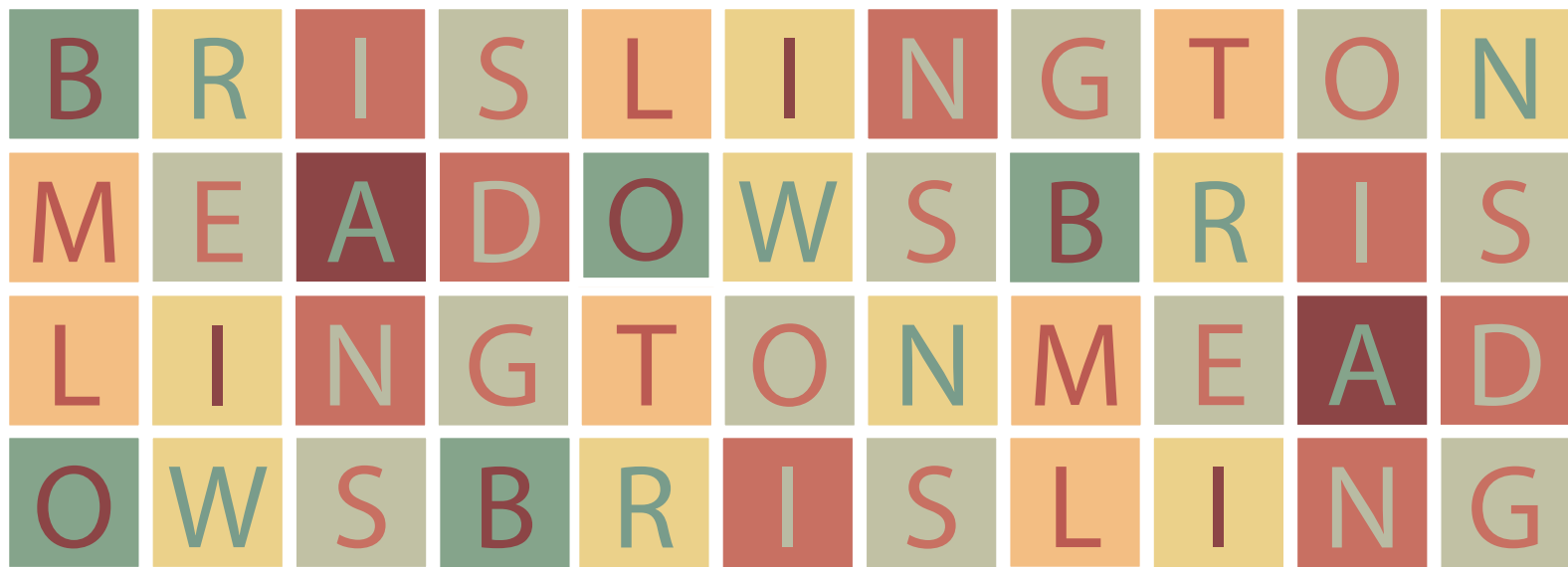




Outline Construction Environmental Management Plan



Homes
England

Confidential

Brislington Meadows, Brislington,
Bristol

Outline Construction Environmental
Management Plan

For



Homes
England

Project Number: 13492

March 2022

Document History and Status

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Project Partner	Mike Lawson
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1.0 INTRODUCTION

- 1.1.1. CampbellReith has been instructed by Homes England ('the Applicant') to prepare an Outline Construction and Environmental Management Plan (CEMP) in support of an outline planning application with all matters reserved except access for development on 9.6 hectares of land to the south of Broomhill and north of Victory Park in the southeast of Bristol (grid reference: 362615 (eastings); 171114 (northings) (referred to in this document as 'the Site').
- 1.1.2. The 'proposed development' comprises development of up to 260 dwellings with pedestrian, cycle and vehicular access, cycle and car parking, public open space and associated infrastructure. All matters except access are reserved.
- 1.1.3. The Applicant is committed to delivering affordable housing in line with policy requirements and will deliver a 10% net gain in biodiversity through on-site and off-site measures.
- 1.1.4. A series of Parameter Plans have been prepared which define the proposed extents of development across the Site. An Illustrative Masterplan has also been prepared which shows one way in which the development could come forward within the parameters identified.
- 1.1.5. The Outline Construction and Environmental Management Plan (CEMP) provides a framework, which governs the construction works associated with the proposed development for all contractors and sets out, in broad terms, methods to avoid, minimise and mitigate construction phase effects on the environment.
- 1.1.6. This Outline CEMP is a live document, which will be updated and reviewed at key milestones as the project progresses, to account of changes in working practices, regulatory requirements, personnel and equipment. Responsibility for adherence to its requirements will be the responsibility of the appointed principal contractor.

1.2. Document Purpose

- 1.2.1. This outline CEMP provides the environmental management framework required for the further planning and Site preparation/construction activities associated with the implementation of the proposed development.
- 1.2.2. The outline CEMP explains how construction activities can be undertaken in accordance with the environmental commitments and mitigation identified as part of the environmental and technical assessments undertaken in support of the planning application. The purpose of the outline CEMP is to demonstrate how generic and detailed site-specific controls will be utilised to avoid, minimise or mitigate the likely adverse impacts of construction on environmental resources, local residents, businesses, community facilities and existing infrastructure.
- 1.2.3. This document represents the first stage in the preparation of the CEMP for the proposed development, as it is prepared in advance of the appointment of the Principal Contractor(s). Once appointed, the Principal Contractor will use this outline CEMP as a framework to produce a final CEMP that will be agreed with the planning authority (envisaged to through a condition on any planning permission for the proposed development. Where any works are to be undertaken by different contractors, the respective contractor is to refer to the CEMP and prepare its site-specific document.

- 1.2.4. The document describes the processes that should be implemented to ensure works are being undertaken in accordance with these requirements, together with measures to enable appropriate corrective actions or mitigation measures are taken.
- 1.2.5. The CEMP forms part of the overall project management during the construction phase and as such, activities described will be integrated with other Quality, Sustainability, and Health and Safety Management processes set up by the Principal Contractor.
- 1.2.6. This Outline CEMP has been prepared, taking account of the technical work prepared in support of the outline planning application (OPA). Although the CEMP is a stand-alone document it must be read in conjunction with all other relevant documentation, especially the Ecological Impact Assessment, Site Investigation and Remediation Strategy, Noise Assessment and Air Quality Assessment.
- 1.2.7. The Principal Contractor, as a minimum, will comply with applicable environmental legislation at the time of construction. For this reason, the applicable statutory requirements are not repeated within this outline CEMP. Further guidance on specific areas will be considered from industry best practice guidance documents as set out in each discipline section. The references to guidance documents within this document are not intended to be exhaustive.
- 1.2.8. In summary, the objectives of this Outline CEMP are to:
 - minimise (eliminating where practicable) the environmental effects of the construction of the proposed development;
 - document the environmental management measures to be adopted during construction;
 - enable agreement with the relevant approval authorities on construction and environmental management measures to be adopted during construction; and
 - provide a framework for contractors to manage construction impacts.

1.3. Update of the Outline CEMP

- 1.3.1. It is envisaged that, as a minimum, the Outline CEMP will be reviewed and issued at the following project milestones:
 - as part of all future reserved matters planning application – a CEMP that demonstrates to all stakeholders that the Applicant and its consultants are aware of their obligations to the environment and committed to controlling the environmental effects of construction;
 - in all future tender documents to ensure that adequate provision is made within the tenders for management and control of the environmental effects of construction and to ensure that roles and responsibilities are allocated and suitable defined;
 - in all future contract documents following selection of the contractor; and,
 - as required during construction as part of the Site Environmental Management System.

1.4. Structure of CEMP

- 1.4.1. Section 2.0 and 3.0 of this CEMP provides a description of the Site, its location and a summary of the Proposed Development.
- 1.4.2. Section 4.0 provides guidance on the methodology to approach site preparation/construction activities associated with the implementation of the proposed development. This includes general

site management issues that relate to good practice in environmental site management, including:

- roles and responsibilities;
- communications and training;
- emergency and incident planning; and
- monitoring and reporting.

1.4.3. This CEMP also covers a range of topics relating to the management of potential environment effects of construction. These topics are:

- Landscape and Visual Impact;
- Archaeology and Cultural Heritage;
- Ecology and Nature Conservation;
- Transport;
- Air Quality;
- Ground Conditions;
- Hydrology, flood risk and drainage;
- Noise and vibration;
- Lighting;
- Waste and Materials Management, and
- Population and Human Health.

1.4.4. Each of these topics are covered by individual sections within Section 4.0 that consider the general issues for construction, topic-specific legal compliance and the construction and environmental management measures to be implemented.

2.0 SITE OVERVIEW

2.1. Site Location

- 2.1.1. The Site is located in Brislington in the southeast of Bristol within the administrative boundary of Bristol City Council and the Ward of Brislington East. The site is centred on National Grid Reference 326615E, 171114N and post code BS4 4NZ approximately 4km outside Bristol City centre. The location of the site is shown in Figure 1 Appendix A.
- 2.1.2. The Site comprises an irregular shaped parcel of land (9.6 hectares) known as Brislington Meadows, as shown on Drawing: 7456_037 (Site Location Plan).
- 2.1.3. To the northeast, the Site is bound by Broomhill Road and residential properties in Condoval Road. To the north the Site is bound by residential dwellings on Belroyal Avenue and an associated rear access lane, Broomhill Junior School and Mama Bear's Day Nursery, and residences accessed off Allison Road. To the east the site is bound by Bonville Road and the protected employment area comprising the Bonville Trading Estate. To the west of the site is School Road and allotments. To the south lie Victory Park and paddocks, which comprise protected open space and a Site of Nature Conservation Interest.

2.2. Site Description

- 2.2.1. The Site currently comprises open fields crossed by two public rights of way and a network of informal trodden paths. The Site is not subject to specific environmental or landscape designations and has an allocation for housing development in the Council's Local Plan.
- 2.2.2. The Site is characterised by a steeply sloping topography from the northern boundary down to the southern boundary, with the gradient reducing towards the east. There are overhead electricity cables and a pylon on the lower slopes towards the southern boundary of the Site. A telecommunications mast towards the northeast of the Site will be relocated following the grant of planning consent for the proposed development.
- 2.2.3. The Site is well located to make use of existing services and facilities. Broomhill Infant School, Broomhill Junior School and Mama Bear's Day Nursery are all located adjacent to the Site's northern boundary. Broomhill local centre, including a small convenience store, public house, salons and takeaway shops, is located approximately 200m north of the Site.
- 2.2.4. There is no public vehicular access into the Site at present. There are two public rights of way across the Site, one running east-west along the southern boundary connecting Bonville Road and School Road, and one north-south between Belroyal Avenue and Bonville Road. In addition, a network of informal trodden paths crosses the Site. The Applicant is in the process of formalising public access rights and the proposed development will accommodate pedestrian and cycle access across and within the Site.
- 2.2.5. The Site has a direct informal connection to Victory Park to the south. Eastwood Farm Local Nature Reserve is located approximately 150m north of the Site on the northern side of Broomhill Road. Nightingale Valley Park is located approximately 600m west of the Site off Allison Road.
- 2.2.6. Historical mapping indicates the site has predominantly comprised undeveloped land. Allotment gardens were present in the west of the site from between circa. 1947 and 1965. An office was present in the north east of the site from circa. 1999 but was demolished in October 2020.

3.0 PROPOSED DEVELOPMENT

- 3.1.1. The 'proposed development' comprises development of up to 260 dwellings with pedestrian, cycle and vehicular access, cycle and car parking, public open space and associated infrastructure. All matters except access are reserved.
- 3.1.2. The Applicant is committed to delivering affordable housing in line with policy requirements and will deliver a 10% net gain in biodiversity through on-site and off-site measures.
- 3.1.3. A series of Parameter Plans have been prepared which define the proposed extents of development across the Site (Appendix B) along with an Illustrative Masterplan, which has also been prepared to show one way in which the development could come forward within the parameters identified. The masterplan is for illustrative purposes only and would not be an approved plan. Detail of layout etc to be confirmed at detailed design stage.
- 3.1.4. The proposed arrangements and distribution of land uses across the Site, together with the key design and access proposals which underpin the development proposals are illustrated on the following drawings and are described below:
- DWG. No 7456_101 Access and Movement Parameter Plan
 - DWG. No 7456_102 Landscape Parameter Plan
 - DWG. No 7456_103 Land Use Parameter Plan
 - DWG. No 7456_104 Building Heights Parameter Plan
- 3.1.5. Supporting technical reports that underpin these Parameter Plans comprise:
- Design and Access Statement
 - Design Code
 - Transport Assessment
 - Detailed Access Plans
 - Framework Travel Plan
 - Ground Conditions Phase I and Phase II Study
 - Flood Risk Assessment and Drainage Strategy (including SUDS strategy)
 - Landscape and Visual Impact Assessment
 - Ecology – Phase 1 Habitat Survey and Species Surveys
 - Ecological Management Plan
 - Tree Survey
 - Arboricultural Impact Assessment
 - Archaeological Survey
 - Noise Impact Assessment
 - Air Quality assessment
 - Energy and Sustainability Statement

4.0 CONSTRUCTION MANAGEMENT AND METHODOLOGY

4.1. Introduction

- 4.1.1. This section provides an overview of proposed site management procedures.
- 4.1.2. Key legislation and guidance references are provided for information purposes only. The lists are not exhaustive but are considered to be current or relevant at the time of writing.

