration Installation Standard, produced by the Department of Energy, in order to obtain a heat output per meter of borehole.

The ground strata at this site was indicated to be Mudstone and a Thermal conductivity value of 1.88W/mK was allowed.

This conductivity value and output per meter of bore hole depth indicated that 35 bore holes at 150 meters deep would be required. We initially applied a spacing rule of thumb of 8 meters between boreholes. This was subsequently amended to reposition the borehole field and a revised arrangement of 30 boreholes at 175 metres deep was arrived at to fit the available drilling space.

The above assessment did not assess differing geological make up through a cross section of the ground and only applies a constant conductivity value for the bedrock strata identified.

The next stage of geological assessment took place, which entailed consulting more detailed BGS data that contained information of cross sectional ground strata build up from existing local records, using any existing bore holes already drilled in the area. The resultant thermal conductivity values obtained from this refined desk top study was then used in industry standard ground modelling software (GHLEPRO ver 5) to dynamically model the ground response and assess more accurately ground output and quantity, depth and spacing of bore holes. The results of this study was represented within a Geo report that was issued as part of the detailed design process.

This study indicated that the ground would likely have a conductivity average of 3.462W/mK.

The modelling software indicated that for the above refined conductivity value, against the required loadings would require 30 boreholes at an increased 210 mtrs depth but at a reduced spacing of 7 meters.

A trial borehole was then completed with an associated Thermal response test (TRT), that ratified the actual ground conditions and conductivity value at the drilling site. The ground modelling software was rerun with the conductivity value obtained thus mitigating any residual design and drilling risk and allows the final construction bore hole field design to be concluded

This study concluded that the ground had a conductivity average of 2.9W/mK.



The rerun on the modelling software indicated that for the above refined conductivity value, against the required loadings would require 30 boreholes at an increased depth of 222 metres maintaining the 7 meter spacing between boreholes as shown below:

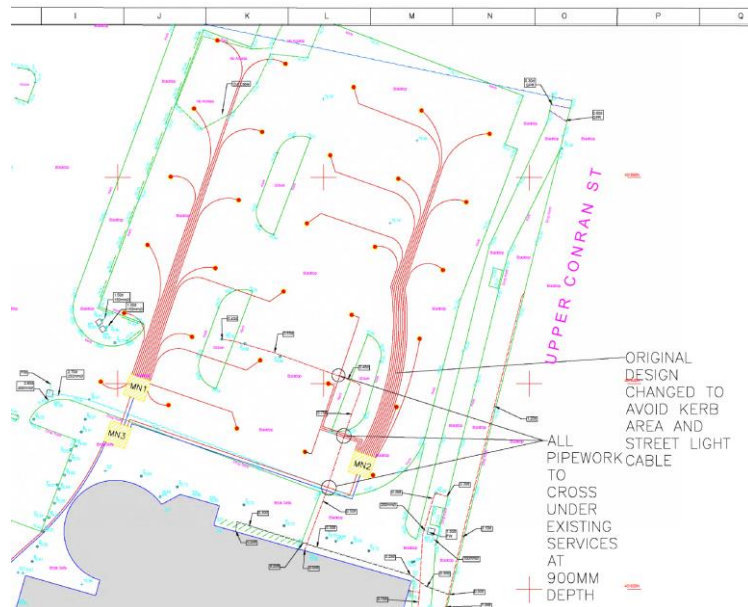


Figure 3 - Detailed Borehole Layout



Figure 4 - Borehole and Trenching Layout

Heat Pump Design

The ground source heat pump installation is designed to serve the base load of the pool water heating system and to serve as a pre-heat to the domestic hot water service and constant temperature (CT) heating pool area AHU coil(s). A ground source heat pump system of c.148.8 kWth is proposed. The heat pump and the system integration are designed so as to maximise annual efficiency and maximise annual running hours. Each heat pump unit shall be supplied with independent MID compliant heat output and electrical input meters which are to be interfaced with the building management system for remote monitoring. Meters will be positioned to enable them to be removed for calibration without impacting any other services except the heat pump.

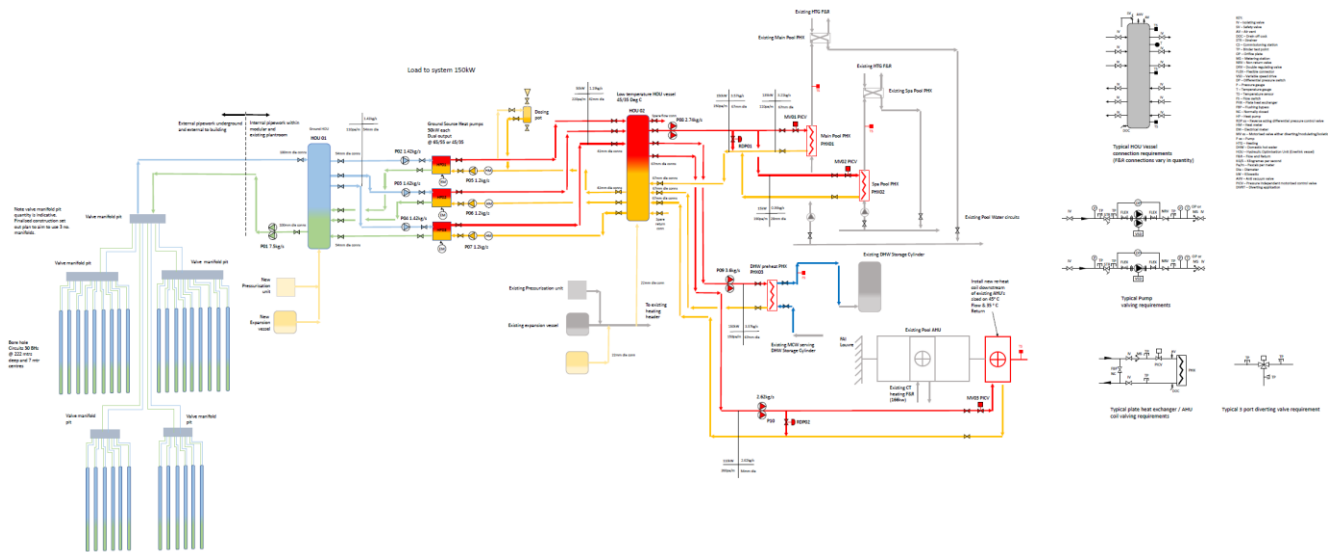


Figure 5 - Heat Pump Design and Hydraulic Schematic

Three, two stage, fixed speed compressor heat pumps (HP01, 02 & 03) are provided, each sized at 50 kW_{thermal} output. The heat pumps are configured to operate at two, selectable heating control set-points. [45]°C for optimum operating efficiency when serving the pool heating load and [65]°C for serving the domestic hot water and constant temperature circuit heating loads. Each heat pump will only output 1 temperature, but the other heat pumps can output the opposing higher or lower temperature depending on which of the high or low temperature circuits has the most demand, with flow diverted to either of the 2 HOU vessels.

