4.0 Environmental Issues

4.01 Protection of trees / Ecology and archaeological sites

As part of the planning submission FPCR prepared a CEMP for the site Biodiversity. The findings of the survey are contained within report Ref: R9051-FPC-18-00-RP-R-0001.

Safe Guarding Retained Trees / Vegetation:

Heras fencing will be erected with a minimum standoff distance of 1m from the drip line of any trees or hedge (NOT the base) the purpose of this specialised fencing is to protect ecological features of interest.

Safe Guarding Wildlife:

As part of the normal site induction process, the ecological protection measures will be outlined to site operatives and any restrictions to operations will be fully conveyed. Additionally, there will be a retained ecologist that will be available to deal with any ecological issues as and when they arise on site.

Should any protected species be identified then FPCR should be contacted – Tel: 01509 672772

The Site Manager will be responsible for day to day issues in terms of implementation of CEMP which includes the safeguarding of trees / hedges / wildlife

Our work is highly visible and subject to scrutiny by the Environment Agency, Clients, Consultant Engineering Companies acting on behalf of government departments, members of the public and environmental groups whose interests lie fundamentally in the protection of important features of the countryside and archaeological sites.

Protection of the above areas involves preventing physical damage to wildlife and eco systems by using environmentally friendly work methods and materials which will avoid damage or destruction of trees, plants, nests, sets, warrens...etc.

St Modwen Homes will avoid undue interference to wildlife and damage to archaeological sites should such sites be encountered. When working in certain areas (especially the countryside), the views of the Client representatives, local residents and environmental groups will be taken into consideration when disturbing and then re-instating the natural habitat.

Archaeology

Prior to the archaeological investigations a Written Scheme of Investigation was completed by the Centre of Archaeology which was approved by the County Archaeologist for Staffordshire County Council on behalf of Staffordshire Moorlands District Council. The findings are contained within report Ref: R9051-STU-18-00 RP-G-0003.

4.02 Protection of water resources

Water pollution is the contamination of water bodies (e.g. lakes, rivers, oceans, and groundwater). Water pollution affects plants and organisms living in these bodies of water; and, in almost all cases the effect is damaging either to individual species and populations, but also to the natural biological communities. Water pollution occurs when pollutants are discharged directly or indirectly into water bodies without adequate treatment to remove harmful compounds.

Sources of water pollution on building sites include: diesel and oil; paint, solvents, cleaners and other harmful chemicals; and construction debris and dirt. When land is cleared it causes soil erosion that leads to silt being run-off and sediment pollution. Silt and soil, which runs into natural waterways turns them turbid, which restricts sunlight filtration and destroys aquatic life.

Surface water run-off also carries other pollutants from the site, such as diesel and oil, toxic chemicals, and building materials like cement. When these substances get into waterways they poison water life and animals that drink from them. Pollutants on construction sites can also soak into the groundwater, a source of human drinking water. Once contaminated, groundwater is much more difficult to treat than surface water.

Measures to prevent water pollution

St Modwen Homes will ensure good construction site practice to help control and prevent pollution; the following measures will be taken to mitigate the risks:

- St Modwen Homes will prevent erosion and run-off, minimize land disturbance and leavemaximum vegetation cover;
- Cover piles of building materials like cement, sand and other powders; regularly inspect forspillages, and locate them so they will not be washed into waterways or drainage areas;
- Use non-toxic paints, solvents and other hazardous materials wherever possible;
- Segregate, tightly cover and monitor toxic substances to prevent spills and possible site contamination; Cover up and protect all drains on site;
- Collect any wastewater generated from site activities in settlement tanks, screen, discharge the clean water, and dispose of remaining sludge according to environmentalregulations.

Concrete is highly alkaline and corrosive and can have a serious impact on watercourses. It is essential to take particular care with all works involving concrete and cement. Suitable provision will be made for the washing out of concrete mixing plant or ready mix concrete lorries so that washings do not flow into any drain or watercourse or seep underground.