4.2. Roles and Responsibilities

The Client

- 4.2.1. The relevant parties and key roles within the client team are detailed below in Table 4.1 [to be completed by the Principal Contractor].
- 4.2.2. For the purpose of this Outline CEMP, the 'Client' is Homes England. Overall responsibility for the CEMP and ensuring legislative compliance lies with the Client. The Client should make sure that all contractors engaged in a particular phase have an obligation to comply with good environmental practice for construction including preparation and implementation of the detailed CEMP.

Table 4.1: Client Team

Role/Contact	Contact Details	
Client Homes England	Homes England 2 Rivergate Temple Quay Bristol BS1 6EH	Overall ownership of scheme.
Development Partner [Organisation] [Individual]	[Address] [Telephone] [Email]	Entity responsible for the delivery of the scheme in partnership with Homes England.
Contract Administrator [Organisation] [Individual]	[Address] [Telephone] [Email]	Overall responsibility for the performance of the contract. Management of the project within the environmental constraints in conjunction with all other necessary management processes including the delivery of the completed project at handover.
Environmental Manager [Organisation] [Individual]	[Address] [Telephone] [Email]	Responsible for monitoring the performance of the project against requirements and standards.

Contractor Team

- 4.2.3. The relevant parties and key roles are detailed below in Table 4.2 [to be completed by the Principal Contractor].

Table 4.2: Principal Contractor Team

Role/Contact	Contact	Key responsibilities
Project Manager [Organisation] [Individual]	[Address] [Telephone] [Email]	Overall responsibility for the project.
Site Manager [Organisation] [Individual]	[Address] [Telephone] [Email]	Responsible for managing the day to day site activities. Provide a presence to ensure works are being carried out in a safe and proper manner.
Environmental Compliance/ Liaison Officer [Organisation] [Individual]	[Address] [Telephone] [Email]	Responsible for: • The management of environmental issues as advised by the specialists; • Obtaining the necessary environmental consents; • Liaising with external third party organisations and individuals; • Regularly reviewing and updating the CEMP and specialist procedures and identify any areas for improvements; and • Review method statements for environmental aspects and advise the Project Manager as to their suitability.
Foreman [Organisation] [Individual]	[Address] [Telephone] [Email]	Responsible to Works Manager with particular responsibility for construction and assisting Agents with safeguarding the environment. Overall responsibility for traffic management.
Site Engineer [Organisation] [Individual]	[Address] [Telephone] [Email]	Responsible for environmental monitoring (except water levels) and the maintenance of records.
Health and Safety Officer [Organisation] [Individual]	[Address] [Telephone] [Email]	Overall responsibility for Health and Safety issues arising from the project.

Project Manager

- 4.2.4. The project manager will act as a central point of contact between Bristol City Council, the Principal Contractor, the local community and other third parties. It is anticipated that a project manager will be confirmed once the contractor has been appointed.

The Principal Contractor

- 4.2.5. The Principal Contractor will be charged with responsibility for management, co-ordination and implementation of the CEMP.
- 4.2.6. It will be the responsibility of the Principal Contractor to see that all of their staff, sub-contractors, and site workers are aware of the CEMP. This is so that everyone understands the aims of the CEMP and recognises their personal responsibility in its implementation, protection of the environment and legislative compliance.
- 4.2.7. The Principal Contractor will have responsibility for ensuring that the CEMP and associated documentation are kept up to date along with details of specific permits etc.
- 4.2.8. Documentation, recording and monitoring of the CEMP will be essential and updated on a regular basis and verified at the end of the project. It is the Principal Contractor's responsibility to ensure that construction works are undertaken in compliance with all relevant and current legislation applicable at the time of the works.
- 4.2.9. The Principal Contractor will register with a national compliance scheme such as the Considerate Constructors Scheme (CCS). The CCS recognises and rewards better than standard industry practice in the following sections:
- Care about Appearance;
 - Respect the Community;
 - Protect the Environment;
 - Secure everyone's Safety; and
 - Value their Workforce.

Environmental Manager

- 4.2.10. For each phase of works an Environmental Manager will be identified by the Principal Contractor to co-ordinate environmental activities during construction. This will include:
- making sure that a detailed CEMP/s is prepared;
 - ensuring appropriate environmental training and advice is provided to contractors;
 - monitoring construction activities and compliance; and
 - acting as point of contact between constructors and other stakeholders.

Sub-contractors

- 4.2.11. Sub-contractors and suppliers will be obliged contractually to adhere to the requirements of the CEMP (based on this framework), and will ensure all their site personnel are inducted on the requirements of the CEMP and are aware of it prior to commencing any work on site.
- 4.2.12. Materials suppliers will provide details to the Principal Contractor of the provenance of all materials they supply to the development e.g. timber.

External Agencies

- 4.2.13. A list of key contacts from external agencies is provided below in Table 4.3 [to be completed by the Principal Contractor]:

Table 4.2: Key Contacts from External Agencies

Team	Contact Details
Planning Officer Bristol City Council [Individual]	[Address] [Telephone] [Email]
Environmental Health Officer [Organisation] [Individual]	[Address] [Telephone] [Email]
Building Control [Organisation] [Individual]	[Address] [Telephone] [Email]
Traffic Officer [Organisation] [Individual]	[Address] [Telephone] [Email]
Environment Agency	Incident Hotline: 0800 80 70 60

4.3. Training and Site Induction

- 4.3.1. The raising of environmental awareness is viewed as a crucial element in the appreciation and implementation of the CEMP. As a consequence, the Principal Contractor is to ensure all staff undergo environmental awareness training, initially by the way of the pre-start induction process.
- 4.3.2. A project specific training plan, that identifies the competency requirements for all personnel allocated with environmental responsibilities, will be produced and contained within the CEMP.
- 4.3.3. Training will take the form of a site induction and toolbox talks. The training will include (but not be limited to):
- Risk assessment procedures requiring all personnel to be aware of, and to sign off the appropriate risk assessment/ method statement for the task(s) in which they are engaged;
 - Full health and safety induction with emphasis on use of the correct PPE which is to be provided by the Principal Contractor;
 - Awareness of the potential for harm to both personnel and the environment from the materials held onsite and the works that are to be undertaken;
 - Awareness of the sensitivity of the environment surrounding the facility;
 - Reporting to the Environment Agency if there is a risk of surface, groundwater or land contamination;
 - Reporting to the Environment Agency if an unpermitted discharge occurs to the foul sewer system;

- Clean-up, safe handling and legal disposal of contaminated materials and waste resulting from an incident (including arrangements for the use of specialist contractors and services);
- The appropriate decontamination and legal disposal of contaminated PPE;
- How to record and report environmental incidents;
- General public relations and the need for exemplary courtesy and behaviour of all site staff towards the general public.

4.4. Communication and Coordination

General

- 4.4.1. This section describes the main methods of communication and co-ordination of day to day activities onsite during construction. Additional informal methods of communication and co-ordination should be undertaken as appropriate other than those highlighted below.

Internal Communication

- 4.4.2. Internal project communications should be via two processes:
- Environmental issues should form an agenda item on project progress meetings.
 - Informal on-site communication. Daily briefing and updates should be informally discussed between the Principal Contractor's Environmental Compliance/ Liaison Officer, Works Manager and site Foreman to discuss changes in programme, issues with activities and potential risk to the environment.

Communication with external organisation

- 4.4.3. A clear and positive working relationship will be maintained with the relevant authorities and statutory and non-statutory bodies, including the local planning, environmental protection, waste and highway authorities, utility providers and other relevant regulatory bodies.
- 4.4.4. There will be regular and proactive liaison with BCC and other third parties as appropriate on environmental considerations throughout the project implementation. The project team / Principal Contractor will determine whether there are any works that may benefit from early discussion.
- 4.4.5. In line with good environmental practice the CEMP file will be available at the site compound to view by regulatory bodies on request.

Communications with the public

- 4.4.6. The Principal Contractor's External Relations Officer is to produce and be responsible for managing/ implementing a Project Community Liaison Plan to provide a framework for managing communications with local residents and interested parties.
- 4.4.7. In the event of the following, local residents/ businesses will be informed prior to work commencing:
- Commencement of construction in critical areas closest to neighbouring properties.
 - Weekend or evening working (outside core areas) of a type, which may affect properties.
 - Road or footpath closures/ diversions and movements of wide loads.
 - Work on roads affecting land used by others.

- Work on land outside the main application site.
- Any complaints will be logged onsite and reported to the relevant individual within the LPA as soon as practicable.

Commitment to Environmental Best Practice

- 4.4.8. The client and Principal Contractor will define construction environmental performance targets (including but not limited to energy use, carbon emissions, water use, waste environmental incidents, complaints etc.) against which monitoring will be undertaken on a monthly basis to drive construction environmental best practice. The environmental performance monitoring will be used to define corrective actions and opportunities for continuous improvement, as relevant.
- 4.4.9. The construction project will be registered under the 'Considerate Contractor's Scheme' and will be monitored against the following Code of Considerate Practice objectives:
- Care about the Appearance of the Construction Site;
 - Respect the Community;
 - Protect the Environment;
 - Secure Everyone's Safety;
 - Value the Workforce.

4.5. Method Statements

- 4.5.1. Method Statements would be completed on behalf of the Main Contractor or Sub Contractor by trained engineers or other appropriate experienced personnel, in consultation with on-site environmental staff and, where necessary, environmental specialists. Their production would include a review of the environmental risks and commitments, as identified in the Environmental Action Plan and risk assessment, so that appropriate control measures are developed and included within the process. The contractor in conjunction with the Environmental Compliance Officer shall decide which of the works have environmental implications using the following criteria:
- The work may result in an adverse effect on the environment or human health; and,
 - The work is adjacent to a surface water drain or watercourse.
 - Method Statements would be reviewed by the Employer's Representative Manager, the Main or Sub Contractor's appointed Environmental Manager and, where necessary, by an appropriate environmental specialist. Approval of the Method Statements will be by the Employer's Representative only. If required, all approved Method Statements would be submitted to the enforcement agencies (Environment Agency, Environmental Health Officer, HSE etc.) as appropriate. Method Statements would contain as a minimum:
Location of the activity and access/egress arrangements;
 - Work to be undertaken and methods of construction;
 - Plant and materials to be used;
 - Labour and supervision requirements;
 - Health, safety and environmental considerations; and
 - Any permit or consent requirements beyond those already obtained.

4.6. Risk Assessments

- 4.6.1. All activities undertaken on the site will be subject to an environmental risk assessment. This comprises an environmental risk register, which summarises the key aspects and effects and their significance associated with the works. The activities associated with the contract are identified, with individual tasks broken down into effects that could arise, or a likely to arise. The probability and importance of each effect is then determined.
- 4.6.2. Risk assessments will be undertaken by trained staff and agreed with Environmental Compliance Officer following an approved procedure which will:
- Identify potential environmental impacts that can be anticipated;
 - Assess the risks from these impacts;
 - Identify the control measures to be taken and re-calculate the risk; and
 - Report where an unacceptable level of residual risk is identified so that action can be taken through design changes, re-scheduling of work or alternative methods of working in order to reduce the risk to an acceptable level.
- 4.6.3. The results of risk assessments, and their residual risks, are only considered acceptable if:
- The severity of outcome is reduced to the lowest practical level;
 - The number of risk exposures are minimised; and
 - All reasonably practical mitigating measures have been taken and the residual risk rating is reduced to a minimum.
- 4.6.4. The findings of the risk assessment and in particular the necessary controls will be explained to all contractors before the commencement of the relevant works using an agreed instruction format (e.g. toolbox talks).

4.7. Site Environmental Standards

- 4.7.1. Site Environmental Standards will be agreed with the Principal Contractor and would detail the minimum measures that should be achieved for general operations falling outside the risk assessment/method statement procedure. The site environmental standards will be designed to cover the majority of construction activities.
- 4.7.2. These will cover issues such as storage of materials, management of waste, noise and vibration and water pollution control. The standards may be used as a briefing tool on site. These standards will also form the basis of 'toolbox talks' which will inform all contractors working on site of the potential environmental risks arising from construction activities.
- 4.7.3. Best practice construction site management techniques will be implemented to avoid/minimise the generation of excessive waste, dust, lighting, noise and vibration.