Each of the heat pumps operate on the Carnot refrigeration cycle, with the evaporator circuit generating coolth and the condenser circuit generating heat energy. A borehole field comprising 30 boreholes drilled to a depth of 222 metres acts as an energy source to elevate the temperature of the evaporator circuit, allowing the heat pumps to continue running to produce heat energy in an efficient manner.

A special ENERLinkvessels (HOU) is used to optimise the use of heat pump operation. These ENERLinkvessels incorporate carefully designed plate arrangements to promote stratification which aids plant run time optimization.

A ground loop interface HOU ENERLinkvessel (HOU 01) is provided to generate a hydraulic neutral point between the borehole field and the heat pump evaporator circuit. This allows the borehole field pump-set (P01) to operate to generate maximum turbulence within the borehole field i.e. above the required Reynolds number, therefore maximizing heat exchange with the ground, without adversely affecting heat pump operation. Whenever the heat pumps are required to operate, the duty pump of the borehole field circulation pump-set (P01) will be enabled to operate at a constant duty. Operation of the duty circulation pump will be verified by a differential pressure switch.

A duty rotation sequence will be incorporated into the BMS system to ensure even use of the ground loop circulation pumps. The lead pump will be rotated at midnight on a Sunday or in the event of a pump flow failure.

The existing main and learner swimming pools are heated by the existing gas fired boiler/CHP arrangement. A new heat exchanger arrangement (PHX01 –Main Pool, PHX02 –Spa Pool) is provided to allow the ground source heat pump system to act as the lead heat source for the pools. It is envisaged that the ground source heat pump system will maintain the required pool operating temperature during normal operation; however supplementary heating may be required from the heating boilers if the pool temperature is significantly reduced due to increased heat loss/drain down/maintenance.



A further heat exchanger arrangement (PHX03) is provided to allow the ground source heat pump system to pre-heat the domestic hot water cold water make up supply i.e. creating a temperature lift from the typical 10°C input temperature, thus reducing the boiler input energy to achieve the storage temperature. Supplementary heating will be required from the heating boilers to achieve the required storage temperature of [60-65]°C.

Heat exchanger arrangement PHX-04 is provided to introduce heat energy to a new coil retrofitted the AHU ductwork which is to be sized to operate on a 45°C / 35°C basis. It is envisaged that the constant temperature heating circuit will have a near continuous load throughout the year as it serves the pool area air handling plants which maintain the hall at circa 30°C. This new coil energy input will offset existing boiler input to the existing pool area AHU coil and hence gas usage.

The design and installation shall comply with the latest UK Building Regulations and the latest European and UK standards. The design and specification of the installation seeks to minimise future maintenance whilst also being visually attractive visually attractive where any components are visible internally or externally.

With regard to mechanical and electrical requirements, the system shall comply with the following standards as are relevant to the installation, including:

- GSHVBS Vertical Borehole Standard (by GSHPA);
- GSHTPS Thermal Pile Design, Installation & Materials Standards (by GSHPA);
- GSHGPG Good Practice Guide for Ground Source Heating & Cooling (by GSHPA);
- GSHSGS Shallow Ground Source Standard (by GSHPA);
- CP2: Surface water source heat pumps: Code of Practice for the UK;
- CP3: Open-loop groundwater source heat pumps: Code of Practice for the UK (2019);
- Microgeneration Certification Scheme – MCS (below 45kW);
- BS EN 15450:2007 Heating systems in buildings. Design of heat pump heating systems;
- BS ISO 5149-1:2014+A2:2021 Refrigerating systems and heat pumps. Safety and environmental requirements. Definitions, classification and selection criteria;
- Other relevant British standards;
- BS 7671 – Requirements for Electrical Installations. IET Wiring Regulations 18th edition;
- BS EN 62305 – Protection against lightning. Risk management; and
- BS 7430 - Code of practice for protective earthing of electrical installations.

Heat Pump Layout

The proposed pump location will be housed within a small new external modular plant building next to the centre.

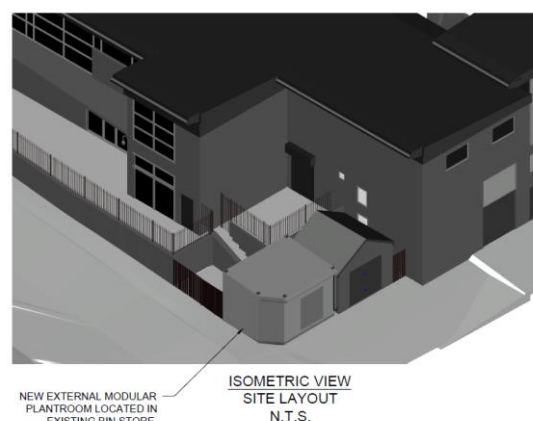


Figure 6 - Proposed Heat Pump Location

3.2.4 ECM 8: Battery Storage

Battery storage is often used in partnership with Solar PV to offset site electrical demand by charging when the PV supply exceeds the site demand. It then discharges as soon as power is needed. The capacity of a battery is determined by the amount of electricity it can hold and is measured in kWh. The number of times a battery can charge and discharge within its design life is known as a cycle. Multiplying the capacity of a battery by the number of cycles defines the amount of energy the battery can produce. Some larger capacity batteries can be used as a temporary backup electrical source which could replace or reduce the amount of time a backup diesel generator is used for example.

This technology can be further enhanced via its application within Smart Grids to help reduce peak demands on the grid. They can also charge when electricity is cheaper and discharge when importing electricity from the grid is more expensive.

Alongside the solar PV system, a 50kW/103.14kWh Li-Ion battery energy storage system (Alpha ESS T50) will be installed on site in the first-floor plant room. The battery inverter will connect to a 100A MCCB mounted in a new panel board splitting the feed to DB LP3 located in the same plant room. The battery system is proposed to be installed in a custom build 30-minute fire rated room complete with fire suppression.

