Outline Construction & Environmental Management Plan

Client
Avon Fire & Rescue Service

Project
Hicks Gate Fire Station,
1.0 INTRODUCTION

This plan has been prepared for the benefit, use and information of the Local planning authority of Bath & North Somerset Council, for the purpose of satisfying condition 10 of planning permission 14/01849/FUL for the development.

The following plan is a qualified assessment based on current information and is subject to refinement as the project evolves. We have prepared our plan to outline how this project will be constructed including a review of the construction methodology, site logistics and environmental measures to be undertaken. This report describes the proposed outline programme and key activities for the construction of the new fire station at Temple Back, Bristol. Potentially significant environmental impacts associated with these activities are identified and where necessary, proposals for mitigation are outlined.

Planning for enabling works and the construction phase is necessarily broad at this stage and may be subject to modifications during detailed construction planning. Consequently, a number of aspects of construction in relation to environmental issues cannot, at this stage, be accurately predicted.

2.0 PROGRAMME OF WORKS

2.1 Construction Programme

The total duration of the scheme as indicated in our high level programme is estimated to be between 44 weeks and will comprise of the following key activities:

- Enabling works
- Construction phase

Due to the uncertain nature of the ground conditions removal we are unable to submit a full construction programme at this stage. However, the schedule of activities below leads to a practical completion date in November 2015. The durations in weeks are given for each section of works but these works will overlap which will be depicted in our construction programme. Our construction methodology statement which follows explains how this will be achieved.

<table>
<thead>
<tr>
<th>Key Construction Activity</th>
<th>Programme Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabling works including forming new entrance and service diversions</td>
<td>4wks</td>
</tr>
<tr>
<td>Highway works</td>
<td>8wks</td>
</tr>
<tr>
<td>Substructure (Excavations/ Piling/ Founds)</td>
<td>8 wks</td>
</tr>
<tr>
<td>Structural Steel Frame &amp; Roof works</td>
<td>8 wks</td>
</tr>
<tr>
<td>External Envelope</td>
<td>18 wks</td>
</tr>
<tr>
<td>Internal Finishes/ Services &amp; Commissioning (Incl. Fitting Out)</td>
<td>20 wks</td>
</tr>
<tr>
<td>Externals (including drainage)&amp; Landscaping</td>
<td>18 wks</td>
</tr>
</tbody>
</table>

2.2 Phasing plans

The phasing plans below show the planned works starting with enabling works through to practical completion of the construction phase and handover to the client. They detail work areas, traffic management, and site set-up based on current knowledge. These plans will get developed through the duration of the project.

Logistic plans are in the process of being developed along with a strict delivery/vehicle schedule. These tools will be essential when operating the project within the confines of a live fire station and headquarters within a city centre environment.
2.3 Proposed Site Compound & Accommodation Layout

Below is a copy of our proposed site compound plan within the existing plot and site plan. Traffic management is covered under section 5.6 on page 12.
3.0 MATERIALS AND RESOURCE USE

3.1 Specialist Waste Management

A specialist waste management company will be appointed with specific responsibility for the coordination of the disposal of all surplus materials and the management of an effective document control system to track and confirm that the proper procedures have been followed. Due to the site restrictions all waste will be removed to a licensed waste transfer station for sorting offsite. The location of the waste handling site where the material will be taken to will vary dependant upon their waste category, but we try to use local resources. Wherever possible, materials will be recycled and re-used onsite. Waste going offsite will be recycled/re-used offsite by our Waste Management contractor.

For the asbestos and demolition phases Willmott Dixon will employ a licensed, competent demolition contractor to carry out these works. The contractor will be chosen via a tender process and be a Willmott Dixon Grade A supply chain partner. All Asbestos waste will be removed and disposed of in line with current legislation and at no risk to people either on site or in the surrounding area. Demolition waste will be removed for sorting offsite.

3.2 Plant & Equipment

Consideration has been given to the types of plant that are likely to be used on-site during the enabling, demolition and construction phases of the proposed development. The plant and equipment associated with each of the key elements in the construction process are set out in the table below:

<table>
<thead>
<tr>
<th>Plant</th>
<th>Enabling works</th>
<th>Substructure &amp; Envelope</th>
<th>Internal Fit-Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>360 Excavators</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Breakers/ Crushers/ Dumpers</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Mobile Cranes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Compressors</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Power Tools</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Hand/ Power Tools</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Mobile Elevating Working Platforms</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Cherry Pickers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scaffold</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delivery Trucks</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Skips &amp; Skip Trucks</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Telehandler</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Note: X – usage of plant at each stage
3.3 Hours of Work

In line with the planning conditions all on site works throughout all stages of the construction will be set out as follows:

- 7:30am – 6pm hours Weekdays;
- 7:30am – 1pm hours Saturdays; and
- Working on Sundays, Bank or Public Holidays will be subject to reasonable notice and confirmation by the local planning authority and/or environmental health department.