4.8. Environmental Incident and Reporting

General

- 4.8.1. An 'environmental incident' is any incident that, by its scale or nature, will have a negative effect on the environment. Such an effect is likely to result in a breach of environmental law, either by pollution to the environment or by endangering wildlife. As there are no restrictions on what constitutes an environmental incident, the system in place must remain flexible.

- 4.8.2. The Principal Contractors Environmental Compliance/ Liaison Officer will be informed of any environmental incidents by the appropriate site supervisor. All environmental incidents, dangerous occurrences or near misses will be recorded by the Principal Contractor on an Accident/ Incident Report form. Once the incident is reported and recorded, actions will be identified to avoid a recurrence and the site procedures will be updated accordingly.
- 4.8.3. In addition to procedures outlined in the CEMP, if a spill occurs that has the potential to enter groundwater, the Environment Agency should be informed.
- 4.8.4. The following list details some of the incidents which it is anticipated may potentially occur, but the list is not intended to be exclusive:
- Leaking or poorly maintained machinery with no drip tray.
 - Improper storage of chemicals.
 - Incident leading to pollution of land, air or water.
 - Incorrectly labelled or unlabelled waste, which may potentially be special (i.e. dangerous) waste.
 - Waste left in an unsuitable and unsafe place.

Enquiries and Complaints

- 4.8.5. The Principal Contractor will establish an email address and telephone helpline contactable all times during working hours to manage enquiries relating to construction activities from the general public and local businesses. Such communication means will also be used as the first point of contact in the event of an emergency or incident. Contact details will be widely promoted and displayed at appropriate locations around the Site hoarding and Site entrance.
- 4.8.6. The Principal Contractor will establish a process for handling all enquires including complaints. All enquires will be recorded and a log will be maintained that will include details of the response and action taken. This will be available upon request for inspection to the LPA. All enquires whether a query or a complaint will be dealt with in a timely manner.
- 4.8.7. Enquiries and complaints received are to be recorded into the register within 24 hours. The interested party will be notified what action is being taken to address the enquiry/ complaint.

4.9. Anticipated Construction Programme

- 4.9.1. The construction programme is yet to be finalised given that all matters are reserved except access for the OPA. It is anticipated that construction would commence in 2024.

4.10. Anticipated Scope of Construction

- 4.10.1. In the absence of an appointed Principal Contractor, it is anticipated that the construction of the proposed development will entail the following:
- Mitigation preparation for work – as set out within this CEMP;
 - Establishing the construction compound(s);
 - Enabling works and site preparation;
 - Construction of site access;
 - Vegetation clearance and creation of development platforms;

- Drainage works, including SuDS;
- Installation of utilities;
- Construction of residential units and facilities; and
- Hard and soft landscaping

4.11. Proposed Phasing of the Construction Works

4.11.1. At the planning application stage it is not yet possible to estimate in detail the number and types of construction vehicles that will be generated by construction activities for the Proposed Development.

4.11.2. The proposed phasing of the site is currently as follows:

- Phase 1 - The principal construction access(s) from Broomhill Road. Creation of a primary construction route off of Bonville Road to enable 'clean' entrance off Broomhill Road for new residents in Phase 1.
- Phase 1a - Construction of the spine road to enable access to Phase 2 along with the first attenuation pond.
- Phase 2 - the construction access from Bonville Road will separate the works from new residential access from Phase 1. This will be undertaken along with construction of the second attenuation area required and delivery of the school link.
- Phase 3 – Construction access from Bonville Road and the Completion of part of the Wetland Meadows 36 homes.
- Phase 4 – 55 homes to be completed in centre / south east of the site.
- Phase 5 – Final 53 Homes to be completed in the south east of the site.

4.11.3. Broomhill Road is anticipated to be used for the initial construction access and for the first phase of works. After the Phase 1 works, it is anticipated that Bonville Road will be used as the primary construction route for the remaining phases, to enable a clean entrance for new residents using Broomhill Road (See Phasing Strategy, Appendix A). Once the most suitable construction routes and the loading / unloading locations have been determined, appropriate temporary signage would need to be erected to provide guidance for both traffic and pedestrians. The proposed site access and route arrangements will be in accordance with Construction Traffic Management Plan is to be prepared by the appointed Contractor.

4.12. Construction traffic management

4.12.1. The Principal Contractor will co-ordinate all deliveries and collections to/from the site. A pre-booking system for deliveries will be implemented and managed so as to ensure minimal impact to the flow of traffic on the public highways. All deliveries will be made to the designated areas within and adjacent to the site. Where it is necessary to load and unload outside the site boundary, the details procedure for this will be agreed in advance with BCC.

4.12.2. Deliveries to the Site are to be controlled to avoid congestion of the surrounding roads particularly during peak times. The Principal Contractor Logistics Manager is to produce a rolling weekly programme of deliveries and a draft of this programme is to be presented and discussed at weekly progress meetings to smooth out obvious bottlenecks and clashes. It is anticipated that the

number of vehicles that will be permitted to travel during the busiest hours on the local network will be limited and that this may be secured via a Construction Traffic Management Plan (CTMP).

- 4.12.3. During construction, an on-site restriction of 5 miles per hour (mph) will be actively enforced for all vehicular movements. A jet wash will be used on-site and off-site road sweeping equipment will also be employed so that surrounding roads are kept clean and free from construction materials.

4.13. General Types of Plant and Equipment

- 4.13.1. Consideration has been given to the types of plant that are likely to be used during the construction works.
- 4.13.2. All key static plant and equipment (e.g. hoists, power distribution units, diesel storage tanks etc.) will be clearly identified on site logistics drawings.
- 4.13.3. The Principal Contractor will be required to complete a 'Register of Plant & Equipment and Statutory Certification' within their Health & Safety 'Method Statement' prior to works commencing on site.
- 4.13.4. The Register allows an inventory of on-site plant and equipment to be kept to ensure they are maintained in accordance with statutory test/examination/inspection requirements, and that specific operator training requirements are addressed. This list also assists by providing a useful cross-reference for noise level predictions and assessments of plant and machinery in respect to ensuring that excessive noise levels are identified and suitable control measures implemented to minimise those noise levels.
- 4.13.5. The plant and equipment likely to be associated with each key element of the construction process is set out in Table 4.4.

Table 4.4: Plant Expected to be used during the Construction Process

Plant	Stage		
	Enabling Works/ Site Preparation/ Landscaping	Infrastructure	Superstructure/ Fit Out
Tracked/ wheeled 360 degree Excavators	✓	✓	✓
Vibrating compaction rollers	✓	✓	X
Excavator mounted hydraulic breakers	✓	✓	X
Excavator mounted hydraulic crushers	✓	✓	X
Dumpers	✓	✓	X
Concrete Crushing Plant	✓	✓	X
Mobile Cranage/ telehandlers	X	✓	✓
Eight-wheeler trucks	✓	✓	✓
Air Compressors	✓	✓	✓
Diamond cutting tools / saws	✓	✓	✓

Plant	Stage		
	Enabling Works/ Site Preparation/ Landscaping	Infrastructure	Superstructure/ Fit Out
Hand Held Tools including breakers (pneumatic and hydraulic)	✓	✓	✓
Power Tools including percussion drills, cutting disks, pipe-threaders	✓	✓	✓
Hand /power tools	✓	✓	✓
Wheel Washing Plant	✓	✓	✓
Piling Rigs	✓	X	X
Scaffold	X	X	✓
Mobile access platforms	X	X	✓
Delivery trucks	✓	✓	✓
Skips & Skip trucks	✓	✓	✓
Forklift trucks	✓	✓	✓

4.14. Arrangements prior to commencement of works

- 4.14.1. The site will be fully secured and made safe prior to the commencement of the enabling and construction works. Temporary fencing will be used and suitable access and egress points within the site boundary will be established for personnel vehicles and deliveries.
- 4.14.2. Prior to the commencement of works, the following third parties would be contacted and notified:
- BCC;
 - Local residents (potentially via liaison meetings);
 - Highway agencies;
 - Notifications to statutory utility companies;
 - Notifications to Emergency Services;
 - Notifications to Environmental Health Officer.

4.15. Compounds

- 4.15.1. One or more Site compounds are likely to be required for each phase of the Proposed Development to enable materials and machinery to be stored safely and securely close to the works on the Site. Compounds are also required under CDM Regulations to provide suitable and sufficient sanitary and washing facilities for construction personnel. Subject to the number of compounds required on each development area within the Site, these are likely to include site offices, welfare facilities (toilets, washroom and canteen area), drying rooms, storage containers, refuelling areas and parking. Where on-site concrete batching is required it is likely that the batching plant will be co-located with the site compound.
- 4.15.2. The location of site compounds will be determined by the Principal Contractor(s) but should take account of:

- Proximity to road junctions;
 - Proximity to public transport infrastructure;
 - Proximity to pedestrian routes and crossing points;
 - Proximity to watercourses and drains;
 - Prevailing topography (flatter areas being preferable);
 - Proximity to ecological receptors (e.g. woodland edges, hedgerows and field margins);
 - Potential for drainage during periods of heavy rainfall;
 - Access for emergency vehicles; and
 - Provision of adequate space for unloading, turning and parking of vehicles without adversely affecting the highway network.
- 4.15.3. Site-specific risk assessments should be undertaken by the Principal Contractor(s) prior to determination of locations for site compounds. Prior to compounds coming into use, Principal Contractor(s) will establish management protocols for their compounds. It is envisaged that these will include (but not be limited to):
- Lighting and fencing of the compound;
 - Access routes for equipment and materials;
 - Control of potential hazards within the site compound;
 - Protection of Trees and Hedgerow (refer to the Tree (and hedgerow) Protection Plan for the type and location of protective fencing to be installed prior to demolition or construction work commencing);
 - Protection of wildlife;
 - Working hours and noise levels; and
 - Safety of the compound layout.
- 4.15.4. Unless appropriate and approved connections can be made to mains drainage, welfare units shall have a sealed receptacle for wastewater, which is to be removed from site on at least a weekly basis and disposed of at the haulier's nominated treatment works.
- 4.15.5. Where power at the compound(s) is not mains-supplied, fuel for electricity generation shall be stored in a bunded twin wall tank within the compound(s). In the event of a spillage, appropriate action should be taken in accordance with the good practice guidance set out in Construction Industry Research and Information Association (CIRIA) C532 *Control of water pollution from construction sites – Guidance for consultants and contractors* (2001) and the Environment Agency Pollution Prevention Guidance Note 22 *Dealing with Spills* (April 2011)¹. A spill kit shall be provided with the welfare facility for use in the event of a fuel spillage.
- 4.15.6. If mains supplies are not available, potable water shall be provided to the Site in a sterilised bowser.

¹ This guidance has since been withdrawn (not replaced) however, is still considered to be good practice in the absence of any other guidance.

4.16. Site Housekeeping

4.16.1. A site housekeeping policy shall be applied at all times. This shall include the following requirements:

- Only appropriately qualified staff would undertake specific tasks;
- When required, staff on site would use Personal Protection Equipment (PPE);
- Basic hygiene practices such as washing of hands at the end of every work period;
- No eating or drinking on-site except in designated areas;
- All ill health of staff shall be reported to the appropriate person;
- All working areas shall be kept in a clean and tidy condition;
- All working areas shall be non-smoking. Specific areas within the site shall be designated as smoking areas and shall be equipped with containers for smoking waste. These shall not be located at the boundary of working areas adjacent to neighbouring land;
- Open fires are prohibited at all times;
- All necessary measures shall be taken to minimise the risk of fire and the
- Contractor shall comply with the requirements of the local fire authority;
- Radios (other than two-way radios used for the purposes of communication related
- to the works) and other forms of audio equipment shall not be operated;
- Site waste susceptible to spreading by wind or liable to cause litter shall be stored in enclosed containers;
- Rubbish shall be removed at frequent intervals and the site kept clean and tidy;
- Hoardings and boundary fences shall be frequently inspected and repaired as necessary;
- Adequate toilet facilities shall be provided for all site staff;
- Food waste shall be removed frequently; and
- Wheel washing areas shall be brushed clean frequently and water would be prevented from entering surface water drains.

4.16.2. All working areas shall be inspected as required by a site audit programme and a written report on compliance provided as a result of the audit. Access to all areas shall be given to any visiting inspectors and all reasonable assistance shall be given during their site inspection.

4.17. Enabling Works and Site Preparation

4.17.1. Enabling works will involve the following:

- Construction of temporary construction compound(s) including site cabins, which will contain offices and welfare facilities for management and construction workers.
- Construction of vehicular access points for construction vehicles off Broomhill Road to the north of the Site and Bonville Road to the east of the site.

- Provision of workshop facilities for maintaining the construction equipment.
- Erection of site hoarding around the Site, which will be a minimum height of 1.8m and painted using a uniform colour that recedes into its surroundings, heras fencing and lighting where applicable.
- Installation of temporary surface water management measures for construction.

4.17.2. During site preparation, topsoil will be stripped and the land re-profiled through cut and fill as required for the creation of development platforms, drainage basins and internal roads.