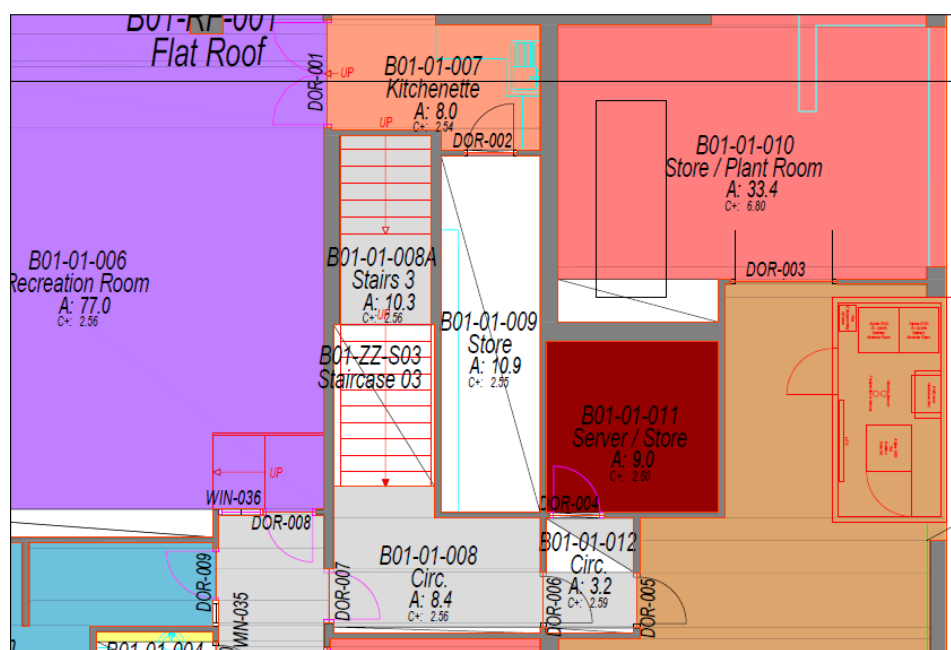


Figure 7 - North City Family and Fitness Centre Battery Storage Layout

Battery Storage Design

The driver for Manchester City Council for inclusion of battery storage with these projects is the future provision for smart grid technologies. As such, whereas many battery storage projects are based around an efficient provision for maximising the self-consumption for on-site generation, sizing for this system is based loosely around a combination of the following two methods:

- Demand: Battery kWh size based on reducing the peak site demand on an average day in the middle of summer by 50%. This means 50% of the peak demand is satisfied by the battery and 50% is imported electricity from the grid. Thus, aiding demand side response in reducing the site peak loads in the summer that the grid would have supplied 100%



- Generation: Battery kWh size based on maximum solar PV generation less the peak site demand on an average day in the middle of summer (Electricity that would have been exported)

The battery system will be installed in compliance with all relevant health and safety regulations and designed with the latest editions of the following:

- IET Code of practice for Electrical Energy Storage Systems
- MCS MIS 3012 The Battery Standard
- EREC G99 and G100 Grid codes
- BS 7430 Code of practise for Earthing
- BS EN IEC 62485-1/62485-2 Safety requirements for secondary batteries and battery installations
- BS EN 50160 Voltage characteristics of electricity supplied by public electricity networks
- Manufacturer's Installation Guidelines
- BS EN 60445 Basic and safety principles for man-machine interface

3.3 Demolition and Removal Works

There is no demolition or removal works required as part of this project.



4 Sequence of Works

4.1 Mobilisation

4.1.1 Preparatory Works

Prior to any works being undertaken, an inspection of the site will be made and any sensitive receptors identified. In identifying such receptors, due regard will be made to the site's layout and construction, and of the nature of the immediately surrounding areas.

An appropriate, impermeable storage area shall be identified/prepared for the temporary stockpiling of any contaminated materials, should they be present. If required, appropriate measures will be implemented to ensure that any contamination which is encountered during the works will be retained within the site.

- Fencing, barriers and signage will be placed around the perimeter of the site
- All site operatives will be inducted and made aware of the site specific hazards
- Access and egress routes will be identified and demarcated by barriers to separate vehicular traffic from pedestrians
- Access to and from the site will be detailed in the contractor's method statement and plan of work
- Capping of all service supplies will be carried out, which affects or will be affected by the works. All such work shall only be undertaken with the prior agreement and approval of the relevant utility companies and the Trust.
- Temporary works to be installed if required.

4.2 General

The safety of the general public and users of the site shall be considered of paramount importance. Where the works affect such people suitable safety arrangements shall be employed (e.g. fanguard scaffolds in the case of falling objects) and shall be detailed in appropriate Method Statements.

It will be incumbent upon the contractor to fully protect all water channels, river walls and flood defences at all times and no aspect of these elements shall be demolished. No debris shall enter the river or water channels.

Dust suppression measures will be implemented by the use of suitable screens, water to damp down and the use of covered vehicle skips to remove the waste from site.

Noise will be monitored against background levels and kept to a minimum by the use of specific tools designed for the task which are modern, maintained and in good order.

4.3 Method Statements

Specific project method statements and risk assessments will be created for the works for qualified and competent contractors for all elements of the works.

The Principal Contractor will also be responsible for putting together a Construction Phase Plan that will require approval from the Principal Designer.

4.4 Site Management

The works will be supervised at all times by a competent person with appropriate experience and training. All operatives attending site will possess as a minimum a trade specific Construction Skills

Certificate Scheme (CSCS) card. The site supervisor for the demolition works will carry out toolbox talks on a weekly basis and a record kept of the attendees and topics in the site office.

Exclusion zones will be established within the site boundaries using Heras type fencing or similar to keep operatives segregated from machinery operations and areas where there is a risk of falling debris.

4.5 Anticipated Plant and Equipment

Consideration has been given to the type of plant that is likely to be used during the construction works. The anticipated vehicle type and use, as well as the anticipated plant and equipment associated with the construction process are set out in the tables below.

VEHICLE TYPE	USE	DISTRIBUTION
Rigid Heavy Goods Vehicle	Excavated material Removal, Plant, Accommodation Units	Existing roads to/from the Site
Vans	Small plant, Plant service, materials, other Suppliers. Existing tenant's deliveries	Existing roads to/from the Site
Cars	Occasional deliveries, Couriers etc.	Existing roads to/from the Site

4.6 Potential Environmental Impacts During Construction

A review has been undertaken of the potential source of adverse impacts, which can be associated with carrying out construction works. The results of this are presented in the table below:

ISSUE	POTENTIAL	MITIGATION
Noise	Increased road noise levels from vehicles. Increased noise levels from plant during excavation and general construction works (e.g. from the use of air compressors and diamond cutters).	Defined working hours, baffles to certain plant, local acoustic screening. Vehicle routing. Beepers, radios etc. to be silenced where appropriate. Engines turned off.
Vibration	Increased vibration levels from vehicles. Increased vibration levels from plant during demolition and general construction works. (e.g. from hand operated breakers)	Defined working hours. Selection of appropriate plant and work. Phased deliveries to minimise number of vehicles attending site, Vehicle routing. Engines to be switched off when vehicles are idle or on site
Dust / Air Quality	Windblown dust from ground surfaces, stockpiles, vehicles, work faces (Demolition works are undertaken within enclosed space) and cutting and grinding of materials. Exhaust emissions from lorries and plant delivering and removing materials including dust and particulates.	Cover all open backed vehicles, 'water down' demolition activities; switch off vehicle engines when parked. Cover waste skips on site.