All work outside these hours will be subject to prior agreement, and/ or reasonable notice to BCC council, who may impose certain restrictions.

3.4 Materials and Resources

Being established in the region for many years has enabled Willmott Dixon to build an extremely reliable and professional supply chain throughout Wales and the South West. We extremely proud of our ability to extract very best from the local supply chain with many of our projects using over 85% of labour from within a 25mile radius of the site. Due this developments city centre location there will be no difference this time.

Materials will also be sourced from local suppliers wherever possible helping to lower carbon emissions and the projects Carbon footprint.
4.0 PROPOSED CONSTRUCTION METHODOLOGY

4.1 General

Prior to the main contract works commencing we propose the medium pressure gas main is diverted and the new site entrance is formed off Durley Hill;

It is our proposal that the new site entrance works and stats diversions are carried out under an enabling package in the November of 2014. It would also be advantageous to the scheme if the foul drainage works in the highway along Durley Hill are completed within this period. These works will be planned and undertaken following consultation and implementations of the recommendations of BANES highways department.

The construction access and egress to the site will be from the new entrance formed during the enabling works off Durley Hill. This access route will be continually monitored throughout the duration of the project to ensure no disruption to commuter traffic. A full time gate person will control vehicle and pedestrian access into the site, office and welfare setup. A Pedestrian access control system will monitor pedestrian movement on and offsite and a dedicated material offloading area will be set up.

Whilst the above provides a general outline of the proposed works sequence, works may vary from stage to stage.

The results of the initial site investigation have confirmed the presence of filled ground and existing underground services. The Project Team will ensure that all appropriate measures are undertaken to ensure all element of work in these areas are carried out safely and securely.

4.2 Site Establishment

During site establishment, the following will occur:

- Appropriate accommodation will be installed to service the needs of the site and site construction works.
- A temporary water supply will be installed to feed the site accommodation and the construction site.
- A temporary electrical supply will be installed to feed site accommodation and the construction site generally. It is likely that a temporary generated supply will be used until a permanent supply can be installed.
- Installation of Storage and Waste management facilities.
- All existing drains will be inspected and filter fabric installed to ensure that they prevent sediment entering the existing storm water drainage system.
- All site personnel including visitors will be inducted in accordance with the site Construction H&S plan.

The site boundary will be made up from 2.4m high timber hoarding, Heras fencing along the division between the new and existing fire stations and the existing boundary (See proposed site compound layout and phasing plans). Our site fencing/ hoarding will incorporate public warning notices, site warning signs, hoarding paintings by local school children and traffic management signage. MASS barriers will be installed demarking the site compound, pedestrian and vehicle routes. The site will be secured at all times with a controlled access gatehouse at the site entrance.

4.3 Enabling works

The content of the enabling works are still to be finalised but in general will be conducted in accordance with the following sequence of activities and phasing plans shown above:

- Diversion of medium pressure gas main
- Installation of water main
- Completion of offsite drainage works
• Form new entrance into the proposed development
• Cut and fill exercise to the form construction plateau
• Setting up of permanent office and welfare compound

These works will be carried out with a temporary site welfare set up prior to the larger, long term office and welfare facilities being installed

4.5 Substructure

The piling design and type of pile to be used will be formalised after information from the further investigation process is known. However, a competent piling contractor will be used to undertake the installation and testing of the piles. Other substructure works will consist of in-situ concrete items by the groundwork’s contractor. The piling mat will be retained to form the stone base underneath the floor slab and form a suitable base for the future cranes and concrete pumps.

4.6 Superstructure

The superstructure takes the form of a steel frame with precast planks. The steel framework will be installed using mobile cranes and a labour force on mobile elevating working platforms (MEWP’s)

The first floor slabs will be reinforced concrete on Pre cast concrete planks; this is likely to have to be supported by back props for the first few weeks after the concrete is cast. Concrete will be pumped onto the metal deck formwork using a concrete pump with the whole floors being completed in four phases. During this stage of the works Willmott Dixon will ensure suitable edge protection and/or a secondary fall system is in place for those working at height

4.7 External Envelope

The external envelope of the building is made up of a variety of façade finishes including cladding and curtain walling. Each will be installed by a specialist contractor utilising different methods of access and construction. Behind this will be a SFS system with insulation to the architect’s specification and a vapour control barrier. This modern building method will reduce program time and aid the construction of a more air tight Fire Station

SFS, boards and installation fixed into place by the workforce in a combination MEWP’s (cherry pickers) and scaffold. Brickwork will be traditionally laid by a bricklaying contractor with access gained from scaffold and kwikstage platforms. The scaffold will be sheeted to prevent debris and dust from entering the local environment. Curtain walling will be installed via MEWP’s (scissor lift) running around the perimeter of the building on a clean, compacted stone base with some areas accessed again by the scaffold

The building envelope will be tested via an air pressure test with the minimum result to be achieved being a 5m3/s/m2 at 50 p.a. Willmott Dixon have a proud record of achieving excellent results in these tests which leads to a more efficient and environmentally friendly building for the client.