4.17.3. Further assessments and investigations may be required in accordance with planning condition(s) associated with the RMA prior to site clearance, therefore, these should be taken into consideration prior to the construction works.

4.18. Development Platforms and Drainage Works

4.18.1. The creation of the development platforms and open space will provide accessible plots in compliance with requirements under Building Regulations Part M.

4.18.2. The currently proposed drainage strategy includes SuDS features such as 2 no. attenuation ponds and permeable pavements. The construction of these features shall be in accordance with the Flood Risk Assessment and Drainage Strategy.

4.19. Hard and soft landscaping

4.19.1. Landscaping works will be in accordance with a Landscape and Ecological Management Plan (LEMP) [to be inserted by the Contractor once complete].

4.20. Material and Resource Use

4.20.1. The Contractor will be required to provide details of the earthwork movements required to create the development platforms and reprofile the site. The groundworks contractor should refer to the final earthwork strategy in order to plan the execution of this activity and establish areas for excavation and stockpiling material. The current proposal aims to utilise the existing site topography to minimise engineering effort and movement of materials offsite. A cut and fill model has been undertaken to facilitate the drainage design as well as the masterplanning of the Site. Consideration has been given to tying to existing levels around the perimeter of the Site, provide sympathetic development parcels and avoidance of hard engineered solutions.

4.20.2. The primary construction materials to be used for access roads will include crushed rock/ stone/ gravel sub-base with tarmac surface course layers.

4.20.3. The earthworks model has accounted for reuse of site won material as engineering fill and as mentioned above with a view to minimise disposal offsite. Subject to construction activities there may be a quantity of material to be disposed of towards the end of the project.

4.21. Construction Waste

4.21.1. The Principal Contractor will implement the waste hierarchy (i.e. prevention, preparing for re-use, recycling, other recovery and disposal) as set out in the Waste (England and Wales) Regulations 2011 (as amended) to ensure that material resources are used to maximum efficiency.

4.21.2. The Principal Contractor will prepare a Site Waste Management Plan (SWMP) / Construction Resource Management Plan or equivalent. This will include information regarding the type and quantities of waste to be produced during demolition and construction, waste carrier details and

plans for the segregation and control of waste and the reuse or disposal. The SWMP will include an audit programme to be undertaken by the Principal Contractor.

4.22. Management of contaminated material

- 4.22.1. From a review of the site investigation information and Land Quality Statement, contaminated arisings are not anticipated to be encountered during the course of the construction phase. However, any contaminated material that would require treatment/removal from the site would be collected by suitable waste carriers and sent for disposal at appropriately licensed waste management facilities.

4.23. Construction site lighting

- 4.23.1. Temporary lighting will be provided in designated areas of the site and the site compound; additional lighting will be provided as the construction progresses.
- 4.23.2. Low wattage directional lighting will be used on the site during the construction works to avoid lighting disturbance of neighbouring land uses, in line with the Institute of Lighting Engineers '*Guidance Notes for the Reduction of Obtrusive Light*'. Lighting will be provided with the minimum luminosity sufficient for safety and security purposes. Where practicable, precautions will be taken to avoid shadows cast by the Site hoarding on surrounding footpaths, roads and amenity areas.
- 4.23.3. Motion sensor lighting and low energy consumption fittings will be installed to reduce energy consumption, where practicable.
- 4.23.4. The construction schedule activities will be primarily kept to daylight hours and the use of high powered floodlights during hours of darkness will be avoided unless absolutely essential. In the case where lighting is adopted for use during night activities, a Construction Lighting Management Plan will be included as an update to the CEMP and agreed with BCC to limit the potential for obtrusive light, with appropriate consideration of receptors (e.g. adjacent residential properties)
- 4.23.5. It is assumed that any lighting required for the construction phase will adhere to the following recommendations:
- New lighting for the Proposed Development will respond to the British Standards and good practice guidance to support safe access to, and use of the site;
 - All lighting to be directed towards its intended target, away from neighbouring properties and identified habitats or commuting routes which include: trees and bat/bird flight zones;
 - When possible, full cut-off luminaires will be used and shields, hoods, cowls, baffles or louvres will be employed to aid in further control of new lighting near sensitive areas to limit upward light or direct views of light sources;
 - Lighting equipment should be switched off, or lighting with the capability to is to be dimmed, in accordance with any BCC approved strategies for part-night lighting

4.24. Workforce and working hours

- 4.24.1. It is expected that the working hours and delivery hours for works that form the construction of the Proposed Development will be:
- Monday to Friday, 08:00 – 18:00;
 - Saturday, 08:00 – 13:00; and

- No working on Sundays and Bank Holidays unless otherwise agreed with Bristol City Council (BCC).

4.24.2. However, working hour arrangements (including what part of the works will be subject to such controls) within the Site will not be confirmed until they are agreed with BCC prior to the commencement of the construction works. Subsequently, all work outside these hours will be subject to prior agreement, and/ or reasonable notice by BCC, who may impose certain restrictions and will have regard to any planning conditions attached to any grant of permission. Night-time working will be restricted to exceptional circumstances. By prior arrangement with BCC (as local planning authority), there may be some out of hour's construction deliveries made to the Site.

5.0 ENVIRONMENTAL MITIGATION METHOD STATEMENT

5.1. Client Requirements

- 5.1.1. Homes England is committed to best practice standards of implementation to ensure safe and secure implementation of the project with the minimum possible environmental harm.
- 5.1.2. Homes England will monitor the Principal Contractor's compliance with the approved CEMP through all normal electronic and written media, telephone conversations and visits.
- 5.1.3. Homes England is committed to good environmental performance and will proactively work with the Principal Contractor and other stakeholders to remedy any issues arising. The appointed Principal Contractor will be required to register the site with the Considerate Constructors Scheme (CCS).

5.2. Method Statements

- 5.2.1. When preparing works specific method statements, the Principal Contractor is required to include an environmental risk assessment that reviews the associated environmental risks and commitments. Works that have a potential environmental impact are to be identified and appropriate control measures developed.
- 5.2.2. The Principal Contractor is to determine which activities have environmental implications using the following criteria:
 - The work may result in an adverse effect on the environment;
 - The work may result in an adverse effect on human health or amenity;
 - The work is adjacent to a surface water drain or watercourse.
- 5.2.3. Where the works have environmental implications, the works specific method statement and proposed control measures are to be reviewed by the Principal Contractor's Site Manager where necessary, the works specific method statements and proposed control measures are to also be reviewed by an appropriate environmental specialist.
- 5.2.4. When it has been determined that an activity has environmental implications, that activity (as detailed in the works specific method statement) may not commence until the Principal Contractor's Environmental Compliance / Liaison Officer and Environmental Manager has approved the works specific method statement and proposed control measures.
- 5.2.5. Where necessary, the Principal Contractor is required to submit their proposed works specific method statements and proposed control measures to gain approval from the appropriate statutory authorities (Natural England, Environment Agency, Lead Local Flood Authority, Environmental Health Officer, etc.), including obtaining all corresponding licences and permits, prior to the commencement of any related site works.

5.3. Baseline Surveys and Sensitive Receptors

- 5.3.1. A number of baseline surveys have been undertaken for the Proposed Development in support of the preparation of the OPA.
- 5.3.2. The receptors, which are considered potentially sensitive to the construction of the Proposed Development have been identified and are summarised in Table 5.1.

Table 5.1: Summary of Potential Sensitive Receptors

Category	Sensitive Receptor/Land Use
Site Specific	
Landscape and visual Impact	- Two public right of ways exist on site. - Six hedgerows are assessed as important under the Hedgerow Regulations Act - Adjacent residential areas - Mama Bears Pre-School and Day Nursery, Broomhill Junior and Infant School
Water and Flood Risk	- A partly culverted unnamed tributary of Brislington Brook is located south of the site. The tributary flows from east to west and feeds into Brislington Brook approximately 0.25km west of the site. The River Avon is located approximately 0.40km east of the site. - Environment Agency (EA) Flood maps indicated the site to be entirely within Flood Zone 1 (very low risk of flooding from rivers and seas). - EA flood maps also indicate the majority of the site to be at very low risk of flooding from surface water flooding.
Contaminated Land	- The application site is set upon a Secondary A Aquifer. - Significant contaminant concentrations have not been indicated through desktop research or encountered by the recent ground investigation. - Asbestos was not encountered during intrusive investigations. - UXO mapping indicates the site to lie within a high risk area. The majority of the site has been cleared for UXO. Inaccessible UXO targets located within the currently tenanted paddock area within the north eastern section of the site require further investigation.
Traffic and Transportation	- There is no public vehicular access into the site at present. - There are two public rights of way across the site, one running east-west along the southern boundary connecting Bonville Road and School Road, and one north-south between Belroyal Avenue and Bonville Road. - The applicant is in the process of formalising public access rights and the proposed development will accommodate pedestrian and cycle access across the site. Vehicular access to the site is proposed to be via Broomhill Road with an emergency access route via Bonville Road.
Ecology and Nature Conservation	- Bristol and Bath Green Belt is located 100m north east of the site. - Eight records of Ancient Woodland were recorded within 2km of site - Two sites of BAP priority Habitat Wood pasture and Parkland were also identified within 2km study area. - Victory Park and tenanted horse grazing land to the south of the site comprise part of the wider protected open space and the Brislington Meadows Site of Nature Conservation Interest (SNCI) - Sensitive ecological receptors which require appropriate consideration and mitigation such as: - Poor to moderate grassland habitat; - Poor to good hedgerow habitat;

Category	Sensitive Receptor/Land Use
	- o Poor to moderate scrub habitat; - o Poor to moderate woodland habitat; - o Disturbance of foraging and roosting bats; - o Disturbance to reptiles; - o Disturbance to foraging mammals including badgers and hedgehogs; - o Disturbance effects on breeding birds during demolition and construction; - o Invertebrate habitat, diversity and abundance reduction.
Archaeology and Cultural Heritage	36 designated heritage assets including two Conservation Areas one Registered Park and Garden and 33 Listed Buildings of which 5 are Grade II* Listed are located within 1km of the site. The site has been assessed as providing a minor positive contribution to the setting of the Avon Valley and Brislington Conservation Areas as representing the remains of former open field and enclosed landscape formerly bordering Brislington Common. 69 non-designated heritage assets within the study area of which two are within or partly within the proposed development site and these include possible remains of medieval ridge and furrow, and the site of a former 19th century farmstead. The non-designated heritage assets include prehistoric findspots, the site of a Roman Villa and findspots of the Roman period, and extant and former built-heritage of the post-medieval period. 6 hedgerows which are assessed as important under the Hedgerow Regulations Act and are of low heritage significance. Evaluation works including geophysical survey and trial trenching have confirmed the presence of below-ground archaeological remains within the site comprising a system of enclosures of indeterminate function, dating to the Roman period, focussed primarily in the south-western corner of the site. Finds included pottery sherds, iron nails and evidence for glassmaking including an assemblage of glass beads. 29 trees on site have been surveyed. 7 of which fall into BS5837 Quality Category A, 20 into category B and 2 which are considered category C. The majority of trees were considered to be in fair to good condition, with one veteran tree identified on site.
General	
Members of the Public/ Facilities	There are two public rights of way across the site, one running east to west along the southern boundary connecting Bonville Road and School Road, and one north-south between Belroyal Avenue and Bonville Road. A telephone mast is located in the east of the site and electricity cables and a pylon are located in the south of the site.
Residential, commercial and industrial	The closest residential receptors are located directly to the north of the site. Mama Bears Day Nursery, Broomhill Junior and Infant school are located directly to the north. The Bonville Trading Estate is located adjacent to the east of the site.
Noise and Vibration	Noise from construction activities - effects principally on residential receptors and community uses close to the site

Category	Sensitive Receptor/Land Use
	Noise from construction vehicles - effects principally on residential receptors and community uses close to the site or roads used for construction traffic routing
Dust and Air Quality	Fugitive dust emission from demolition, materials handling, materials storage and movement of construction vehicles – effects principally on residential receptors and community uses within 100 metres of the construction site; Emissions from construction vehicles and plant – principally fine particulates and nitrogen dioxide – effects principally on residential receptors and community uses close to the site or roads used for construction traffic routing.
Waste Disposal	Waste aggregates generated during demolition; Waste soils generated during construction General waste generated during construction.

- 5.3.3. The following section summarises the environmental context on and within close proximity to the Site, and sets out mitigation and control measures in relation to the sensitive receptors. Mitigation and control measures will be refined where necessary by the Principal Contractor to best reflect the prevailing methods of working and the programming of construction activities and the CEMP will be updated accordingly.