Waste	Waste from excavation, minimal waste anticipated from foundation and structure works.	Instigate Site Waste Management Plan and re-cycling programme
Water	Increased sediment loadings to storm water system. Potentially contaminated storm-water runoff.	Do not allow direct discharge of water into sewerage collection system.
Traffic	A relatively small increase in traffic expected during the Construction Phase. Minor potential traffic disruption caused by site traffic. Increased vehicle movements mainly consisting of Heavy Goods Vehicles (HGV). Nominal levels of transfer of mud and material from vehicles onto the public highway. Disruption from abnormal or hazardous loads. Exhaust emissions.	Phased deliveries to minimise numbers of vehicles attending site, switch off vehicle engines when parked, minimise abnormal loads. Vehicles to be attended when at the site boundaries. Vehicle routing applied to all vehicle commercial vehicles attending the site.
Storage of Fuels and Construction Materials	Accidental spills, discharges to drains/storm-water systems. Contamination to ground. Minimal storage of small quantities of Diesel/Propane/Oxyacetylene anticipated.	All fuel tanks etc. to be bunded, no discharge allowed into the sewerage collection system. No significant storage of fuels on site is expected during the construction Phase. Ventilated Gas storage cages.
Pedestrian Access	Restrictions on pedestrian access to project areas.	Erect protective barriers and hoardings around all project areas.
Hazardous and contaminated materials	Exposure of the workforce to deleterious / hazardous materials and contaminated land, mobilisation of any source contaminants and creation of pathway from source to groundwater receptor.	Site investigation reports to indicate if any contaminated fill is present. COSHH assessments and careful implementation of associated working method statements to ensure that no hazardous materials find a path to groundwater source.
Ecology	Water / mud run off into the drains.	Do not allow direct discharge of water into sewerage collection system, utilise interceptors where necessary.



4.7 Programme

It is anticipated that the site preparation will commence in October 2021 all works completed by March 2022.

Anticipated Project start date:	20 th October 2021
Anticipated Works on site start date:	12 th November 2021
Anticipated Project Completion date:	30 th March 2022

These will be in accordance with MCC Guidelines and Contractor Requirements. Working hours will be between 7.30am – 6pm, Mon-Fri, and 8.30am – 2pm on Saturdays. There shall be no working on Sundays or Bank Holidays.

Subject to deliveries and abnormal works, there may be a requirement for night-time working and working at weekends, as and when required. Full liaison will be maintained with the local neighbours through letter drop, regular email notifications and direct communication and with the Council noise team and the Environmental Health Officer.

Consideration should be given to early / late deliveries and collections to reduce any traffic congestion during the peak periods.

Where potentially noisy working is required outside of the above hours due to unforeseen circumstances, emergencies or planned work that can only occur outside of the core hours, then these will be undertaken following communication with the site, the reasons for the work, likely impact, if any, and estimated time to start and complete the work.



5 Responsibilities

In accordance with its ISO9000 accredited management system, Ameresco are taking into consideration the Client's obligations based on information available at the time of preparing this plan.

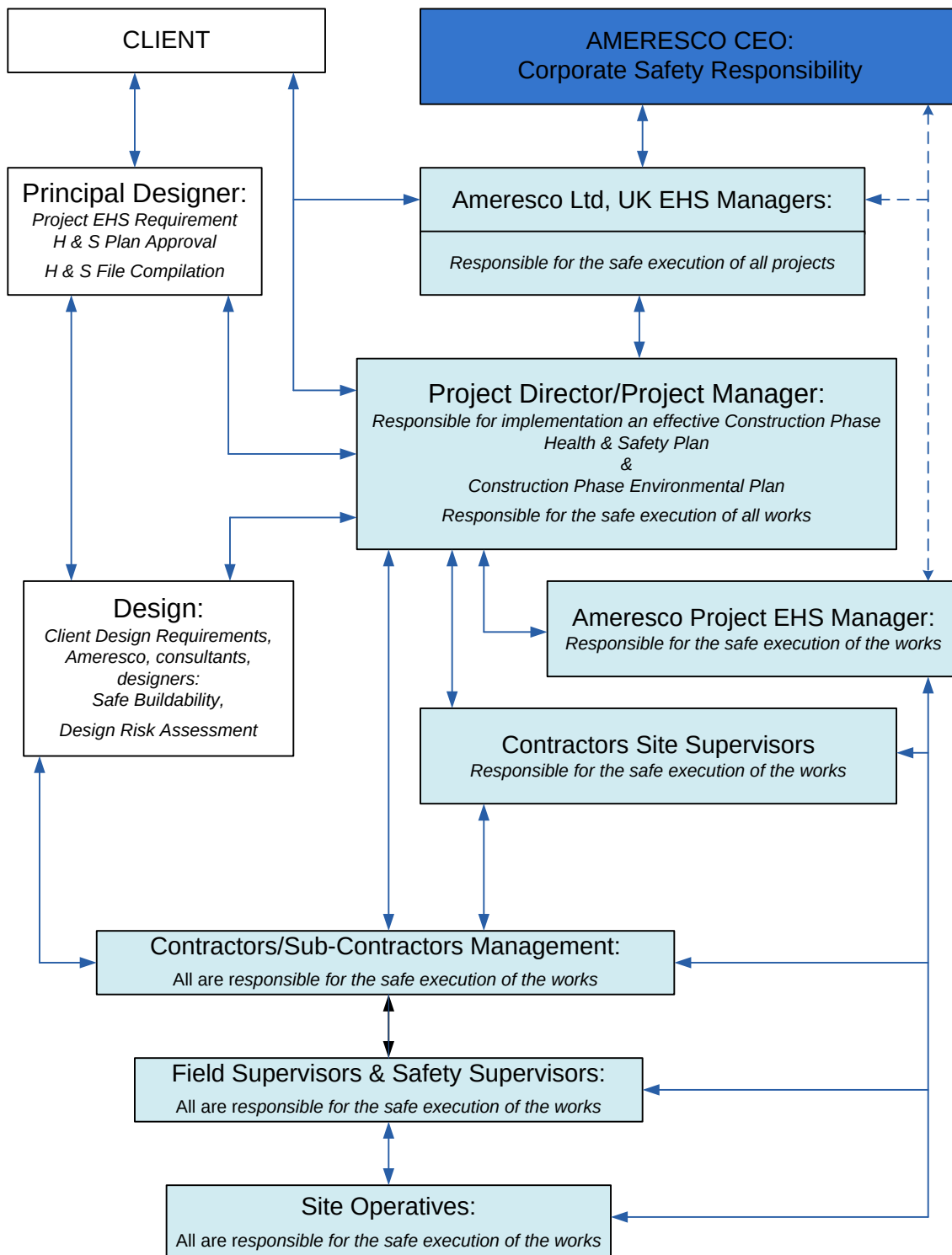
This plan may change as information becomes available and the Construction Strategy shall be updated as deemed appropriate.