4.8 Roof

The roof construction takes the form of a single ply membrane over an insulated structural deck. These materials will be lifted into position via the use of mobile cranes. Fall protection for these works will take the form of scaffolding hand rails and safety netting.
4.9 **Internal Fit Out**

The internal fit out comprises of construction of stud work walls, M&E installation, ceilings, flooring, carpentry & decoration etc., High level access for these trades will be via MEWP’s and aluminium scaffold towers. Low level access will be from electric single man lifters, towers and podiums. Willmott Dixon use the hierarchy of access equipment where the use of step ladders and ladders are strictly limited and controlled under permit.

As each system is completed throughout the buildings, they will be tested in accordance with the mandatory specifications and codes. No service voids such as ceiling areas and service risers will be sealed until such tests are completed and signed off. Fire protection materials will be inspected as required under national regulations. On completion of all the works the buildings and systems shall be subjected to statutory inspections and testing before finally being handed over and occupied by the client.

4.10 **External Works & Landscaping**

A full external works and landscaping design is ongoing. It will not however, deviate greatly from the submission for planning permission. The full landscaping plan will be submitted to BANES separately from this document.

4.11 **Highway works**

Any highway works will be carried out by a BANES approved and licensed competent contractor. The scope of any highway works is currently being developed. Drawings and phasing plans will be submitted at a later date. A meeting will be held with the Highways department in early September to discuss the scope of the scheme and the traffic management required. A full traffic management scheme will be developed prior to the commencement of these works and this will be submitted prior to commencement.

5.0 **SITE LOGISTICS**

5.1 **Deliveries and the unloading of plant and materials**

The management of the site logistics will be vital to the success of the project and will require detailed plans to control and manage the site. All deliveries will be planned as there is be limited storage of material on-site due to the extent of the works, location and access restraints. It is expected that all major deliveries will be booked in and recorded via a delivery schedule which will be issued to the gateman prior to arrival on-site. A delivery zone will be established on-site and will be able to hold one to two vehicles at any one time to facilitate efficient use of the telehandler servicing the site. All vehicles will be offloaded in line with Willmott Dixon procedures.

Examples of good practice
It is anticipated that site logistics will form a significant part of the pre-appointment meetings for contractors and sub contractors and that regular co-ordination meetings will be held throughout the construction phase of the project.

In view of the location of the site and the constraints on traffic the project manager will be responsible for communication with the local highway authorities with regard to traffic problems, planned large deliveries and road maintenance issues. In this way it is anticipated that the risk of material shortages at key times will be reduced to a minimum.

5.2 Management Organisation

Our Operations Manager, Richard David and Senior Building Manager, Ryan Williams will have overall responsibility for the construction and will ensure interfaces with design; procurement and construction are identified and controlled.

Other responsibilities will include health & safety, checking the standards of work on site and to liaise with all parties to resolve technical queries and requests for information.

The Senior Building Manager will be supported by our Project quantity surveyor (Eleanor Best), Building managers, Management trainee, Senior design manager (Dave Wood) and Senior Services Manager (Neil Ballard).
5.3 Boundaries & Site Fencing

The site plans in section 2.0 shows the fixed boundary fencing between the surrounding areas and the construction site. The security of the site will be maintained by utilising the existing fence, Heras fencing and Willmott Dixon’s corporate hoarding throughout the construction phase. Permanent fencing will be constructed throughout the project as per the agreed landscaping & external works plan. This fencing forms a key part of our strategy to maintain personal safety by preventing unplanned access to site. It will be checked on a daily basis by our site staff to ensure it remains secure at all times. We will incorporate viewing panels in this hoarding at agreed locations to provide vision and promote interest from the local residents. A primary entrance to our site will be off Durley Hill.

5.4 Site Accommodation

Our intentions will be to install the accommodation so all personnel have to pass the offices to gain access to the work area helping to control the flow of pedestrian movement through the site.