In the event of a spillage on site, the material will be contained (using an absorbent material such as sand or soil or commercially available booms). All spillages will be reported to the Site Manager who will inform the Environment Agency in the event of a significant occurrence.

4.03 Protection of Amenity – Noise, Air Quality, Mud and Vibration

The *Environmental Act (Part III) 1990* – requires local authorities to inspect their areas to detect statutory nuisances (e.g. noise, accumulation of waste). The Act makes provisions for individuals to take action in the case of a grievance involving a statutory nuisance, for example, noise.

The *Environmental Act (Part IV) 1990* - makes it an offence to leave litter at work sites and depots (unless a prior agreement with the landowner has been arranged).

Noise

Noise from plant and tools as well as vehicles is a major source of complaints from residents. Prior to the commencement of development, a detailed assessment of the noise levels likely to emanate from the use of the surrounding roads will be undertaken and a report of the findings, together with details of any measures required in respect of noise attenuation and ventilation to residential properties, will be submitted to and approved in writing by the Local Planning Authority. The approved measures will thereafter be fully implemented before any of the dwellings to which they relate are occupied.

Additional Requirements

Radios are banned throughout the site including within plant vehicles. Percussive plant will be avoided where alternative non-percussive plant is available for a given task. It is thought the only activities which has the potential to cause a noise nuisance is piling which has to occur in the Western corner of the site. These works will be monitored in accordance with the measures described below and any residential properties which may be affected will be notified of the works prior to their start.

Large concrete pours (for which an extension of working hours may be necessary) will commence as early as possible within normal working hours so that activities can be completed within normal working hours as far aspossible;

Construction work by definition involves heavy plant and machinery and will result in unwanted sound (the accepted definition of noise). However, St Modwen Homes (with similar expectations upon contractors) will follow the mnemonic E.R.I.C.P.D wherever practicable. The E.R.I.C.P.D hierarchy of control measures is applicable to all risks.

Where construction activities occur close to occupied properties or sensitive areas all practical measures will be taken by St Modwen Homes to minimise noise. Unless specified otherwise the recommendations in B.S. 5228:1984 Code of Practice for Noise Control on Construction and Open Sites, Guide to Noise Control Legislation for Construction and Demolition including Road Construction and Maintenance, will be adhered to for noise levels at the site boundary and occupied

buildings within the site. St Modwen Homes will at all times comply with The Noise at Work Regulations 1989.

Noise assessments will be completed for all plant, machinery and tasks to help ensure employees, contractors, visitors and neighbours to the site are protected where necessary and with a minimum of disruption to the community. Noise monitoring will be undertaken at regular intervals at the site boundary adjacent to residential areas, which will be documented. Contractors will assess sources of noise likely to exceed occupational action levels prior to commencement of works on site.

St Modwen Homes will employ suitable measures to reduce and contain any noise at source. These measures will include well maintained plant and machinery, preventative maintenance on plant and equipment, the use of temporary baffles and sensible positioning of plant and equipment, and utilise technological advances e.g. suppressed/insulated equipment.

Only sound-reduced compressors will be used, with properly lined and sealed acoustic covers fitted in accordance with the manufacturer's instructions and kept closed whenever the machines are in use. All ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturer.

When plant/equipment exceeds the recommended noise levels St Modwen Homes will remove it from site and find an alternative; as a minimum PPE i.e. ear defenders, will be provided in accordance with operator's manuals and recommendations, not only to the operator but to all personnel who have to undertake tasks in the vicinity of the noise.

Machines in intermittent use will be shut down in periods between work periods or throttled down to a minimum. Pumps and mechanical static plant will be enclosed by acoustic sheds. St Modwen Homes will remove from the works any item of plant which in the opinion of the Site Manager is ineffectively silenced.

St Modwen Homes recognises that compliance with the above clauses and the related noise schedule does not relieve the PC of his general obligations under the Environmental Protection Act, 1990.