Issues that may impact the Project have been identified and are recorded within the project Risk Register and will be monitored in accordance with the Risk Management procedures.

Ameresco Limited will be Principal Designer and Principal Contractor for the Works.



5.1 Management Safety Structure & Management Responsibilities



Ameresco as the The Principal Contractor will:

- Be responsible for the site environment and adhere to the obligations and recommendations set out in this CMP whilst also placing the same responsibility on all sub-contractors through pre start meetings and the approval of their detailed method statements and risk assessments. The

Principal Contractor's site-based construction manager will be the key contact concerning environmental matters and will therefore be the person contactable on site related issues.

- Ensure management systems comply with the environmental management framework.
- Provide the Site with information of key personnel.
- Ensure that they and their sub-contractors provide and maintain tools, plant and equipment that are fit for purpose and without risks to health and safety and environment.
- Obtain all necessary permits and licences from regulatory bodies. Information on the nature and timing of all key site activities relating to the CMP will be provided by the Principal Contractor to Local Planning Authorities, the emergency services and other Statutory bodies as required.
- Ensure a safe place of work at all times with safe means of access and egress from the place of work.
- Ensure safe handling, transporting and storage of articles and substances that will be incorporated into the works, or used on the project.
- Only utilise competent employees and sub-contractor who are trained and deemed competent in the safe working practices for the work they undertake, appropriate levels of supervision will also be maintained.
- Provide adequate resources to ensure the health and safety and environmental objectives for the project are met in full. Construction Environmental Management Plan
- Provide all persons on the project with information on the risks to health, safety & environment and the safe working practices to be implemented, to eliminate or reduce those risks to acceptable levels.
- Ensure the health and safety of operatives, members of the public and others who come onto site or come into contact with the Principal Contractor's work activities.
- Carry out all works without undue inconvenience and nuisance to members of the public and surrounding residents/patients/visitors.
- Ensure adequate welfare facilities are available throughout the project in compliance with CDM.
- Monitor work activities to ensure health and safety standards and objectives are being achieved and maintained by all involved with the project.
- Co-operate with the Designers, and sub-contractors to ensure the highest standards of health and safety are achieved.
- Comply fully with all duties under the Construction Design and Management Regulations and other relevant health and safety and environmental legislation.

5.2 Environmental Incident Procedure

The Principal Contractor will establish and implement an environmental incident procedure as part of their Emergency Plan combined with their management systems on site. This procedure will be designed to respond to anticipated environmental hazards and risks on site and will include emergency control measures taking into account the Environment Agency's Pollution Prevention guideline, General Guide to the Prevention of Pollution and Pollution Incident Response Planning.



The environmental procedure will include:

- An environmental incident / pollution reporting and response plan.
- Measures to mitigate the adverse effects of an environmental incident.
- 24-hour emergency contact details and method of notifying emergency services, Local Authorities, Environmental Agency, other statutory authorities and key personnel.
- Measures to be adopted to investigate and prevent the recurrence of an environmental incident.

The Principal Contractor will produce a Construction Phase Health and Safety Plan which will be maintained and updated by them throughout the project.

Exchange of Design Information / Design Changes during the project will be monitored / controlled using Principal Contractor standard meeting agenda and timetables.

Existing records as regards Hazardous Substances including the presence of asbestos are being validated ahead of commencement of Works on site. Additional surveys prior to demolition will be carried out if required to ascertain the presence and specific location of asbestos.

5.3 Consultation

Good public relations, its contractors and the image of the development are important to Ameresco Limited. Ameresco will be responsible for communicating on a regular basis to the Trust and other interested parties, particularly where there are likely to be impacts from abnormal events.

Ameresco will nominate a senior member of his team as a point of contact for all communications from the Trust and adjacent construction projects. Their name and contact number will be clearly displayed on the project sign board.

A weekly and monthly report will be published and issued to the Trust to update them as to the progress of the works as well as planned works and any changes expected.

5.4 Health & Safety File

Information for inclusion in the health and safety file will be collected by the Principal Designer from the wider design team, Principal Contractor and subcontractors and included within the Health and safety file that will be handed over to the client on completion of the project. During the project information will be stored within the site offices and on project servers.

6 Construction Environmental Management Plan

6.1 Good Housekeeping

The Principal Contractor will ensure that the site is kept in good order at all times. Including the maintenance and management of all entrances and hoardings.

6.2 Pedestrian Access

Pedestrian access to the Project Area will be restricted by hoardings and barriers.

Pedestrian routes within the site boundary will be explained during the site induction process showing all secure entrances and exits for both vehicles and pedestrians.

All suppliers will be instructed that drivers of large construction vehicles are to call 10 minutes before they arrive at site. The banksman will ensure that no pedestrians are in the immediate vicinity of the junction when the vehicle undertakes this manoeuvre.

6.3 Resourcing and Training Development

The Principal Contractor will instigate and maintain an induction process for all workers detailing ways in which to respect the local community as well as understanding the site logistics, health, safety and the environment.

This will include security measures and a behavioural safety performance system and the implementation of the CSCS or equivalent. Continued site training in the form of targeted tool box talks will help to maximise awareness of evolving site-specific hazards and the mitigating measures being implemented to reduce risk.

6.4 Project administration and Welfare Facilities

The Workplace (HS&W) Regulations 1992 specify the requirements for temporary facilities for the works normally comprising of suitably sized canteen, changing and drying room and toilets. The location of the welfare accommodation and storage compounds will be located fully within the site boundary.

It is anticipated that the workforce numbers on site will peak at approximately 10 personnel per day between October 2021 – March 2022. The site accommodation will be selected to provide suitable changing, welfare and dining facilities to cater for this number of site personnel.

Temporary services, water and power, will be brought to the compound area. It is anticipated that electrical power will be provided by use of the existing boiler house supply

6.5 Site Security

Ameresco will control access and egress to the Project Area around this site for the duration of the development.

In addition, it will be recommended that valuable items and power tools should be securely stored in site strong boxes or storage containers. Site boundaries will be secured when not in use and potentially hazardous materials will be safely secured e.g. fuel outlets will be locked, plant and equipment will be immobilised overnight.



6.6 General Good Housekeeping Measures

Measures to ensure the site is safe, secure and presentable at all times will include but will not be limited to the following:

- Clear access routes with appropriate signposting.
- Segregation and regular removal of waste including food stuffs.
- Keeping the site tidy and clear.
- Inspecting hoardings frequently, repair and repaint as necessary.
- Visual inspections of plant, equipment and material storage areas for leaks and spills.
- Toilet, changing and drying facilities will be kept clean.
- Open fires will be prohibited at all times.
- Hard standings for vehicles will be cleaned frequently.
- Mud will be minimised on access routes.