We have double–stacked the offices/welfare to reduce required floor plan space. In addition to providing all necessary welfare facilities (such as staff toilets, canteens, drying rooms, offices and Health & Safety Induction rooms, our site cabins will house and manage all our operational site IT installations, ensuring that we are constantly in touch with our electronic document management and information systems. This is portrayed in the site plans of section 2.0 of this document.

We have located the site office establishment such that it uses minimal space in the compound and allows the site management team to passively supervise the site operations while undertaking office based tasks.

During the initial phases of the works a small setup will be located on site. For the construction phase of the works a 3x3 Moduflex Eco set up will be installed.

Examples of Willmott Dixon’s good practice are shown in the photographs below.
5.5 Controlling Vehicle and Personnel Access onto the Construction Site

A manned security gate will be located at the entrance to the site to control the movement of all construction traffic and pedestrians entering and leaving the site. Pedestrian access is via a separate gate on Water lane and through the "handscan" controlled security access point. All visitors will "sign in" before proceeding to the office set up for an induction. All personnel must have a CSCS card before being allowed on site. It is good practice from both a Health & Safety and logistics perspective to keep the pedestrian access and vehicle access for deliveries completely segregated.

5.6 Off-Site Activities & Traffic Management

Until the formation of the new site entrance, all construction traffic will enter the site via the existing entrance off the Durley Hill road. Through consultation with BANES, the following procedures have been agreed to manage this access until the completion of the proposed site entrance:

- The existing crossover will be upgraded to carry heavy vehicles and avoid damaged to the public footpath / buried services.
- No right turn into the site will be permitted when driving from Keynsham, instead all traffic will be directed to and approach the site from the Hicks gate roundabout
- Advisory speed reduction signs will be posted for a quarter of a mile on the approach to the proposed site
- Site entrance warning signs will be posted on the approach to the proposed site.

All deliveries will follow strict vehicle routes due to the heavy traffic. This will reduce disturbance to the general public and local road networks. Due to high volumes of traffic at peak times we propose restricted delivery times as follows.

Proposed no deliveries between the following times

- 8:00am – 9:00am
- 4:45pm – 17:45pm

Construction traffic will be routed using the main strategic highway network along the M4 from the North, M5 to the West and the Bristol Ring Road to the East and South. It is considered that the impact associated with temporary increase in construction traffic associated with the demolition of the training centre and construction of the new fire station can be mitigated by means of vehicles arriving and departing at staggered intervals during the day in order to reduce congestion and delays on the road networks at peak times through Bristol city centre. These conditions can be firmed up later after consultation with the relevant parties and form part of the subcontractor agreements.

In the case of an emergency on site all construction activities will cease to allow the relevant emergency vehicles unimpeded access on to the site.
5.7 Construction Vehicle Movements

Construction vehicle movements during the project will be monitored closely with detailed traffic management and logistics plan updated and monitored daily. The total duration of the enabling works is assessed at approximately 8 weeks until commencement of the construction phase. The total duration for the excavation, foundations, steel frame and roof will be approximately 11 weeks. Large material deliveries for the steel frame, cladding and the like will commence after the completion of the foundations through to project completion.

The table below illustrates indicative construction traffic movements for the proposed scheme.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Programme Duration</th>
<th>Approximate Construction Vehicle Movements</th>
<th>Estimated Loads Per Day (Average)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enabling Works</td>
<td>8 wks</td>
<td>100</td>
<td>5</td>
</tr>
<tr>
<td>Substructure (Excavations/ Piling/ Founds)</td>
<td>4wks</td>
<td>120</td>
<td>5</td>
</tr>
<tr>
<td>Structural Steel Frame &amp; Roof works</td>
<td>8 wks</td>
<td>80</td>
<td>5</td>
</tr>
<tr>
<td>External Envelope</td>
<td>18 wks</td>
<td>100</td>
<td>5</td>
</tr>
<tr>
<td>Internal Finishes/ Services &amp; Commissioning (Incl. Fitting Out)</td>
<td>20 wks</td>
<td>120</td>
<td>6</td>
</tr>
<tr>
<td>Externals (including drainage) &amp; Landscaping</td>
<td>18 wks</td>
<td>150</td>
<td>8</td>
</tr>
</tbody>
</table>

5.8 Contractor Car Parking Proposals

Due to the location of the proposed development, a contractors car park will be constructed on site as part of the site establishment works. All contractor parking will be in this newly formed area. No parking will be allowed on Durley Hill and this will be monitored and enforced by the Willmott Dixon gateman.
5.9 Storage of plant and materials used in constructing the development

Broadly speaking all plant and materials will be stored within the site boundary. Small expensive items of equipment will be stored in the site storage container where the security team can monitor them more closely.