The foundations for this project are anticipated to be strip / trench fill.

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Air Quality

Dust control is essential and will almost certainly be required at various stages of development - the need will be assessed at the time of Contract start-up. Water bowsers and sprays will be held in readiness and roadways kept as clean as possible at all times.

The location of the site and the planned construction activities do not give rise to a serious risk to air quality. However, contractors will be expected to take measures to minimise the presence of air borne dust during construction. It is anticipated that dust will travel a considerable distance from where it is generated.

The principle mitigation measures to avoid contamination to neighbouring properties and infrastructure is to keep construction activities as far away from the site perimeter as possible and reduce dust at source with water and/or vacuumed extraction measures.

The following additional measures will be taken:

- Design controls will be implemented for construction equipment and vehicles, and appropriately designed vehicles are to be used for materials handling with proprietary dust suppression attachments for site forklift;
- Completed earthworks will be vegetated as soon as practicable;
- The site will be regularly inspected and site boundaries checked for dust deposits and removed as necessary. In addition, local roads will be checked and cleaned when necessary;
- There will be no burning of materials on site.

Mud

St Modwen Homes will take all reasonable measures to avoid mud being deposited on public roads. Adjacent roads and footways will be regularly inspected and cleaned.

Measures to be adopted will include:

- The provision of easily cleaned and properly drained hardstanding for vehicles entering, parking on and leaving the site;
- The provision of wheel-washing facilities, with sumps and catch-pits;
- The use of approved mechanical road sweepers, to clean hard-standings and any mud or debris deposited by site vehicles on roads or footpaths in the vicinity of the site;
- Secure sheeting of lorries carrying spoil or other particulate materials.

St Modwen Homes will take all reasonable measures to minimise sedimentation of highway drainage systems. This may include the use of sediment traps and/or barriers to prevent mud and/or contaminated materials entering the system. St Modwen Homes will provide a gateman on the exit of the site and a wheel wash station will be present to wash down exiting vehicles to stop mud and dirt spreading on the surrounding roads.

Vibration

Should percussive piling be necessary on this project, any residential properties which may be affected will be notified of the works prior to their start.

Ground vibration monitoring will be undertaken at the closest facade of the locations identified. A trigger warning level will be set below the criterion level of 10 mm p/s PPV for residential properties. In the event of trigger level exceedance, pile installation will cease and an alternative will be sought. The likely outcome would be to install an open ended driven tubular steel pile which greatly reduced vibration levels due to its much smaller surface area at the toe of the pile.

4.04 Wheel washing

St Modwen Homes will ensure there is a road sweeper or road sweeping attachment for telehandler as well as a

water bowser to ensure damping down and road sweeping can take place on a regular basis.

A waterless wheel wash facility will be provided on site by St Modwen Homes at the Site exit if deemed required at any point during the project. It will be the responsibility of each contractor to ensure that his vehicles and delivery vehicles are clean prior to leaving the site. This will be supervised by the Site Supervisor/Manager.

The wheel wash facility will consist of a power washer and a water tank. The wash down facility will be off the main access route, with a bunded catchment area to allow any silt to settle. The water will run off into a catchment area, which will be emptied periodically by a vacuum tanker.

As stated earlier the infrastructure and roads will be constructed in the first phase of the build, this will greatly reduce the amount of mud and dust brought off site. As part of the initial stage the area of the show homes and marketing suit will be enabled. This will be the initial location of a wheel wash facility, if deemednecessary

4.05 Visual impact

St Modwen Homes will carry out an environmental impact assessment (in which visual impact would feature prominently)

and adopt reasonable measures to mitigate the visual impact upon the landscape. We will also, in consultation with LPA, reinstate the landscape to their requirements.