6.7 Lighting

The existing lighting will be utilised during the construction works.

6.8 Hoarding and Fencing

Hoarding will be used to separate all construction works for the heat pumps from general access. The extent and height of hoarding at a particular location will be selected to maintain effective security.

Hoarding will be maintained in good condition at all times.

Lockable gates will be located on the entrances / exits from the site access and will remain closed when not in use.

The hoarding for the site shall be installed around the works area and will be 3m high, constructed of timber with a branded vinyl wrap with a flush finish. If lighting is to be provided, it will be fixed at high level to the top rail of the hoarding.

Scaffold and branded monoflex may be required from time-to-time as the works progress. The hoarding and scaffolding will be inspected weekly by the Contractor and repairs made if necessary. The hoarding will include double vehicle access gates and pedestrian access.

6.9 Deliveries

Numerous types of delivery vehicles will be used to bring materials to and from site. These include:

- Transit Vans
- Skip Lorries
- Ready Mix Concrete Lorries
- Flatbed delivery vehicles for the delivery of various material including scaffolding, steelwork, reinforcement, bricks / blocks, cladding and glazing
- Heavy goods vehicles and articulated lorries
- Drilling Rigs

Given the nature of the project the projected vehicle movements are will be kept to a minimum and will not adversely impact the site. It is estimated at peak there will be 2 deliveries per day over a period of 8 weeks. The vehicle movement will vary on a day by day.



Loading and unloading will occur within the site boundary.

A booking in procedure for all vehicle movements will be implemented. All deliveries will be scheduled to minimise the number of vehicles on site at any time. Care will be taken to avoid the potential for large construction vehicles arriving, when unloading areas are in use. No queuing will be permitted, and no HGVs will be allowed to enter the area until a loading space is available for it. A log of all vehicle deliveries will be maintained throughout the programme.

6.10 Parking Facilities

The car park to the Northwest of the site will be closed for the duration of the borehole drilling works. Access will be maintained to the North City Family Fitness centre at all times. The car park will be resurfaced following completion of the borehole drilling works and the car park spaces/orientation will be restored to its original condition.

There is sufficient Car Parking for all users at the adjacent retail shopping centre (this is currently used as overspill for the Fitness Centre). This has been agreed with the Building Manager at the Centre.

6.11 Monitoring

Regular recorded site inspections will be undertaken which will include a review of good housekeeping practices on site.

6.12 Emissions Air Quality

Air quality effects will be controlled through the selection of appropriate plant and machinery, careful planning of works and effective site management. Planning of works will take into consideration local topography, prevailing wind patterns and local sensitive receptors.

The principle of prevention and mitigation is to be used to identify if the activity can be achieved minimising dust and air pollution. Where possible best practice guidance will be applied.

Measures to be considered for limiting emissions and avoiding nuisance will include one or more of the following, as appropriate and, as far as reasonably practicable:

- Ensuring that the engines of all vehicles and plant on site are not left running when not in use, to prevent exhaust emissions (and noise).
- Using low emission vehicles and plant fitted with catalysts, diesel particulate filters or similar devices.
- Using ultra low sulphur fuels in plant and vehicles.
- Requiring that plant will be well maintained, with routine servicing of plant and vehicles to be completed in accordance with the manufacturer's recommendations and records maintained for work undertaken.
- Maximising energy efficiency (this may include using alternative modes of transport, maximising vehicle utilisation by ensuring full loading and efficient routing).

6.13 Dust Pollution and Suppression

Construction dust can seriously damage workers' health and some dust types can lead to fatal disorders. Regularly breathing these dusts over a prolonged period can lead to life-changing lung disease. Construction dust is a general term used to describe different dusts which occur on construction sites. There are three main types:

- Silica dust: created when working on silica-containing materials, such as concrete, mortar or sandstone (also known as respirable crystalline silica or RCS).



- Wood dust / Sawdust: created when working on softwood, hardwood and wood-based products such as MD, OSB, or plywood.
- Lower toxicity dusts: create when working on materials containing very little or no silica. The most common include gypsum, limestone, marble and dolomite.

The Contractor will endeavour to minimise the release of excessive dust particles into the environment immediately around the site. Methods for the suppression of dust are as follows:

- Dust extractors and water suppression will be used where required, including on tool suppression and extraction.
- Regular cleaning of the site will be undertaken by the relevant subcontractors using filtered heavy-duty vacuum cleaners.
- Operatives will wear suitable respiratory protection during cleaning involving dust and working with materials which create dust.
- Vehicles carrying dusty materials will be sheeted over.
- Damping down of haul roads will be carried out as required.
- Skips will be kept covered.

The Construction Manager will monitor the level of dust being emitted from site and suspend any work which is deemed to be creating excessive dust, until necessary mitigatory measures are put in place. Any complaints in relation to excessive fugitive dust particles can be brought to the attention of the Construction Manager.

6.14 Plant and vehicles

- All loaded vehicles leaving site with the potential to cause dust will be sheeted.
- Vehicles will not be overloaded.
- Altogether site vehicle engines, generators or site plant engines will be switched off when not in use.
- Plant and equipment will be kept in good repair and regularly maintained in accordance with the manufacturer's specifications.
- Plant and equipment maintenance records will be kept on site for the duration of the works.

6.15 Earthworks

- Completed earthworks will be sealed or seeded as soon as practicable.
- Exposed earthworks will be kept damp to minimise air borne dust emissions.

6.16 Materials handling and storage

- Stockpiles will be located out of the prevailing wind or protected to minimise the potential for dust generation.
- Silos or stockpiles will be sited away from sensitive receptors including watercourses.
- Tipping height of potentially dust generating materials will be minimised.

Lockable storage areas will be established on site and will be used for the storage of materials, small plant and will have the facilities for storage and testing of materials. The storage areas will be kept locked at all times with a designated key holder. No hazardous materials should be kept within these, unless relevant specialist precautions are taken.

Due to the use of mechanical plant, diesel maybe required to be stored on site. For this purpose, double skin tanks with integral bund will be utilised..

6.17 Concrete work

- Large quantities of concrete, mortar or similar process where possible will be ready mixed and stored in enclosed / shielded areas to prevent the escape of dust.
- After concrete pours, the surface of the concrete will be kept free of dust and mud until cured.

6.18 Demolition and crushing

- During demolition and crushing activities, water for suppression of dust will be used.
- Skips and loose materials will be covered prior to leaving site.
- All crushing plant will be fitted with dust suppression equipment and this will be used at all times.