Plant will be parked on site in the secure compound and monitored throughout the night by regular security patrols. Materials delivered on site will be stored in line with Willmott Dixon procedures in secure compounds.

Examples of Willmott Dixon storage of materials good practice

5.10 Wheel Cleansing facilities

Wheel cleansing facilities will be installed just before any material is removed from site. It will be positioned close to the entrance/exit gate leaving a short concrete “run off” area before leaving the site. At present we are exploring the wheel cleansing options available for use on the site so the exact specification is undetermined. However, for the Japanese knotweed removal we will follow advice from White Young Green Environmental as per their Japanese Knotweed strategy. For the remainder of the construction period the options we are currently looking at include:

- Carbon neutral, eco friendly rumble cleaner that requires no water, electricity or diesel to operate and relies on the self weight and vibration of the lorry to clean the wheels
- Traditional water cleansing system

5.11 The sheeting of lorries leaving the site

All lorries carrying loose material away from site will use sheet covering to prevent the spillage of material onto the local carriageways. This will be written in to all subcontract agreements, communicated to the workforce at induction and regular toolbox talks will be by the subcontract supervisors to their workforce. In addition to this strict instructions will be given to the gate person to ensure the above is complied with.
### 6.0 SITE POTENTIAL ENVIRONMENTAL IMPACTS

#### 6.1 Potential Impacts during the demolition, ground works and construction phases

A review has been undertaken of the potential sources of adverse impacts associated with the demolition, ground works and construction stages. The results of this have been presented below.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Potential Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dust/ Air Quality:</td>
<td>Wind blowing dust from ground surfaces, stockpiles, vehicles, work faces and cutting and grinding materials. Exhaust emissions from lorries and plant delivering and removing materials including dust and particulates.</td>
</tr>
<tr>
<td>Ecology:</td>
<td>Disturbance to nesting birds. Water/ mud run-off into drains and canal Disturbance to bat foraging areas</td>
</tr>
<tr>
<td>Energy Usage:</td>
<td>Indirect impacts associated with energy consumption such as CO2 emissions, depletion of natural resources, air pollution etc (material selection and embodied energy issues are covered during the sustainable design section).</td>
</tr>
<tr>
<td>Fuel &amp; Construction materials storage:</td>
<td>Accidental spills, discharges to drains/ storm-water systems, contamination to ground.</td>
</tr>
<tr>
<td>Hazardous materials &amp; contaminated land:</td>
<td>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.</td>
</tr>
<tr>
<td>Noise</td>
<td>Increased road noise levels from vehicles. Increased noise levels from plant during the remediation and construction works (e.g. from the use of air compressors and diamond cutters) on-site.</td>
</tr>
<tr>
<td>Site &amp; Surroundings pedestrian access:</td>
<td>Restrictions on pedestrian access to walkways, footpaths and roads</td>
</tr>
<tr>
<td>Traffic</td>
<td>Traffic congestion caused by site traffic. Increased vehicle movements mainly consisting of construction vehicles. Transfer of mud and material from vehicles onto public highway. Disruption from abnormal or hazardous loads exhausted emissions.</td>
</tr>
<tr>
<td>Waste</td>
<td>Waste generation and its disposal</td>
</tr>
<tr>
<td>Water &amp; Water Usage</td>
<td>Increased sediment loadings to storm-water system. Potentially contaminated storm-water run-off. Natural resources depletion.</td>
</tr>
<tr>
<td>Vibration</td>
<td>Increased vibration levels from vehicles. Increased vibration levels from plant during the remediation and construction stages.</td>
</tr>
<tr>
<td>Valley Views For Residents</td>
<td>Views impacted and/ or impeded from construction equipment, hoarding and particularly cranes.</td>
</tr>
</tbody>
</table>
7.0 MITIGATION MEASURES

7.1 Management of Sub-contractors

Individual contractors (e.g. for waste removal) will incorporate relevant requirements in respect of environmental control, based largely on the standard of “good working practice” as outlined in the Construction Phase Health and Safety Plan and Project Method Statement, as well as statutory requirements. Potential sub-contractors will be required to demonstrate how they will achieve the provisions of the Construction Phase Health and Safety Plan and PMS, how targets will be met and how potential effects will be minimised.

7.2 Considerate Constructors Scheme & Public Relations

The Considerate Constructors Scheme is the national initiative, set up by the construction industry to improve its image. We are an associate member of this scheme and we are monitored against a Code of Considerate Practice, designed to encourage best practice beyond statutory requirements. The Scheme is concerned about any area of construction activity that may have a direct or indirect impact on the image of the industry as a whole. The main areas of concern fall into three main categories: the environment, the workforce and the general public.