This issue normally refers to man-made constructions on or near the countryside but can also refer to the same in towns or cities. Also affected by this issue is the disturbance of the natural landscape

4.06 Run-off waters and silt pollution

Temporary site accommodation, fencing and materials storage areas will be sited to minimise visual impact. Visual impact will be considered throughout the project. At this stage every effort will be made to minimise the environmental impact of visual intrusion taking into account the practical constraints and LPA requirements.
All water pollution is an offence under the *Water Resources Act 1991*. The Act makes it an offence to cause pollution to controlled waters either deliberately or accidentally. Controlled waters include all water courses and water contained in underground strata (groundwater).

Although not so obvious a cause of water pollution as chemicals or farm waste, for example, silt causes six per cent of all water pollution incidents. Any works which create silt therefore pose a serious threat to the water environment.

Silt causes lasting damage to river life by:

- Clogging gills, so fish suffocate and die;
- Destroying spawning sites;
- Injuring fish by its abrasive action;
- Destroying insect habitats on the riverbed, starving fish of their foodsource;
- Stunting aquatic plant growth, limiting oxygen supplies, shelter and afood source;
- Building up to cause flooding.

Also, oil and chemicals are often present in silt, especially from roads, land reclamation, and construction sites. This causes even more dangerous pollution.

Preventing silt pollution in the first place is the best solution – and can be done by careful planning and taking suitable precautions.

The construction industry is a major cause of silt pollution. There are many reasons – rainfall running off disturbed or stripped ground, for example.

Virtually all development, construction and maintenance works are likely sources of silt pollution. These include;

- Land reclamation;
- Any pipelines construction and repairs;
- Dewatering or pumping out excavation
- Demolition; Concreting;
- Culvert cleaning;
- Sand blasting;
- Road cutting

5.0 Appendices

5.01 Appendix 1 – St Modwen Environmental policy

St Modwen Homes recognises that our business activities have an impact on the environment; therefore, we are committed to encouraging a proactive environmental attitude through environmentally sound policies and effective management by following our Environmental Code of Practice and supporting documentation contained in our Safety, Health and Environmental Management (SHE) System.

St Modwen Homes accepts and acknowledges its obligations and responsibilities under legislation and guidance in dealing with environmental issues that affect or arise in consequence of our construction business.

St Modwen Homes strategy is to use competent persons/companies to identify environmental issues and assess their significance. These persons/companies will then provide advice and guidance so that St Modwen Homes can implement measures to mitigate and minimise the potential impact to the environment.

The key elements of our strategy to achieve this policy within our construction operations, including sites on which we operate, are to ensure;

- We maintain compliance of all relevant environmental legislation and continuously improve our environmental performance by integrating recognised environmental management best practice intoour business operations;
- We promote environmental awareness amongst those working for or on behalf of St Modwen Homes, providing training and encouraging sub-contractors and suppliers to adopt sound environmentalpractices;
- We quantify and take action to reduce the carbon footprint of our business activities to meet our objectives and targets;
- We are considerate in the use of land undergoing development having special regard to the storage, treatment and disposal of any waste, hazardous or potentially toxic materials to avoid environmentalharm;
- We use and re-use materials to minimise and curtail creating waste and whenever practicable,using materials and products from sustainable sources;
- We control the emission of pollutants, noise and dust, and the use of potentially harmful substances and treatments particularly during construction activities;
- We conserve energy through sensible selection, use and management of resources, equipment, plant and transport;
- We consider environmental issues and energy performance in the acquisition,design, construction, location and use of buildings;
- We continue to develop, monitor and investigate our systems, practices and procedures at each stage of manufacture and construction to ensure the environment remains a foremost consideration.

This policy represents our general position on environmental issues, and the policies and practices we apply in conducting our regeneration business. St Modwen Homes will ensure arrangements are in place to review and update this policy annually and/or in line with any changes inlegislation.

5.02 Appendix 2 – Toolbox Talk example

ST.MODWEN HOMES	Toolbox Talk Dust & Air Quality	Section 4 Supporting Documentation

Introduction

Many of the materials that we use have the potential to create dust and dirt.