6.19 Smoke and odours

Measures will be taken to avoid causing nuisance from smoke, odours, dust and other air emissions including the following:

- Burning of materials / fires are completely banned on site.
- Vehicles and plant will be maintained in accordance with manufacturer's guidance.
- Waste will be managed and will be removed from site on a regular basis to avoid excessive accumulation.
- Materials containing volatile organic compounds (VOCs) are banned from use on site.
- The citing of activities with the potential to emit aerosols, fumes, odours and / or smoke including refuelling and site ablution, will take account of prevailing wind and will avoid where practicable the transmission to locations of sensitive receptors.

6.20 Monitoring

Beyond the measures to prevent, control and mitigate the factors affecting air quality, monitoring will be carried out to include regular visual inspections of dust levels undertaken particularly during dry periods and action to reduce levels where necessary.

6.21 Noise

The works shall, as far as reasonably practicable, be conducted with the minimum of noise, and the Construction Manager shall ensure:

- When either they or a contractor are planning an operation which is liable to expose any person to noise at or above a lower exposure action value that a suitable and sufficient assessment of the risks is undertaken by a competent person to determine the measures which need to be taken to meet the requirements of the Regulations.
- When risk is assessed that attention is paid to other contractors and members of the public who may also be affected by the noise.
- That action is taken to reduce the noise exposure that produces those risks.
- That those affected are provided with and wear hearing protection where noise exposure cannot be reduced enough by using other methods.
- The legal limits on noise exposure are not exceeded.
- That those undertaking the work are provided with information, instruction and training on noise risks and control.
- Where any person entering an area on site is likely to be exposed to noise at or above an upper exposure action value that the area is designated a Hearing Protection Zone.



- The area is demarcated and identified by means of the sign specified for the purpose of indicating that ear protection must be worn and access to the area is restricted where this is practicable and the risk from exposure justifies it.
- So far as is reasonably practicable that no person enters the Hearing Protection Zone unless they are wearing personal hearing protectors.
- Prior to the commencement of the site operations the Construction Manager shall take noise readings to record the background from the site boundaries and surrounding areas.
- The site manager shall take and record regular noise checks at the various times and distances from the source(s) of the noise from site operations.
- All activities should not exceed a noise level of 85 dBA. Anybody working with that zone shall wear ear defenders to the required standard.
- Subcontractors undertaking the works shall be required to provide a detailed risk assessment and method statement (RAMS) which detail, among other items, the proposed equipment and machinery to be used.

In additional measures will be identified and employed to reduce the noise and vibration arising from this phase of the development. Specific measures will include:

- Selection of construction methods and programme to minimise noise and vibration at sensitive receptors.
- Selection of routes and programming for the transport of construction materials, spoil and personnel to minimise noise and vibration at sensitive receptors.
- Avoidance of vehicles waiting or queuing on the Public Highway with engines running.
- The design and construction of temporary infrastructure to minimise noise and vibration.
- Only plant conforming to relevant national and international standards, directives and recommendations on noise and vibration emissions will be used.

Plant or equipment liable to create noise or vibration will be located away from sensitive receptors or will be controlled by the use of lined and sealed acoustic covers or enclosures.

Any covers or enclosures will remain in place whilst the relevant noise generating equipment is in use.

6.22 Vibration

Vibration will be controlled in order to minimise disturbance to residents and other users of buildings close to the works.

The Contractor will ensure that the methods for carting out works are chosen to ensure that vibrations do not cause damage to any of the adjacent properties and that all plant and equipment used, is well considered for the tasks in hand, using the most up-to-date technology.

All operations where there is a risk of exposure to vibration shall be assessed and where practicable eliminated at the source.

Where it is not reasonably practicable to eliminate risk at source and an exposure action value is likely to be reached or exceeded, exposure shall be reduced to as low a level as is reasonably practicable by establishing and implementing a programme of organisational and technical measures which is appropriate to the activity including:

- Look for ways of working that avoid or reduce the need to hold vibrating equipment or workpieces.
- Avoiding types of equipment with high vibration when there are suitable lower vibration alternatives.
- Keeping an inventory of equipment and its vibration emissions.



- Maintaining equipment in accordance with its manufacturer's instructions.
- Planning work schedules to minimise vibration exposures and make sure exposures are below the Exposure Limit Value [ELV].
- Organising work to avoid uncomfortable postures and the need for high manual effort to grip, push or pull equipment.
- Helping employees maintain good blood circulation, for example, by providing clothing to help them keep warm and dry.

The Control of Vibration at Work Regulations 2005 specify daily exposure levels at which employers will be required to take action to control risks. These are known as Exposure Action Values (EAVs). The regulations also set out Exposure Limit Values (ELVs). Where these are reached, the employer must prevent further daily exposure.

6.23 Working hours

Normal working hours will be from:

- 08:00 – 18:00 weekdays
- 08:00 – 13:00 Saturdays (if works require)

When unforeseen circumstances result in noisy works (audible beyond the boundary of the site) extending beyond normal working hours, the Principal Contractor will notify and seek approval from the Trust and records will be kept of such events by them.

6.24 Monitoring

The impact of noise will be mitigated by the selection of appropriate plant and / or techniques and / or use of noise barriers. The Principal Contractor will carry out weekly assessment of noise levels at selected positions across the site layout and a log of results to be retained in the site offices.

6.25 Ground Conditions

Measures will be implemented to prevent the contamination of ground and surface watercourses and aquifers during the works.

6.26 Earthworks and site management

Work method statements will identify measures to prevent recontamination of the site by construction activities. Typical measures include bunded fuel tanks, designated and protected fuelling areas, drip trays and catchment materials, all to be provided with relevant trained personnel or training as required.

Where unforeseen areas of contamination are found or suspected, works will stop in the area and appropriately investigated by the Principle Contractor and a suitably qualified person to determine the measures for mitigation or remediation.

Topsoil to be used for creating habitat and / or landscapes will not be seeded and herbicides will not be used.

6.27 Waste

In order to minimise the generation of waste and waste disposed to landfill, all spoil, construction arisings and wastes will be managed in accordance with the waste hierarchy and relevant regulatory controls.



Measures to reduce excessive quantities of material storage on site will include adopting a just in time approach to material deliveries.

A comprehensive Site Waste Management Plan (SWMP) will be developed as part of their Construction Phase Plan adopting best practice procedures in as many areas as possible.

The SWMP will be updated as the project progresses capturing any changes that may result in differing waste streams and quantities. The SWMP will provide a structure for waste disposal at all stages of the construction project. It will help to identify: Who will be responsible; What type of waste will be generated; How the waste will be managed, reduced, reused or recycled; How the quantity of waste generated from the project will be measured.

6.28 Material selection

During procurement buying schemes (such as group purchasing) will be sought to minimise packaging and waste wrapping of products. The buyer shall ensure accurate scheduling and ordering of materials in order to minimise waste through over ordering.