5.4. Landscape and Visual Impact

Introduction

- 5.4.1. This section identifies the construction and environmental management measures to be implemented to avoid and reduce LVIA effects during the construction stage. This section has been informed by the Landscape and Visual Impact Assessment.
- 5.4.2. Overall effects on the townscape / landscape character are judged to be of a negligible magnitude, minimal and neutral. It has been assessed that the intrinsic and prevailing characteristics would not be discernibly affected through the introduction of the proposed development.
- 5.4.3. Effects on townscape character would be their greatest within the site itself, being at most of a High Magnitude, Major – Moderate and, in TVIA terms adverse owing to the change from an area of open semi-improved grassland with new housing, albeit place within a new network of green infrastructure. It must also be considered the site is allocated for development and therefore the introduction of new built form within the site is acceptable in planning policy terms.
- 5.4.4. Effects on visual receptors would be at their greatest on users of the Public Rights of Ways which traverse the site. From within the public right of ways within the site, visual effects would be of a high magnitude, Major. Effects would be adverse given the visible change from an area of open grassland to that of new development, albeit seen within the existing townscape of Broom Hill and Brislington.
- 5.4.5. Beyond the sites boundaries visual effects would gradually reduce with distance. Effects would be, at most, of a low magnitude and slight from local roads immediately surrounding the site (such as Broomhill Road, Bonville Road, School Road and Manworthy Road); and adjacent accessible recreational spaces namely Victor Park. Effects would be, on balance, Neutral, given the influence of visible housing and commercial buildings seen within the context of the site in existing views.

- 5.4.6. From further afield of the Site's immediate context, visual effects would rapidly reduce as a result of intervening vegetation, buildings and landform screening views to the Proposed Development. Effects at most would be Negligible Magnitude, Minimal and Neutral.

Construction and Environmental Management Measures

- 5.4.7. The following mitigation measures should be implemented during the construction phase in order to specifically limit impacts on landscape and visual amenity of the surrounding area:

- Land / vegetation clearance will be limited to the minimum necessary for the works;
- Temporary storage of soils and other material considered of value for retention. Where practical, stockpiles would be sited to screen the construction works from sensitive receptors;
- Construction areas will be laid out to minimise adverse impacts arising from temporary structures, construction activities and lighting;
- Construction roads will use existing onsite roads or the same route as permanent access roads where possible;
- Use of construction site lighting outside normal working hours will be restricted to the minimum necessary for workforce and public safety, and for security. Directional luminaries will be used to limit unwanted light spill;
- Site compounds will be kept tidy where practical, at all times;
- Hoardings will be erected around the area of construction works, for reasons of creating a visual barrier to construction activities and as a safety measure, to prevent access to the general public;
- Temporal measures include the removal of all temporary structures and stockpiles when no longer required, and prompt reinstatement of construction areas.
- Where the hedgerows considered important under Part II of the Hedgerow Regulation 1997 Act cannot be retained due to the proposed development, mitigation should be achieved by a preservation record including photography, drawn section profiles of the hedge and recovery of artefacts.

5.5. Contaminated Land

Summary of environmental context

- 5.5.1. The BGS Geology of Britain Viewer indicates the site to be underlain by bedrock geology of the Farrington and Barren Red Formation. The BGS sheet 264, Bristol 1:50,000 scale, 2004 series also indicates limited thicknesses of superficial Head deposits are anticipated in the north east of the site.
- 5.5.2. A Technical Due Diligence Desk Study was undertaken by WSP in September 2019, which identified the initial risks of potential sources of contamination to range from 'very low risk' to 'low risk' across the Site. A Ground Investigation (GI) was undertaken by Geotechnical Engineering Limited with the main element of the intrusive works carried out between the 2nd and 20th November 2020 and reported within the Phase II Geo-environmental Interpretative Report (CampbellReith, February 2022).

- 5.5.3. The soil sampling undertaken has not identified any significantly elevated contaminant concentrations and statistical analysis undertaken has demonstrated the soils on site are not considered to pose an unacceptable risk to the proposed end users.
- 5.5.4. The minor exceedances of adopted Environmental Quality Standards (EQS) values identified by the groundwater sampling undertaken is not considered to represent a potentially significant risk requiring further investigation, assessment or possibly remediation at this stage.
- 5.5.5. Detectable concentrations of methane were not encountered. Elevated flow rates and carbon dioxide concentrations were generally not encountered. As such, ground gases are not considered to pose a risk to buildings or end users, and gas protection measures are not required.
- 5.5.6. Asbestos was not encountered across the site.
- 5.5.7. An intrusive UXO investigation was completed in November 2021 in line with the recommendations made in the 2019 Detailed UXO Risk Assessment and April 2021 non-intrusive UXO survey. UXO was not identified in 145 out of the 196 locations targeted during the intrusive investigation. The remaining 51 targets were inaccessible at the time of the investigation. Additional intrusive target investigations are required for the inaccessible locations. This Outline CEMP will be updated upon completion of the works.
- 5.5.8. The site is set upon a Secondary A aquifer which are highly permeable formations. The site is not located within a Nitrate Vulnerable Zone. There are no groundwater abstractions within 1km and source protection zones are not present within 2km.
- 5.5.9. A drainage ditch is present on site, which flows into the Brislington Brook located 330m west of the site. Brislington Brook provides flow to the River Avon located approximately 400m from site.
- 5.5.10. Environment Agency (EA) Flood maps indicated the site to be entirely within Flood Zone 1, therefore is at very low risk of flooding from rivers and seas.
- 5.5.11. EA flood maps also indicate the majority of the site to be at very low risk of flooding from surface water flooding. EA flood maps show the site to be at very low risk of inundation following major reservoir failure.
- 5.5.12. Soakaway tests carried out in the GI indicated infiltration into the ground will not be a suitable means for surface water disposal as three of four soakaway tests showed no infiltration capacity.

Mitigation and Control Measures

- 5.5.13. Environmental protection during construction will be achieved by compliance with industry standard codes of practice for the treatment of natural and Made Ground and through the implementation of construction environmental management procedures under the following topic areas:

Protection of construction personnel

- The Principal Contractor will prepare risk assessments and method statements in view of the identified and foreseeable ground conditions and include these within the Health and Safety Plan: for example these should consider worker protection from skin contact, ingestion and inhalation of contaminants, asbestos in soils and ground gas. To achieve satisfactory control, Health and Safety provision in accordance with HSE Publication HS(G) and CIRIA Report 132 should be considered. The Principal Contractor must also control relevant elements associated with responsibilities under the CDM regulations 2015.

- In relation to presence of asbestos in soils, the Principal Contractor will formulate their working arrangements in view of the requirements of the Control of Asbestos Regulations (2012) and the associated ACoP (L143). Additional interpretation on the application of these regulations is presented in publications prepared by CL:AIRE and the Joint Industry Working Group (CAR-SOIL™ Control of Asbestos Regulations 2012, Interpretation for Managing and Working with Asbestos in Soil and Construction and Demolition Materials, 2016; and the associated JIWG decision support tool, 2017). Additional guidance is provided in CIRIA C765, Asbestos in Soil and Made Ground Good Practice Site Guide, 2017.
- A watching brief is to be implemented and maintained throughout all groundworks to identify any previously undetected areas of contamination. This should be specified on a grid basis and shall include the procedure to follow in the event that unforeseen contamination is identified.
- Contaminated soils arising from excavation will be transported to a designated containment area prior to treatment or waste classification and subsequent treatment or disposal.
- Where unforeseen contaminated soils are encountered the Principal Contractor will prepare a detailed remediation strategy (if required) to define a material management / recovery plan associated soil remediation, mitigation and subsequent validation approach to be adopted and agreed with BCC prior to implementation.
- Inaccessible UXO targets will be investigated prior to intrusive works. UXO safety and awareness briefings should be prepared and implemented.
- A Groundworks Specification is to be implemented incorporating details of the testing requirements for imported materials.

Sediment runoff:

- Site access points will be regularly cleaned to prevent build-up of dust and mud;
- Earth movement will be controlled to reduce the risk of construction silt combining with the site surface water run off via appropriate storage and draining measures;
- Sediment traps will be positioned appropriately to control and trap sediment set back an appropriate distance between working areas, materials stockpiles or areas for the manoeuvre of vehicles and surface water drains.
- A Surface and Foul Water Management Strategy is to be implemented incorporating SuDS features.

Leaks and spillages of contaminants

- All staff will be trained in the use of spill kits and be made aware of their locations on Site.
- Spillages and leakages will be immediately contained in line with an Emergency Response Plan (ERP) and managed through the use of geotextile bunding of adequate capacity (110%), to isolate and minimise the ingress of surface water runoff to non-decommissioned boreholes or exposed surface water drainage pipes. Valves and trigger guns will be protected from vandalism and kept locked when not in use.
- An Emergency Spillage Action Plan will be produced, which site staff must read. On-site provisions will be made to contain a serious spill or leak through the use of booms bunding and absorbent material.

- Wherever possible, plant and machinery will be kept away from surface water drains and will have drip trays beneath oil tanks / engines / gearboxes / hydraulics, which will be checked and emptied regularly via a licensed waste disposal operator.
- Environment Agency Pollution Prevention Guideline PPG6 will be complied with which gives requirements such as the bunded storage of any chemicals or fuel kept on site and the introduction of petrol interceptors to filter run off from areas of hardstanding created for demolition / construction plant.
- All gases and fuels to be stored in accordance with the current regulations for such materials and their presence shall be noted on the Fire and Emergency Plan.
- It is envisaged that the majority of concrete used will be pre-mixed and delivered from an off-site source, thereby negating the need to mix concrete on-site and reducing the creation of alkaline wastewater.
- Any mixing and handling of wet concrete on-site will be undertaken in designated impermeable areas, away from surface water drains.
- All spills, regardless of size are to be reported to the Principal Contractor and dealt with appropriately. Where spills have the potential to enter the drainage feeding into Brislington Brook, the EA and the Lead Local Flood Authority should also be informed in addition to implementing appropriate procedures.
- Fuel, oil or chemical storage required during the construction phase will be stored on impervious bases of appropriate capacity and will be located away from watercourses in accordance with the Environment Agency's PPGs 1,2,7 as well as COSHH Regulations 2002 and the Control of Pollution (Oil Storage) Regulations 2004.
- Leaking and empty drums will be removed from the site and disposed of appropriately.
- Any refuelling of mobile plant and machinery will be undertaken in a designated area away from watercourses and surface drains, and supplied with appropriate spill kits and bunded bowser.
- Biodegradable hydraulic oil to be used for machinery / plant where possible.
- All drums and barrels will be fitted with flow control taps and will be properly labelled
- The Principal Contractor must seek to minimise, where possible the amount of wastewater that needs to be discharged and shall find an appropriate means of disposal including obtaining all corresponding approvals/ licences/permits.
- The handling and storage of potentially hazardous liquid on site e.g. fuels and chemicals are to be controlled and best practice guidance from the EA is to be applied.

5.6. Traffic and Transportation

Environmental Constraints

- 5.6.1. The site is located immediately south of a residential area in Brislington and directly adjacent to Broomhill Junior School, Broomhill Infant School and Mama Bears Day Nursery. Bonville trading site is situated adjacent to the east of the site.
- 5.6.2. The site can be accessed via two public rights of way on site, one running east-west along the southern boundary connecting Bonville Road and School Road, and one north-south between

Belroyal Avenue and Bonville Road. In addition, a network of informal trodden paths cross the site.

- 5.6.3. The proposed development comprises new vehicular access via Broomhill Road located to the north of the site and emergency access via Bonville Road to the east of the site.

Mitigation and control measures to be implemented

- 5.6.4. Access to the site will be monitored and carefully planned to ensure vehicle movement will not cause damage to existing highways, parked vehicles or kerbs.

- 5.6.5. The Principal Contractor must ensure that suitable management is in place to maintain, as far as reasonably possible any existing public access routes around the construction site. The Highway Authority must be contacted to form an agreement when working on the highways.

- 5.6.6. A licence will be required for any works affecting the surrounding network and movement of traffic, this licence must be obtained at the early stages of development to avoid any delays. Examples of management include controlling the timing of deliveries as well as requiring loading and unloading to take place in a specified location to minimise disruption.

- 5.6.7. The delivery of materials will be managed to ensure wherever possible that arrival times occur outside of sensitive periods. No deliveries will be accepted outside of the normal site working hours.

- 5.6.8. Identified routes for all construction traffic (appendix E) are to be agreed with the Highway Authority prior to commencement of works. This will reduce the likelihood that vehicles will pass along the sensitive roads (i.e. residential roads, congested roads, via unsuitable junctions).