Some of the ways we plan to ensure we adhere to the criteria set out by the CCS are:

- Regular newsletter to resident & business’ in local area. These will also be distributed in the local bus station, train station & police station
- Site information board located at the site entrance
- A Q&A session for the public
- CO2 monitoring and carbon emission reduction techniques applied to construction activities
- Encourage the use of car sharing and public transport by workers
- A Project Manager will be appointed to deal with complaints and enquiries. This individual will be named at the site entrance, with a contact telephone number, and will be identified to BCC and community groups prior to works commencing, and whenever a change of responsibility occurs
- Involvement in local community action groups
- Sponsorship of local sport teams
- Noise, dust & vibration monitoring and control
- Utilise techniques for the reduction in the use of energy and water throughout the project
- Waste management
- Safety presentations given to local schools
- Involvement in the construction ambassador scheme

There is also potential to provide labour to assist in small local projects. This will be explored further once the project team are based on site.

The scheme requires an independent assessor to score the project in 5 different categories with a maximum score that can be achieved in each is 10.

More details can be found at www.ccscheme.org.uk. Other details relating to this scheme can be found on our project notice board as well as on the newsletters.

7.3 Construction Vehicle Management

A good working relationship will need to be developed between the local residents, AFR and the project team to keep access routes clear and useable for all. Unapproved parking on public roads will not be allowed. Any local traffic management measures for site access will be agreed with BCC and Avon Fire and Rescue.
7.4 Road Cleanliness

Willmott Dixon will take measures that include restricting road based vehicles to the existing tarmac surface compound only and provide a wheel wash/jet wash facility at the exit to the site compound to avoid any environmental nuisance on highways as previously stated in section 5.10. We also have to ensure that there is no groundwater run off from the site onto the local road network. Control measures for this are described below

Additional measures will include but are not limited to:
- Use of approved mechanical road sweeper to clean the site and retail park access road of any mud or debris deposited by site vehicles, although the offsite debris will be negligible due to the onsite wheel wash facility. The road sweeper is to be available whenever needed and will be properly used and maintained.
- Adequate sheeting of vehicles carrying waste materials
- Measures will be taken to ensure mud and debris is not swept into local gullies
- Provision of wheel washing on the site compound exit and lorry jet washing facilities

7.5 Management of Noise, Vibration and Dust

Full assessment of activities with the potential to generate high levels of noise and vibration will be carried out post-award of contract. This assessment will then be incorporated in the Construction H&S Plan and Project Method Statement. We believe this aspect of the works will likely be regulated by an agreement under Section 61 of the Control of Pollution Act.

Willmott Dixon will monitor noise, dust and vibration levels on site. Feedback received will be discussed in weekly site team meetings and actions put into place if thresholds are being exceeded. However good practice should ensure this doesn’t occur

On-site good practice procedures will be followed in order to mitigate noise, vibration and air pollution (e.g. through dust and fume generation) impact under the Considerate Contractors Scheme. Measures currently planned to be adopted include:

- Use of hoarding around part of the site to assist in the screening of noise and dust generation from low-level sources;
- Dust and vibration suppression techniques will be used extensively, particularly during the demolition phase;
- Hydraulic breakers during the demolition stage to be used in preference to percussive techniques where practical;
- Off-site pre-fabrication to be used, where practical, including the use of pre-fabricated structural elements, cladding, mechanical and electrical services and package plant rooms;
- All plant and equipment to be used for the works to be properly maintained, silenced where appropriate, and operated to prevent excessive noise and switched off when not in use;
- Plant will be certified to meet relevant current legislation and British Standard 5228 (BS5228) standards;
- All sub-contractors to be made familiar with current legislation and guidance in BS5228 (Parts 1 and 2), which will form a pre-requisite of their appointment;
- Threshold vibration limits will be set and monitoring equipment established at locations near or on the site that are deemed sensitive, such as nearby homes and businesses;
- Loading and unloading of vehicles, dismantling of site equipment such as scaffolding or moving equipment or materials around site will be conducted in such a manner as to minimise noise generation. Where practical these will be conducted away from noise sensitive areas;
- Deviation from approved method statements to be permitted only with prior approval from site management and Willmott Dixon safety department. This will be facilitated by formal review before any deviation is undertaken;
- Noise complaints reported to Willmott Dixon and immediately investigated;
- Brushing and water spraying of heavily used site hard surfaces and access points as required;
- Vehicles transporting materials capable of generating dust to and from site to be suitably sheeted on each journey to prevent release of materials and particulate matter;
- Effective wheel washing facilities to be provided and used as necessary;
- Burning of wastes or unwanted materials will not be permitted on-site; and
• All hazardous materials including chemicals, cleaning agents, solvents and solvent containing products to be properly sealed in containers at the end of each day prior to storage in appropriately protected and bunded storage areas.