Fine particles of dust and dirt, once airborne will settle out on the environment and cause a nuisance through soiling of surfaces, as well as causing health problems.

Another common cause of complaint made towards us as a construction company is a direct result of vehicles depositing mud on public highways.

Contaminated or hazardous material such as asbestos require specialist attention in order to comply with legislation, but general dust and dirt can be reduced on site by complying with the following guidelines:

Reducing dust on site

- Good housekeeping and site planning will help in general to reduce dust and dirt created on site;
- Store dusty materials in an enclosed area, reducing the potential of wind erosion;
- Ensure that all dust collecting equipment is properly maintained and is operated efficiently;
- During periods of dry weather, especially during the summer use fine water sprays in order to dampen down materials, haul roads and vehicle routes;
- Make use of Wheel wash facilities, especially when leaving the site and using public highways;
- Sheet vehicles when transporting fine or contaminated materials;
- Keep your vehicle speed low on site especially during periods of dry weather;



Do's

- ✓ Damp down stock piles in dry periods;
- ✓ Store stock piles away from populated areas if possible;
- ✓ Use a wheel wash system to prevent mud being carried onto the highway;
- ✓ Recycle as many materials as possible this will cut down on the amount that has to be brought in;
- ✓ Plan site works so that soil stripping and replacement can be undertaken in summer months.
- ✓ Identify a person responsible for supervising soil management.
- ✓ Clearly mark out all haul routes and areas to be protected from construction activity.

Don'ts

- × Do not drive vehicles erratically on site;
- × Do not allow vehicles off site if they are not sheeted up;

5.03 Appendix 3 – Contractors Environmental code of practice

We have prepared the code of practice to enable contractors appointed by ourselves to understand what standards should normally be adopted when undertaking the following types of building works:

1. Demolition;
2. Site clearance and remediation;
3. Construction;
4. Maintenance and repair.

It is the responsibility of the contractor to ensure that all contractors and site personnel, working under their control, are aware of and comply with the requirements of the code.

St Modwen Homes Construction and Environmental Management Plan will provide more project specific information; the contractor should generally consider the following issues;

Hours of working

We consider that the following working hours should apply when there are sensitive receptors (e.g. school, hospital, residential property) adjacent to the site. These details will be confirmed in pre-construction information issued to the contractor and at the project's pre start meeting.

Unless agreed in advance with us no working should be undertaken on Sunday or Public/Bank Holiday. Changes in

daylight hours will also be considered where necessary.

Construction works outside these hours may be undertaken in the event of an emergency or to facilitate a safe working environment

We also acknowledge that some activities may be undertaken on site without causing disturbance to neighbours (e.g. electrical rewiring) and therefore may be scheduled outside the normal working hours. The arrangements for such work should be discussed with our site management team.

Temporary hoardings

Construction sites should be fully enclosed to protect the general public and deter unauthorised entry. As a general guide site hoarding should be plywood faced on a timber frame with a minimum mass per unit surface area of 7kg/m2. The minimum height above pavement level should be 2.4 meters.

Temporary hoarding should not be used for advertising. However, it may be used to display details of the site including project name and duration, name, address and telephone number of the main contractor and/or site agent. On key sites the opportunity for public art and community involvement should be explored with us. The provision of viewing points for the public through the hoardings will be considered.

Note that permission to erect a temporary hoarding on the public highway will require a license in accordance with Section 172 of the Highways Act 1980.

Access gates, Scaffolding and Gantries

Where possible access to and from the site should be organised to allow vehicles to enter and leave the site in a forward gear. Scaffolding and gantries that encroach onto or overhang the public highway will require approval by the local authority.

Artificial lighting

Where he has been appointed to do so, the contractor should ensure that any artificial lighting of the site and its perimeter is sufficient to ensure the safety of pedestrians. In addition, artificial lighting should be located and orientated so that it does not cause intrusion to adjacent residential property or distract passing motorists.