- 5.6.9. Specific mitigation and management measures for construction traffic will include:

- One member of the Principal Contractor team will be designated as Logistics Manager. The person responsible will have received suitable training to fulfil this role and will be accountable for all construction logistics and vehicle movements;
- Traffic Marshalls are to be suitably trained;
- Contact numbers of Logistic Manager and Traffic Marshall to be displayed in prominent positions;
- Compliance with the construction Traffic Management Plan will be a pre-requisite of supply chain orders;
- No deliveries will be permitted during peak hours (AM and PM)
- Just-in-time delivery methods will be used;
- Delivery vehicles will enter the site and become stationary at the holding point;
- Deliveries only brought to site upon confirmation from Banksman/Traffic Marshall and Supply Chain Supervisor that they are ready and in a position to receive the delivery;
- All operatives including management team will be encouraged to use public/green transport;
- Bicycle racks will be provided for Construction personnel within the site compound and welfare area;
- An on-line portal will be used for booking of deliveries – this will be the only tool available for booking of deliveries;

- All vehicles entering and leaving the site will be escorted by a Banksman/Traffic Marshall;
- Signage will be erected in appropriate locations warning pedestrians of site construction traffic movements;
- All pedestrian footpaths in the immediate location will be swept daily.

5.6.10. Prior to commencement on site, the Principal Contractor will directly engage with local residents and occupiers. Information provided to the local community will include contact details of the site management team and details of regular drop-in sessions for the public to discuss any issues with the works. Regular communication with the local community will be undertaken through the duration of the works.

5.7. Air Quality

Summary of Environmental Context

5.7.1. The site is located approximately 700m north of the an Air Quality Management Area (AQMA) that covers Bristol City centre and parts of the main radial roads and has been designated for fine particulates and nitrogen dioxide.

5.7.2. There are number of sensitive receptors within close proximity of the site, which include the following:

- Existing residential receptors within the immediate surrounding area;
- Pupils and staff at Mama Bear's Day Nursery and Pre-school, Broomhill Junior and Broomhill Infant Schools;
- Existing commercial and industrial receptors on Bonville Trading Estate;
- Allotment gardens and users located adjacent to the west of the site;
- Pedestrians and cyclists on roads surrounding the construction site and along the proposed construction traffic routes;
- Existing residential, community uses and commercial uses along the construction traffic routes.

Mitigation and control measures to be implemented

5.7.3. The Principal Contractor must comply with all relevant legislation and guidance for the control of dust and emissions during construction works in accordance with Best Practicable Means

5.7.4. Liaison with BCC Environmental and Public Health Team will be maintained throughout the demolition and construction works and any incidents which lead to excessive elevation of dust deposition and or PM₁₀ concentrations at neighbouring sensitive receptors will be reported to the Environmental and Public Health Team. In addition, nearby residents will be notified that dust emergence is being controlled on the Site.

5.7.5. Emissions from demolition and construction traffic will be minimised through, but are not limited to:

- Using low emission vehicles (where appropriate) fitted with catalytic converters, diesel particulate filters or similar devices;
- Requiring any plant on the site to be well-maintained to optimise efficiency in operation;

- Ensuring that all commercial road vehicles used in construction meet the European Emission Standards;

5.7.6. In accordance with best practice construction dust will be controlled through the application a series of measures, including (but not limited to):

Preparation and maintenance of the site

- Plan the site layout so that machinery and dust causing activities are located away from receptors, as far as is possible;
- Erect solid screens or barriers around dusty activities or at the site boundary that are at least as high as any stockpiles on site;
- Fully enclose specific operations where there is a high potential for dust production and the site is active for an extensive period;
- Avoid site runoff of water or mud;
- Keep site fencing barriers and scaffolding clean using wet methods;
- Remove materials from site as soon as possible;
- Cover, seed or fence stockpiles to prevent wind whipping;
- Carry out regular dust soiling checks of buildings within 100 metres of the site boundary and cleaning to be provided if necessary.

Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable;
- Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable;
- Only remove the cover in small areas during work wherever possible and not all at once;
- Screening of earthworks where appropriate should be completed to provide a physical barrier between the Site and the surroundings.

Construction

- Ensure sand and other aggregates with potential for wind-blown dust are stored in banded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place;
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored to prevent dust;
- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g., suitable local exhaust ventilation systems;
- Ensure an adequate water supply on the Site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate;
- Use enclosed chutes and conveyors and covered skips;

- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.

Track-out

- Use water-assisted dust sweeper(s) on local roads, to remove, as necessary, any material tracked out of the Site;
- Avoid dry sweeping of large areas;
- Ensure vehicles entering and leaving the site are covered to prevent escape of materials during transport;
- Inspect on-site routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable;
- Record all inspections of access routes and any subsequent action in a Site log book;
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the Site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the Site exit, wherever site size and layout permits.

Plant Exhaust Emission – Non-Road Mobile Machinery (NRMM)

- No vehicles or plant will be left idling unnecessarily;
- NRMM will be well maintained. Should any emissions of dark smoke occur (except during start up) then the relevant machinery will be stopped immediately and any problem rectified before being used;
- Engines and exhaust systems will be regularly serviced according to manufacturer's recommendations and maintained to meet statutory limits/opacity tests;
- Use of diesel or petrol powered generators will be avoided by using mains electricity or battery powered equipment where possible and if safety concerns can be overcome.

5.8. Noise and Vibration

Summary of environmental context

- 5.8.1. The site is located within a residential context, and principal environmental noise sources include road traffic and industrial uses on Bonville Trading Estate.
- 5.8.2. Principal sensitive receptors to demolition and construction works will include existing residential receptors in the immediate surrounding areas, pupils and staff at Mama Bears Day Nursery and Pre-School, Broomhill Junior and Broomhill Infant school, users of the allotments adjacent to the west of the site, receptors within Bonville Industrial Estate.

Mitigation and control measures to be implemented

- 5.8.3. The permitted hours of work for any works that are audible at the Site are: 8:00am - 18:00pm Monday to Friday and Saturday 9:00am - 13:00pm. No machinery is to be started outside of these hours unless agreed with BCC Environmental and Public Health Team.

- 5.8.4. Best practicable means of preventing, reducing and minimising noise will be adopted in agreement with BCC Environmental and Public Health Team and in accordance with the Control of Pollution Act 1974.
- 5.8.5. The recommendations relating to the impact of any operations will comply with the guidance set out in BS 5228; *Code of practice for noise and vibration control on construction and open sites* parts 1 and 2, and will be implemented, together with the requirement set out below:
- Limit the daily time that noisy equipment is operated; however, it is acknowledged that sometimes a greater noise level may be acceptable if the duration of the construction activity, and therefore length of disruption, is reduced;
 - The effect of noise and vibration on nearby sensitive receptors can be minimised through a good communication strategy. Information on construction works and prior notice of when high noise and/or vibration generating activities will be provided to reduce adverse effects;
 - Vehicles and mechanical plant used for the purpose of the works will be fitted with effective exhaust silencers, maintained in good and efficient working order and operated in such a manner as to minimise noise emissions. The Principal Contractor will ensure that all plant complies with the relevant statutory requirements;
 - Machines in intermittent use will be shut down or throttled down to a minimum when not in use;
 - Compressors will be fitted with properly lined and sealed acoustic covers, which will be kept closed whenever in use. Pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers;
 - Rotary drills and bursters activated by hydraulic, chemical or electrical power will be used where possible for excavating hard or extrusive material;
 - Plant will be maintained in good working order so that extraneous noise from mechanical vibration, creaking and squeaking is kept to a minimum;
 - Noise emitting machinery that is required to run continuously will be housed in a suitable acoustically lined enclosure;
 - Time slots will adopted for deliveries to ensure that convoys of vehicles do not arrive simultaneously and avoid unnecessary idling on or adjacent to the Site;
 - The use of sufficient clear signage to ensure that construction vehicles use only designated routes;
 - Loading and unloading of vehicles to be undertaken in a manner that limits noise generation and where practical away from noise sensitive areas;
 - Complaints to be reported to the Principal Contractor and immediately investigated in regards to noise levels.

5.9. Ecology and Nature Conservation

Environmental Constraints

- 5.9.1. Bristol and Bath Green Belt is located 100m north east of the site. Hedgerow, grassland, scrub and woodland habitats have been classified as generally poor to moderate habitats. Ten features comprising seven trees, two groups and one woodland have been categorised as high quality.

- 5.9.2. Protected species known to use the habitats within the site include bats, badgers, nesting birds, hedgehogs and slow worm.
- 5.9.3. Bat activity surveys undertaken between May and October 2020 confirmed the use of Brislington Meadows by foraging bats but only one of the trees identified to have potential bat roost features is anticipated to require removal to facilitate development.
- 5.9.4. There is growing concern about the impacts of artificial light upon invertebrate communities and increasing evidence of negative effects from such light sources. The ways in which light may impact upon invertebrates are varied, including mortality through impact with the light source itself, increased predation by bats of insects attracted to light, changes in behaviour of adults or night-feeding larvae, which in turn may impact upon breeding success, etc. Light pollution within the development has the potential to have a significant impact upon the insect population

Mitigation and control measures to be implemented

- 5.9.5. An ecological clerk of works (ECOW) will be appointed prior to the onset of construction. All method statements and construction phase management plans will be provided to the ECOW prior to the onset of construction. The role of the ECOW will be set out in the EMP/CEMP and should include:
- Ensuring the construction (including site clearance, construction and landscaping works) comply with the site protocols regarding ecological receptors and are completed following best practice guidelines in relation to ecology;
 - Delivering toolbox talks and on-site supervision where necessary;
 - Answering questions as they arise and to advise accordingly;
 - Carrying out an Ecological Watching Brief (EWB) throughout the construction period;
 - Raising Quality Alerts for any non-compliance with the ecological protocols;
 - Reporting any changes to the site and compliance concerns to the Site Environmental Manager. If insufficient action is taken, stopping the works and reporting to Homes England;
 - Liaise with the Site Environmental Manager and Homes and keep a site log. The site log will contain a log of daily activities, details of any recommendations made, details of any further actions required and with whom the responsibility for those action lies; and
 - Provide periodic reports to Homes England and BCC with respect to the progress of works.
- 5.9.6. It is anticipated the production of the EMP (or inclusion of the EMP measures into the CEMP) will be secured by condition.

The ECOW or otherwise an experienced botanist should assess planting schemes before the designs are finalised to ensure appropriateness of species in respect to ecological objectives for habitat types, habitat conditions and species requirements, particular invertebrates.

General Habitat Protection Measures

- 5.9.7. An ecological mitigation and protection management plan (EMP) will be produced to detail measures to protect wildlife and their habitats prior to and during construction. This will either be a standalone document, or otherwise will be incorporated into the Construction Environmental Management Plan (CEMP).

- 5.9.8. Species specific precautionary working measures to protect wildlife are discussed in subsequent sections (paragraphs 5.45 to 5.81). The following paragraphs outline precautionary working measures of relevance to habitat protection.
- 5.9.9. Measures will be detailed within the EMP or CEMP to avoid pollution incidents which may indirectly affect terrestrial or aquatic habitats. These measures should include, but may not be limited to, the following:
- Arrive at the site with clean footwear;
 - Ensure footwear is visually clean from soil and debris before leaving the site;
 - Ensure vehicles are kept clean. Remove any accumulated mud before leaving the site using a stiff-haired brush. Cleaning should be carried out over a root barrier membrane or hard surface that can contain and collect any contaminated material that has been washed off the vehicle;
 - Make use of facilities on site to clean footwear and equipment;
 - Keep vehicles to established tracks and park vehicles on hardstanding;
 - Any works carried out by contractors should be accompanied by a Risk Assessment Method Statement (RAMS). The RAMS should detail appropriate biosecurity measures to be observed during the duration of the works and outline the scope of the works and any ongoing monitoring/works required;
 - Refuelling stations for any powered equipment will be located more than 15m from any off-site aquatic habitat (to the south, within Brislington Meadows SNCI) or any completed onsite aquatic habitat (e.g., within sustainable drainage designs) to avoid run-off of pollutants into these features;
 - Fuel, oil and chemical storage will be sited on an impervious base within a bund and secured. The base and bund will be impermeable to the material stored and of adequate capacity;
 - All powered equipment operated within 15m of any off-site watercourse (to the south, within Brislington Meadows SNCI) or new aquatic or wetland habitat created within the site will use biodegradable chain oil;
 - Any fuel spillages within the site or within close proximity of the site will be reported to the site environmental manager;
 - Water containing silt will not be pumped or allowed to flow into any off-site watercourse (to the south, within Brislington Meadows SNCI) or any other valued terrestrial habitat;
 - Where possible, water will be prevented from entering excavations.
- 5.9.10. Dust management measures will be implemented during construction, including monitoring. Management measures will be set out within the CEMP.
- 5.9.11. Tree protection measures will be implemented in accordance with British Standards BS5837:2012.
- Protected species
- 5.9.12. If any protected species are encountered onsite, all works should discontinue and the appropriate contact and enquires made in accordance with appropriate guidance.