As far as practically possible the demolition and construction works will be carried out using methods that minimise noise. For actions such as breaking out existing concrete, there is little reasonable choice other than to use percussion tools in one form or another. Quieter types of machinery will be specified for these works where possible. The use of music broadcasting equipment on site will not be permitted, to minimise noise pollution to adjacent buildings and occupied areas. Noise related impacts attributable to excavation, along with other construction related noise impacts will be controlled through generic and site specific mitigation measures outlined within our Construction Health & safety Plan.

7.6 Site Waste Management Plan

A formal and detailed Waste Management Plan will be in utilised covering all potential aspects of waste generated from the development. The disposal of all waste or other materials removed from site will be in accordance with the requirements of the Environmental Agency, Control of Pollution Act 1974, Environment Act 1995, Special Waste Regulations 1996 and the Duty of Care Regulations 1991.

In general and in accordance with the principles of the UK Governments "Waste Strategy 2008", a principle aim during the demolition, substructure and construction works will be to reduce the amount of waste generated and exported from the site. This approach complies with the waste hierarchy whereby the intention is first to minimise, then to treat at source or compact and, finally, to dispose of off-site as necessary. All relevant sub-contractors will be required to investigate opportunities to minimise and reduce waste generation, such as:

• Agreements with material suppliers to reduce the amount of packaging or to participate in a packaging take-back scheme (e.g. British Gypsum Plasterboard);
• Implementation of "just-in-time" material delivery system to avoid materials being stockpiled, which increases the risk of their damage and disposal as waste;
• Attention to material quantity requirements to avoid over-ordering and generation of waste materials;
• Re-use of materials wherever feasible. The government has set broad targets of the use of reclaimed aggregate, and in keeping with best practice, Willmott Dixon will ensure they maximise the proportion of materials recycled;
• Segregation of waste skips will be installed from the outset.

Re-use and recycling of materials off-site where re-use is not practical (e.g. through use of an off-site waste segregation facility and for direct re-use or re-processing) our expectations in this regard are shown in the table below.
## Overall, the waste management for the site is likely to comprise of the following:

- The waste material from the site will either be segregated onsite before removal to a waste transfer station for sorting, re-use and recycling.

Skips will be covered to prevent dust and debris blowing around the site, and will be cleared on a regular basis. The waste management area will be secured by Heras fencing to prevent arson and cross contamination.

As the development progresses and the building becomes enclosed, the rubbish generated will be collected in light weight floor-based wheeled skips that can be easily manoeuvred through the building onto the hoists and telehandler loading bays, and either disposed of into larger recycling skips, or if suitable, placed into a compactor to reduce the volume of the waste before it is taken off-site.

We will put into practice our waste management procedure that has recently won a construction excellence innovation award. This puts the onus on the supply chain to become more responsible for their waste, rewarding them if they stay under their targets but penalising them if they go over.

### 7.7 Protection of Views

Views across the site by local residents will be affected to some degree during the construction process and we intend to mitigate the impact by the imaginative decoration of the construction site hoardings and scaffold sheeting which may include a representation of the finished scheme or other suitable images developed by the local schools and community groups.

### 7.8 Energy and Water Usage

All sub-contractors will be required to investigate opportunities to minimise and reduce use of energy and water, such as:

- Use of alternative to diesel/ petrol powered equipment where possible;
The incorporation of sources of renewable energy to offset the use of main utilities will be considered;
Selection and specification of energy efficient plant and equipment wherever viable;
Implementation of staff based initiatives such as turning off taps, plant and equipment when not in use both on-site and within site offices; encouraging a paper-reduced office and encouraging double sided printing and photocopying when these activities are necessary;
Use recycling water systems such as wheel washes; and
Use of a rainwater harvesting system for the use in equipment and vehicle washing will also be investigated.

The energy and water consumption of the project will be monitored, either through sub-metering or reading utility bills, to allow comparison against best practice benchmarks and improvements to be made.
APPENDIX 1 – PROTECTION OF WATER RESOURCES

Potential Impacts

The construction of the new fire station could, without mitigation measures in place, have a direct negative impact on the surface water quality and the surface water run off in terms of increase in water pollution and sediment laden run-off at various stages of the construction process.