Materials such as timber will be selected from certified sustainable sources.

6.29 Waste Management

Compliance with all aspects of the Duty of Care (Environmental Protection Act 1990) will be achieved during construction in order to protect the interests and safety of others from the potential effects of handling, storing, transporting and disposing of materials and wastes arising from the works.

Disposal of waste from site will be carried out by a licensed waste carrier.

All non-hazardous waste leaving site will be accompanied by a waste transfer note.

Copies of waste transfer notes for non-hazardous wastes will be kept for a minimum of 2 years.

If waste is to be deposited, kept or treated on the site, a Waste Management Licence or an exemption will be obtained.

Copies of documentation for the transport of hazardous waste will be kept for 5 years.

6.30 Storage of soil, materials and waste

During the development, waste will be clearly labelled and segregated on site. Measures will be taken to ensure that wastes cannot blow away.

Should soils require disposal, the Principal Contractor will undertake Waste Acceptance Criteria (WAC) testing prior to disposal.

Housekeeping measures will be followed for the storage of materials to ensure that materials are protected as much as possible.

The burning of waste on site will not be permitted.

Site management will ensure that materials are not delivered to site too early and are not exposed to damage from weather or poor storage. Off cuts will be reused where possible (i.e. timber off cuts greater than 300mm in length could be used as noggins or packers).

To mitigate the effect on the development on the canal running next to site, any plant near the water edge will be bounded off, drip tray used and pollution booms available on site if required.

Materials and waste taken off site will be measured and monitored.

As a minimum, the following waste management data will be provided:

- Quantity of materials and waste removed from site by type in volume and weight.
- Outcome of the materials and waste on and off site.
- Waste transfer notes.
- Hazardous waste consignment notes.

6.31 Drainage

Where discharges are required to controlled waters or sewers, consent will be obtained from the EA or the statutory sewerage undertakes as applicable.

6.32 Site drainage

Site drainage requiring discharged into sewers will be in accordance with relevant permissions obtained from the sewerage or statutory authority.

Site drainage will meet the effluent standards required by the sewerage undertaker or EA.

Mortar mixing waste at the silo location will be collected and wash water kept to a minimum and settled before clearance.

6.33 Pollution control

- All potentially polluting substances will be stored on impermeable surfaces with controlled drainage or at least 10m away from storm water sewers, grids, channels, watercourses and ditches.
- All fuel, chemicals and oils will be stored within bunded areas.
- All tank discharge pipes, valves and trigger guns will be contained securely within the bund when not in use.
- Bowsers will be stored within secure areas when not in use to protect against theft or vandalism.
- Leaking or empty drums will be removed and stored in a suitably bunded area separating from other drums prior to disposal by an appropriate licensed waste disposal contractor.
- All hazardous substances on site will be controlled in accordance with COSHH Regulations (2004).
- Refuelling of plant and machinery will take place on concrete hard standing with controlled drainage.
- Wheel washing will be undertaken in a designated area.
- Washing out of concrete trucks, hoppers and mixers will take place in areas away from storm water sewers, grids, channels and watercourses.
- 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.

6.34 Managing run off and silty water

- Measures will be taken to ensure that run off from earthworks does not enter drains, watercourses or ditches including the use of silt fences.



- Areas of exposed ground and stockpiles will be minimised where possible to reduce silty run off.
- Provision will be made for settlement areas to deal with silty water. The settlement facility will be designed for the volume of water and suspended particles within it.
- Water unpolluted other than with coarse particles and with relatively small flows may be treated by passing through tanks or skips with a suitable filter such as gravel, geotextiles, straw bales or silt busters.
- Where periods of prolonged or heavy rainfall are forecast, appropriate additional measures will be taken to control surface run off and move potentially polluting activities out of the areas susceptible to flood risk.
- All discharges will be monitored in accordance with any consents held.
- The use of water will be monitored during construction.

6.35 Ecology

There are no habitats of international, national, county or local importance that would be directly affected by the development,

Birds/Reptiles/Bats - There are no ecologically sensitive features to be retained on the site.

Trees and other vegetation – There are no local trees/vegetation that will be impacted by the project.

If screening and fencing is required as part of a strategy to remove or contain animals in the site area, it will be sensitively designed to be both effective and sympathetic to the local environment.

The site management team will as part of their site inspections monitor the site. If any creature is found to be nesting in the site area measures will be taken as described above and relevant advice sought.

6.36 Construction Traffic Management Plan

A Construction Phase Plan will be developed by Ameresco setting out the methods of control, application and monitoring of construction site traffic during this stage of the development. Details of all construction accesses, lorry/construction routes and any haul road provision for this development or part thereof that are required in connection with site clearance and demolition.

The Principal Contractor is committed to working in conjunction the Trust on matters concerning the scheme such as logistics, area safety and taking part in strategy meetings

Car parking will be accommodated on site for the work force.

7 Relevant Health and Safety Legislation

- The Health and Safety at Work Act 1974.
- The Construction, Design and Management Regulations 2015.
- MCC policies and procedure documentation e.g. Fire, Equipment, Major Incidents, Health & Safety including Accident & Incident reporting.
- MCC/Site Fire Policy and emergency procedures.
- The Fire Precautions Act 1971.
- The Electricity Supply Regulations 1988 (SI No. 1988/1057).
- The Electricity at Work Regulations 1989 (SI No. 1989/635).
- The Pressure Systems and Transportable Gas Containers Regulations 1989 (SI No. 1989/2169).
- The Management of Health and Safety at Work Regulations 1992 (SI No. 1992/2051) and 1999 (SI No. 1999/3242).
- The Manual Handling Operations Regulations 1992 (SI No. 1992/2793).
- The Personal Protective Equipment at Work Regulations 1992 (SI No. 1992/2966).
- The Workplace (Health, Safety and Welfare) Regulations 1992 (SI No. 1992/3004).
- The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995 (SI No. 1995/3163).
- The Confined Spaces Regulations 1997 (SI No. 1997/1713).
- The Fire Precautions (Workplace) Regulations 1997 (SI No. 1997/1840).
- The Provision and Use of Work Equipment Regulations 1998 (SI No. 1998/2306).
- The Gas Safety (Installation And Use) Regulations 1998 (SI No. 1992/2451).
- The Pressure Systems Safety Regulations 2000 (SI No. 2000/128).
- Control of Pollution (Oil Storage) (England) Regulations 2001 (SI No. 2001/2954).
- The Control of Hazardous Substances to Health Regulations 2002 (SI No. 2002/2677).
- The Regulatory Reform (Fire Safety) Order 2005 (SI No. 2005/1541).
- The Control of Noise at Work Regulations 2005 (SI No. 2005/1643).
- All other relevant enactments, regulations and working rules relating to safety, health and welfare.