- 5.9.13. Demolition and construction work will be undertaken in compliance with ecological mitigation requirements set out in the Ecological Assessment accompanying the planning application (Ref: 7507.20.066), and any relevant planning conditions as appropriate. This may include Reasonable Avoidance Measures or inspections by an Ecological Clerk of Works. The Principal Contractor will engage with the Ecological Clerk of Works on appointment to confirm specific ecological requirements relevant to the Site.
- 5.9.14. Daily inspections will be undertaken to ensure that animals are not trapped in excavations etc. If found, the advice/assistance from a Suitably Qualified Ecologist and/or the RSPCA will be sought. Where encountered, reptiles and mammals should be removed by a Suitably Qualified Ecologist and relocated away from the working areas to suitable habitats.
- 5.9.15. All deep excavations are to be ramped and pipework capped during the hours of darkness to minimise mammals becoming trapped within the Site. Deep excavations will also be covered over at the end of the working day where possible. A member of staff should check the Site at the end of each working day to ensure that these provisions have been made.
- 5.9.16. Initial site briefings and tool box talks will be undertaken by a Suitably Qualified Ecologist to notify staff of any protected species onsite and mitigation to be followed. The talks will include identification, legal protection and safe working practices to be adhered to.

Reptiles and Amphibians

- 5.9.17. Construction activities will put slow worms at risk of killing and injury and therefore need to be removed from the construction footprint prior to works commencing. Slow worms excluded from the construction footprint would require suitable habitats to sustain the population until such time recolonisation into the new landscape is possible.
- 5.9.18. Preferably, slow worms will be retained on site if phasing of construction enables sufficient retained habitat to provide for the population at appropriate carrying capacity.
- 5.9.19. In the event that sufficient retained habitat capable of supporting the retained population in situ is unlikely to be available throughout the construction period, an offsite translocation scheme would be required. A suitable receptor site would be identified, with any habitat and reptile surveys completed as necessary to confirm suitability. As this is a legal compliance matter, these measures will be set out in a method statement.
- 5.9.20. A slow worm mitigation and management method statement will be produced to inform any future RMA.
- 5.9.21. Measures to address protection of slow worms are anticipated to be appropriate to protect any terrestrial amphibians that may be presented within the site.

Breeding Birds

- 5.9.22. Vegetation clearance in advance of development must be planned to avoid the nesting bird season (March to August inclusive).
- 5.9.23. Ideally, subject to build programmes and phasing, vegetation removal should be implemented in sequential winter periods in a staged manner that lessens the impact of habitat losses. Advanced planting should be implemented where possible to further reduce this effect. Planting should generally be planned for the earliest appropriate season within development areas as soon as

infrastructure allows i.e., planting should not be left as a last measure but should be integrated into the new build as soon as possible with appropriate monitoring and aftercare.

5.9.24. Vegetation clearance will be undertaken outside the recognised bird breeding season (March to August inclusive). Where vegetation clearance cannot take place outside this period, the vegetation must be subject to a nesting bird check prior to works commencing:

- The nesting feature will be checked by a suitability qualified ecologist no more than 24 hours prior to any clearance works;
- If nests are identified, works must cease in that area and an appropriate buffer zone established around the nest until the young have fledged. The extent of the exclusion zone will depend upon the bird species present and will be advised by the ecologist. This will require monitoring of the active nest by an ecologist who will advise when works within the buffer zone can proceed;
- If no active bird nests are found, vegetation clearance within the affected area must take place within 24 hours of completion of the nesting bird check. This will ensure that no bird nests are built within the intervening period between the nesting bird check and vegetation removal. If works are not completed within the 24 hour period, repeat nest checks will be required following the above protocol.

5.9.25. The floors of the drainage basins should be designed with a varied topography, creating hummocks and pools that will function as a larger draw-down zone that will retain areas of standing water for longer periods. This will provide water sources for birds, provide sources of nesting material for some species and also will attract invertebrates which will create additional forage resources.

Invertebrates

5.9.26. To address the effects of habitat loss for invertebrates, the following recommendations are made:

- As the amount of habitat lost under the proposals is so considerable, biodiversity off-setting should form a major part of the mitigation package.
- Retain hedgerows and mature trees as far as is possible within the site and leave a margin of 3m minimum, which should be mown annually with the cut grass removed.
- The impacts of artificial light on invertebrates can be reduced by minimising lighting within the development, minimising the number and wattage of bulbs, avoiding lights with a high UV component, not allowing light to be emitted at angles greater than 70°, and use of time switches to introduce lighting curfews, as well as designating dark sky areas where no lighting is included.
- The provision of brown roofs on buildings to help compensate for habitat loss. Design should follow that of Buglife: https://cdn.buglife.org.uk/2019/07/Creating-Green-Roofs-for-Invertebrates_Best-practice-guidance.pdf.

5.9.27. A mitigation method statement, including landscaping details confirming numbers, models, installation methods and locations of the above measures will be produced to inform any Reserved Matters application. It is anticipated this will be secured by condition.

Badgers and mammals

- 5.9.28. A mitigation and management method statement will be produced that identifies measures to protect badgers and other mammals, including hedgehogs, during construction. This method statement will be produced to inform any future Reserved Matters application.
- 5.9.29. During construction, trenches and other excavations will be covered at the end of each working day, or they will include a means of escape for any animal falling in. This will comprise secured wooden boards or an earth ramp no steeper than a 40° angle. Excavations will be checked at the end of each working day to ensure either excavations are covered, or that this provision is made for animals to escape. Excavations will be checked each morning to ensure no wildlife has become trapped within.
- 5.9.30. Any vertical step changes within the site (retaining walls) that represent a significant barrier to hedgehog movements from one area of the site to another should ideally have wildlife ramps or other means of safe wildlife access integrated into their design. Preferably, all retaining walls, certainly those within/facing public realm, should be designed as living walls to provide wildlife cover. This would also offer additional forage resources for invertebrates and, potentially, additional nesting resources for birds. Living walls may be created either as a living façade or by planting climbers and other appropriate spreading vegetation at the base of the wall.

Bats

- 5.9.31. All trees within the site confirmed to require removal at the detailed design stage will be subject to repeat inspection by a licensed bat ecologist to determine suitability for roosting bats.
- 5.9.32. Prior to removal of trees identified pre-construction to possess PRF and for which removal may be unavoidable, the tree will be inspected by a licensed bat ecologist. An appropriate felling strategy will be proposed according to the findings of the inspection. During the felling process, any sections of the tree with PRF should be carefully lowered to the ground using ropes. The section of the tree should be laid on the ground with the potential roost feature facing upwards for at least 24 hours, to give chance for any bats that may have remained undiscovered by the PRF inspection to safely vacate the tree. In the unlikely event a bat roost is confirmed by the inspection and alternative measures to retain the tree in situ remain unavailable, a licence from Natural England would be obtained to permit removal of the tree supporting the bat roost.
- 5.9.33. Any pruning or other tree works with potential to disturb or remove PRF on retained trees will be subject to these same measures described above. Cutting through PRFs should be avoided during the pruning process.
- 5.9.34. For each tree to be removed and which possesses PRF, three bat boxes will be installed onto suitable retained trees prior to tree felling commencing. The three bat boxes will be installed onto one or at most two trees, at least 3m above ground and facing different aspects (south-west, south-east and north). The models of the bat boxes will be suitable for pipistrelle bats, natterer's or Daubenton's bats and noctule or serotine bats. The same model should not be sited with the same orientation, in the event multiple trees are selected for bat box installation.
- 5.9.35. Light mitigation measures will be required within the new development. Details of such measures will be set out in a Lighting Mitigation Strategy to inform any future Reserved Matters application. This is anticipated to be secured by condition.

Protected Plants

- 5.9.36. A method statement to identify measures to be implemented to minimise the loss of bluebells within the site will be produced to inform any future Reserved Matters application.
- 5.9.37. The long-term management plan to be produced for the site will ensure that grassland, woodland and hedgerow habitats supporting bluebells are managed appropriately to protect and maintain the integrity of the population.

Non-Native Invasive Plants

- 5.9.38. Monitoring and treatment of invasive flora at the site will be ongoing in accordance with best practice as part of site maintenance operations. Subject to condition and extent at the time a planning application is to be made, an invasive species method statement will be produced that will detail further appropriate control or removal measures to be taken forward during development of the site.

Habitats

- 5.9.39. All areas of habitat outside of the working the working area are to be retained and protected by Heras fencing. No works or machinery are allowed within such areas at any time, unless agreed with the relevant authorities.
- 5.9.40. No materials or plant are to be stored, rubbish dumped, fires lit or buildings erected within the fencing area and no changes in ground level are to be made within the spread of retained trees without prior agreement from BCC.
- 5.9.41. Habitat loss within the SNCI during the drainage connection will be avoided by the use of underground construction methods and by lifting and replacing turfs within the small-scale pit excavations required to connect the drain to the existing network. The method statement should include details for turf recovery, storage and maintenance during works.
- 5.9.42. Habitat loss within the SNCI will be minimised by varying the width (or line) of the pedestrian part of the upgraded route. Scrub to be lost is of poor condition and contains a number of undesirable species. Landscaping in association with these works provides substantial opportunity for enhancement by increasing species diversity, improving scrub structure, establishing a ground flora layer and removing undesirable species.
- 5.9.43. The following measures will be implemented to avoid pollution incidents, which may indirectly affect terrestrial or aquatic habitats. These measures should include, but may not be limited to, the following:
- Arrive at the site with clean footwear;
 - Ensure footwear is visually clean from soil and debris before leaving the site;
 - Ensure vehicles are kept clean. Remove any accumulated mud before leaving the site using a stiff-haired brush. Cleaning should be carried out over a root barrier membrane or hard surface that can contain and collect any contaminated material that has been washed off the vehicle;
 - Make use of facilities on site to clean footwear and equipment;
 - Keep vehicles to established tracks and park vehicles on hardstanding;

- Any works carried out by contractors should be accompanied by a Risk Assessment Method Statement (RAMS). The RAMS should detail appropriate biosecurity measures to be observed during the duration of the works and outline the scope of the works and any ongoing monitoring/works required;
- Refuelling stations for any powered equipment will be located more than 15m from any off-site aquatic habitat (to the south, within Brislington Meadows SNCI) or any completed onsite aquatic habitat (e.g. within sustainable drainage designs) to avoid run-off of pollutants into these features;
- Fuel, oil and chemical storage will be sited on an impervious base within a bund and secured. The base and bund will be impermeable to the material stored and of adequate capacity;
- All powered equipment operated within 15m of any off-site watercourse (to the south, within Brislington Meadows SNCI) or new aquatic or wetland habitat created within the site will use biodegradable chain oil;
- Any fuel spillages within the site or within close proximity of the site will be reported to the site environmental manager;
- Water containing silt will not be pumped or allowed to flow into any off-site watercourse (to the south, within Brislington Meadows SNCI) or any other valued terrestrial habitat;
- Where possible, water will be prevented from entering excavations.

Trees

- 5.9.44. Appropriate tree protection measures will be implemented for all retained trees, in accordance with BS5837:2012 - *Trees in Relation to Design, Demolition and Construction – Recommendations*. These measures, including Root Protection Areas (RPAs), will minimise incidental damage and disturbance to the habitats and the species they support.
- 5.9.45. No trees shall be lopped, felled or have their Root Protection Area encroached upon or protective fencing moved or be otherwise interfered with without prior agreement of the Project Arboriculturist and written approval following discussions with the local planning authorities Tree Officer.
- 5.9.46. All trees to be retained shall be protected. Tree Protection Fencing will be installed prior to commencement of site clearance or construction in compliance with BS 5837 (2012) – *Trees in Relation to Design, Demolition and Construction – Recommendations* and in compliance with the relevant planning conditions.
- 5.9.47. Soil cells will be used for newly planted trees in hard landscape areas to ensure that the soil capacities (approximately 12 m³ per tree) are achieved and not compacted. Underground guys and anchors are to be used to support all newly planted trees.
- 5.9.48. Any impact to veteran trees on site must be avoided. Detailed design stages must confirm layout and construction methods avoid impacts upon veteran and category A trees.
- 5.9.49. A detailed Arboricultural Impact Assessment (AIA) will be required at the detailed design stage to confirm appropriate avoidance and tree protection measures.

Hedgerow and Scrub

- 5.9.50. Retained hedgerows and new hedgerows planted in ecological corridors should be retained and managed with a minimum 2m buffer to the hedgerow bases within which no development should occur.
- 5.9.51. These hedgerow buffers should comprise existing grassland and scrub habitats. Where compatible with adjacent land uses hedgerow buffers should be enhanced with wildflower and/or scrub planting and incorporation of dead wood features, butterfly/bee banks or other wildlife refuge feature to provide foraging opportunities for invertebrates and in turn provides food for bats, birds and other wildlife.

Grassland

- 5.9.52. Landscaping in and around the drainage basins should avoid the use of nutrient rich topsoils and should avoid the use of fertilisers or biocides.
- 5.9.53. During establishment, controls of run-off from bare soils will be required. Base of slope drains should be incorporated to intercept run-off from the slopes.