A number of land based activities associated with the demolition works and construction stages could potentially impact on surface waters in and around the site, including:

- Site clearance;
- Earthworks, including the concreting of foundations;
- Demolition activities;
- Construction materials handling, including the storage and use of fuels and oils and other potentially construction material;
- Handling of potentially polluting silt-laden run-off and excavation dewatering from construction activities and site compounds; and;
- Spillage or uncontrolled release of potentially polluting material such as cement, concrete, diesel, hydraulic fluid or paint.

Silty water can arise from earthworks, exposed ground, water collecting in excavations, stockpiled materials, plant and wheel washing facilities and site roads. As such there is potential for polluted drainage from the construction activities to enter the existing watercourses, particularly during the initial earthwork stages of the scheme.

Other pollutants, such as construction chemicals or fuels, may be carried in drainage. Unless managed appropriately, the pollutants, including sediment, could be washed into surface water sewers in the local area and from there into the local waterways) resulting in contamination. Sediment deposited in the sewer system can result in restriction to the sewer pipes and reduce the capacity flow, causing blockages and the potential for discharge and pollution.

Legislation

The scheme will be constructed in accordance with the guidance contained within the Environmental Agency Pollution Prevention Guidelines. The following PPG are of particular relevance to the construction activities within this scheme:

- PPG1: General Guide to the Prevention of Pollution;
- PPG2: Above Ground Oil Storage Tanks;
- PPG5: Works In, Near of Liable to Affect Watercourses;
- PPG6: Working at Demolition and Construction Sites; and
- PPG21: Pollution Incident Response Planning.

Mitigation Measures

Surface Water Run-Off

It is possible that during the demolition and substructure works, there is the potential for ponding to occur on site and for the adjoining area to be affected by accidental run-off whilst the permanent drainage system is being installed. During this period any increase in run-off caused by the earthworks or discharge from any dewatering operations will be carefully controlled by directing the run-off to a temporary storage tank ready for treatment prior to draining into the existing drainage network.

All necessary consents for land drainage works, drainage discharge and other authorisation will be obtained from the appropriate body, such as Bristol Water and the Environment Agency.
Prevention of Pollution from Plant and Machinery

In order to prevent materials leaking from static plant, such as pumps and generators, contaminating the ground and being washed into the existing courses, all static plant will be placed within a bunded area. Mobile plant will be refuelled over "plant nappies" to prevent any leakages entering the storm water system.

Spill kits will be located on site near high risk areas and within the works compounds in case accidental spillage occurs; and fully trained staff in the use of this equipment will always be present on-site.

Chemicals will be stored on-site in secure, designated, bunded areas and in accordance with appropriate regulatory requirements, including the Control of Substances Hazardous to Health Regulations 1994. Refuelling of vehicles and machinery will be undertaken in accordance with specified Willmott Dixon procedures that will include the designation of refuelling areas. Spill contingency plans will be drawn up and included in the procedures.

Stockpile of dry material will be stored in areas that prevent contamination of surface waters. They will be located away from any neighbouring buildings where possible

**Hicksgate Fire Station - Scheme Recommendations:**

The potential for impacts to occur as result of contamination of water by wet cement or concrete will be minimised by the following measures:

- Manholes and catch pits will be covered to prevent concrete and/or cement ingress;
- Utilise Pre-cast concrete were practical;
- The washing of all concrete lorries will be made in a designated concrete washing zone with run off directed to a temporary storage tank and appropriately disposed of.

The potential for impacts to occur as result of disturbance of silt will be minimised by the following measures:

- All roads and hard standing will be kept clean and tidy to prevent the build up of oil and dirt that may be washed into the watercourse or drains during heavy rainfall;
- The use of sprays to reduce dust or wash down construction areas will be carefully regulated to avoid washing substantial quantities of silt into the surface water drains. Where large quantities of gravel, mud and other such material require cleaning, the area will be swept clean prior to any subsequent hosing down.

The potential for impacts to occur as a result of storage of materials will be minimised by the following measures:

- Storage compounds (for the storage of construction material and temporary stockpiles awaiting possible re-use) will be located away from surface watercourse and drains;
- Drums and barrels will be stored in designated bunded areas within the site compound; and
- All drums and barrels will be fitted with flow control valves/or taps and will be suitably labelled.

The potential for impacts to occur as a result of contamination of water by oil or other liquids will be minimised by the following measures:

- Storage compounds for fuels/oils and any other liquid chemical will be sited away from existing surface water drains. These containers will house an impermeable base and a bund with a capacity of 100% and will not drain directly into the surface water drains. Where practicable, drainage from storage compounds will be passed through oil interceptors prior to discharge.
- Small Plant such as pumps will be equipped with drip trays
- Drums and barrels will be stored in designated bunded safe areas within the site compound;
- All drum and barrels will be fitted with control taps and properly installed.