Highway management

Where reasonably practicable all loading and unloading of contractors' vehicles should be within the site boundary. Deliveries and collections should be scheduled to coincide with the normal working hours. Contractors should avoid parking

vehicles on the public highway and vehicle movements should be staggered to avoid queuing outside the site access point.

Any damage to the pavement, kerbs or carriageways that is directly attributable to the site works should be repaired to the satisfaction of us as soon as practicable.

When it is not reasonably practicable to load and unload contractors' vehicles on site it may be necessary to discuss alternative arrangements with the local authority.

Mud on the roads

Hard-standings or equivalent compacted areas should be provided on site for vehicle parking and adjacent to access points. Where required, a wheel washing facility should be provided to minimise the deposit of mud onto public highways. Where necessary a mechanical road sweeper should be used to remove any excess deposits.

Dust

Although a high standard of general site housekeeping will minimise dust emissions the following steps should assist:

1. Bulk storage of potentially dusty materials should be located away from the site boundary.
2. Cutting and grinding operations should be undertaken using appropriate dust suppression techniques.
3. Potentially dusty spoil and other waste materials should be damped down regularly when handled and transported in sheeted vehicles.
4. Rubble-chutes should be used with care and "drop heights" kept to a minimum.

Air pollution

Smoke, fumes and particulate emissions can be minimised by ensuring that:

1. No on-site bonfires are used for the disposal of any waste.
2. All plant is properly maintained and throttled down or switched off when not in use.
3. Fuel storage tanks are located away from the site boundary, secured in a bunded area and vented at a point remote from sensitive receptors (e.g. school, hospital or residential property).

Noise and vibration

We will expect contractors to use the "best practicable means" to minimise noise, for example:

1. All plant and equipment should be selected having regard to its published sound power level.
2. If an activity is inherently noisy (e.g. driven piling) then an alternative technique should be investigated.
3. Effective silencers and acoustic covers should be provided and maintained in good working order.
4. Plant and equipment should be located having regard to its proximity to sensitive receptors (e.g. school, hospital and residential property).
5. Temporary structures and buildings may provide useful noise screening.
6. Fixed items of plant (e.g. generators) should be electrically powered rather than diesel or petrol driven, where possible.
7. Anti-social behaviour involving swearing, shouting and loud radios will not be allowed and may result in personnel being removed from site.

Water and Effluent

Water and effluent generated from on-site activities should be treated and disposed of in accordance with the requirements of the Environment Agency. Adequate pollution prevention techniques should be adopted to ensure that any potentially hazardous substances do not come into contact with vulnerable water (e.g. via surface water drainage systems). Recycling water should be encouraged.

Pest control

Preventative measures should be adopted to control any rodent activity on site and, where required, pest control specialists should be employed to confirm the existence or otherwise of an infestation. All redundant drainage and sewerage infrastructure should be removed or stopped up and accumulations of putrescible waste should be avoided.

Protection of Flora and Fauna

Contractors must ensure they are aware of any protected foliage and/or fauna on site, e.g. Japanese Knotweed, Tree Preservation Orders, habitats of wildlife etc. and their work activities must not impact on any such areas.

General arrangements

Display relevant emergency contact numbers for the regulatory agencies on the site notice board. All site personnel will be made aware of the incident reporting procedure during induction.

No toxic or hazardous materials are to be introduced to the project area.

The contractor is to inform the Site and Site Manager immediately of any contamination spillages and/or any environmental issues.

We recommend the use and re-use materials to minimise and curtail creating waste and, whenever practicable, materials and products from sustainable sources.

St Modwen Homes Limited safety, health and environmental advisors will make regular, unannounced visits to site to check health and safety performance, including environmental issues.

This code of practice will be reviewed and amended in line with our Construction and Environmental Management Plan for each project and changing legislation and guidance. The success of this code of practice will be monitored against regular environmental audits.