5.10. Archaeology and Cultural Heritage

Introduction

- 5.10.1. This section identifies the construction and environmental management measures to be implemented to avoid and reduce effects on the Archaeology and Cultural Heritage resource during the construction stage.
- 5.10.2. Groundworks including infrastructure, landscaping and flood management have potential to have a direct impact on known and as yet unknown below ground archaeology.
- 5.10.3. Groundworks including infrastructure, landscaping and flood management have potential to have a direct impact on below ground archaeology.
- 5.10.4. Construction methods of the Proposed Development also have the potential to indirectly impact built heritage through the effects of dust and noise. Therefore general and specific heritage measures should be employed in order to mitigate potential effects on heritage assets from all construction activity (permanent and temporary); including but not limited to site preparation, access routes, site compounds, ground improvement and excavation works, foundations, utilities and drainage works.

Construction and Environmental Management Measures

- 5.10.5. The following general historic environment management measures will be implemented during the construction of the Proposed Development:
- Locations and descriptions of all known heritage assets within and adjacent to construction works is communicated to project teams and will be made available in the form of mapping distributed to the relevant contractors, including restrictions to construction methods to protect heritage assets, where these have been identified;
 - Due to the archaeological potential reflected in the historic environment baseline it is recommended that further evaluation work be carried out at the pre-determination stage in order to assess the below ground conditions within the proposed development site. This work might comprise geophysical survey or trial trench evaluation. The scope of any

such work should be confirmed in consultation with the Bristol City Council Principal Historic Environment Officer;

- It should be noted that geophysical surveying and evaluation trenching has been undertaken and is summarised in the Cotswold Archaeology Brislington Meadows, Archaeological Evaluation Report (ref. cotswold2-428967 dated February 2022) and the Wessex Archaeology Detailed Gradiometer Survey Report (ref 239880.03. November 2020. Any further archaeological works will be secured as a condition of a planning consent. The archaeological evaluation works have revealed a system of enclosures of indeterminate function, dating to the Roman period, focussed primarily in the south-western corner of the site. Finds included pottery sherds, iron nails and evidence for glassmaking including an assemblage of glass beads.
 - It is envisaged that further archaeological works will comprise an open area focussed on the main area of archaeological remains identified in the south west of the site. The final scope of works will be agreed following consultation with the local authority archaeological advisor.
- The scope of any archaeological works will be set out in a Written Scheme of Investigation (WSI) which will be approved by the local authority archaeological advisor prior to the works. The WSI will provide defined archaeological excavation areas with procedures for ground-breaking, and a methodology for find collections and the investigation and recording of any archaeological remains. Any variation from the methodology outlined in the WSI would need to be approved by the LPA archaeological advisor prior to implementation.
 - Provision of briefings and toolbox talks where necessary to highlight site specific heritage constraints and the procedures and measures to be followed;
 - Protective measures including barriers and exclusion zones to protect excavation areas, heritage assets and the significant hedgerows within construction areas. The placement of barriers will be dependent on the potential for impact during the works;
 - Where the hedgerows considered important under Part II of the Hedgerow Regulation 1997 Act cannot be retained due to the proposed development, mitigation may be required by the local authority in the form of a preservation record by including photography, drawn section profiles of the hedge and recovery of artefacts;
 - Choice of location of compounds within the construction site layout, and the methodology for operation should be considered to reduce impact on heritage assets. If it is considered that compound works will impact on known or potential archaeological remains an appropriate form of mitigation such as excavation ahead of construction of watching brief during construction may be required by the local authority archaeological advisor;
 - Each item of plant used will comply with the noise limits referenced in the relevant European Commission Directive 2000/14/EC/United Kingdom Statutory Instrument (SI) 2001/1701 where available;
 - Any excavation equipment utilised for the purpose of archaeological excavation will be fitted with a toothless ditching bucket of an appropriate width for the task and monitored by a suitably qualified archaeologist

- Equipment will be well-maintained and will be used in the mode of operation that minimises noise, and will be shut down when not in use or throttled down to a minimum during waiting period;
- All materials will be handled in a manner that minimises noise.

Additional Provisions

- The Contractor will secure all sites from unauthorised access – which will reduce the likelihood of theft from or damage to any heritage assets;
- Should artefacts be located during the course of construction that are deemed by their material content or context to be treasure, as defined by the Treasure Act 1996, then all necessary measures to comply with the requirements of the Act and any project specific requirements will be implemented.

5.11. Population and Human Health

Introduction

- 5.11.1. This section identifies the construction and environmental management measures to be implemented to reduce and avoid effects on the local population during construction of the Proposed Development.

Construction and Environmental Management Measures

- 5.11.2. The Principal Contractor will be required to follow a voluntary code of professional conduct, demonstrating minimum standards for practices that affect the environment around construction sites, including:
- Considerate - consideration for residents, workers, pedestrians, visitors, neighbouring occupiers, businesses and highway users at all times and in a manner that will minimise disturbance. Special attention is to be shown to the needs of those who have difficulties with sight, hearing or mobility, those in wheelchairs, or pushing prams and pushchairs;
 - Quiet - Noise from works, machinery, workers, radios, music, vehicles and all other sources is to be kept to a minimum. There are to be no works that are audible at the nearest residential boundary outside permitted hours of work, unless prior agreement has been reached with BCC
 - Clean - Footways, carriageways, public areas adjacent to the site, as well as all visible aspects of site activities such as hoardings, scaffolding and warning lights, are to be kept clean and in good order. Dust and smoke are to be kept to a minimum. Mud and spillage are to be cleaned off pavements, roads and public areas immediately;
 - Responsible - The contractor is to ensure that all employees, agents, sub- contractors, suppliers, drivers and others working on or near the site or activity maintain all aspects of the Code of Good Practice;
 - Tidy - Pride in the condition and appearance of the site or activity, adjacent highways and public areas is to be shown in every way, including the tidiness of temporary structures, materials, machinery and the constant removal of litter and rubbish;

- Safe - Projects, activities and vehicle movements are to be carried out with utmost care for safety of passers-by, adjacent neighbours and construction workers. All plant and machinery items are to be maintained in safe working order and the safety of structures is to be checked frequently; and
- ☐ Accountable - A contact board is to be clearly displayed by the project or activity giving names and telephone numbers of staff who can be contacted promptly and take immediate action in response to issues raised by residents, businesses and others.

5.12. Waste and Materials Management

- 5.12.1. The Principal Contractor will perform its Duty of Care to dispose of waste safely. It is an offence to handle or dispose of controlled waste without a waste management licence
- 5.12.2. The waste hierarchy will be adhered to throughout the demolition and construction works. The preferred option is to reduce waste, then re-use and finally recycle. If these three options are not viable then as a last resort waste will be disposed to landfill.
- 5.12.3. Any soil arisings from the works, suitable for reuse on the Proposed Development will be retained and stockpiled where possible to incorporate such materials into the construction process.
- 5.12.4. A plan (site waste management strategy or other) will be prepared by the Principal Contractor to dispose of the waste that is generated as a result of the works and should document details about the transportation and management of waste within and outside the site. Hazardous waste must be documented and disposed of safely and in accordance with appropriate guidance.
- 5.12.5. Suppliers of raw materials for the proposed development will be committed to reducing surplus packaging associated with the supply of any raw materials.
- 5.12.6. Carriageways and footpaths on and in the vicinity of the Site are to be kept free of debris and litter.

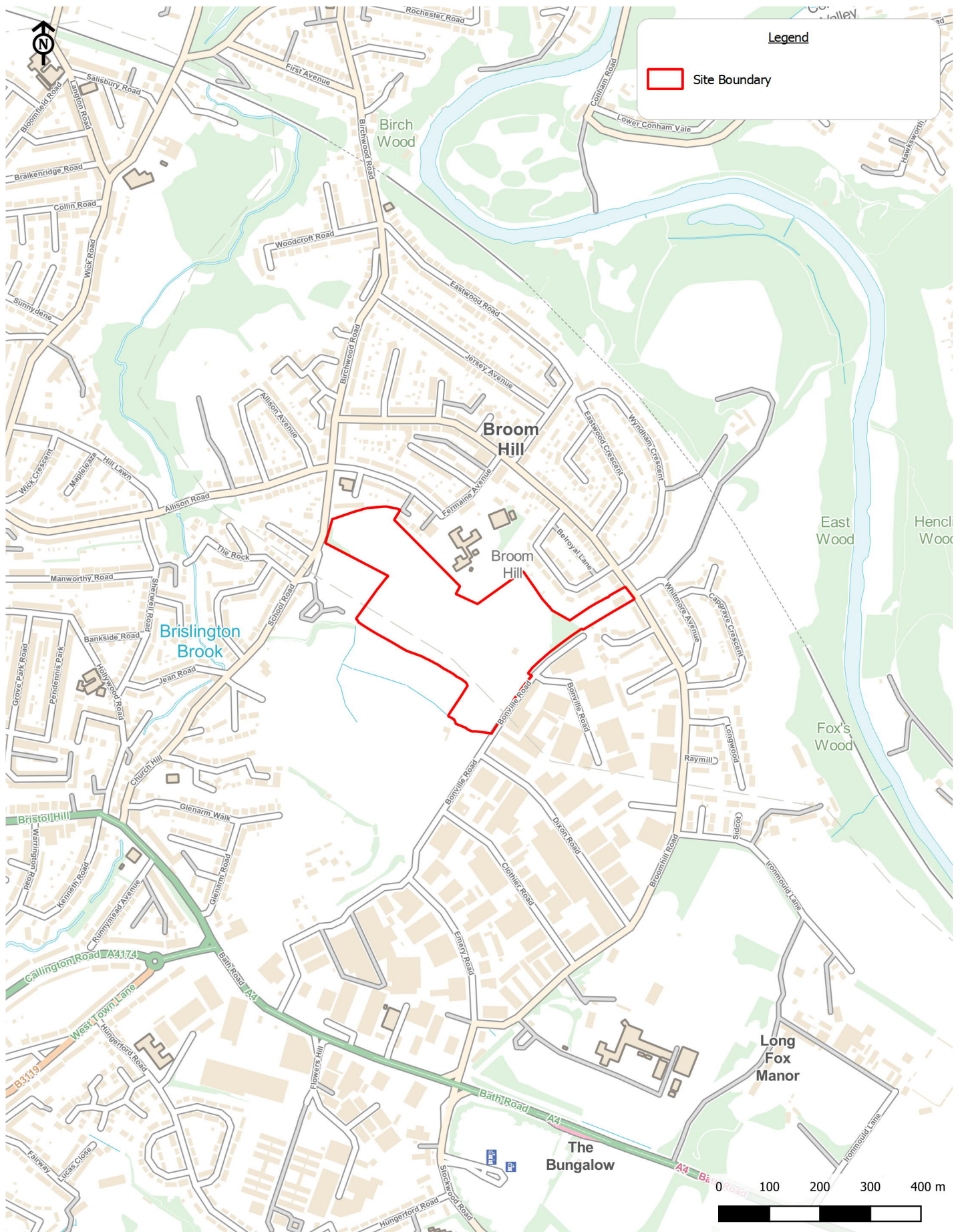
5.13. General Mitigation

- 5.13.1. The general mitigation and control measures that should be considered are noted below. These will be required to be included, supplemented and expanded upon in the Principle Contractor's submission for approval in relation to the relevant planning condition(s).
- The site will be securely fenced prior to the commencement of any works. The site hoarding will be a minimum of 1.8m in height and of such a standard so as to deter trespassers onto the site. Hoarding will be painted using a uniform colour that recedes into its surroundings with advertising and fly posters deterred.
 - The Contractor's compound, plant and materials, stockpiles and fuel will be located away from nearby sensitive receptors including topsoil, existing trees, hedgerows, grassland, watercourses and surface drains and the Contractor will provide measures to contain any possible spillage such as bunding.
 - Fires will be strictly prohibited within the site.
 - Deviation from approved method statements will be permitted only with prior approval from the LPA, Principal Contractor and all other relevant parties.
 - Lighting usage will be minimised and switched off when not in use. Where possible works will be restricted to daylight hours to avoid the potential for disturbance. Security and site lighting

which required on a temporary or permanent basis through the night for security of safety reasons will be of a type with downward directional luminaries, low lighting columns (4-5m high) and low wattage luminaries to reduce light spillage. Light fittings will comply with the specifications and the requirements of CIE 150 (2003) and CIE 126 (1997).

The construction area adjacent to footpaths or roads will be lit and clearly defined at all times during the operational hours of lighting to ensure the safety of motorists and pedestrians.

Appendix A: Site Location



Brislington Meadows, Bristol

Client: Bristol City Council

Figure 1:
Site Location Plan

Scale: 1:10000@A4
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CampbellReith
consulting engineers

LONDON 020 7340 1700 ☐ MANCHESTER 0161 819 3060
REDHILL 01737 784 500 ☐ BIRMINGHAM 01675 467 484
BRISTOL 0117 916 1066 ☒ DUBAI 00 971 4453 4735
www.campbellreith.com

Appendix B: Illustrative Masterplan and Parameter Plans

\\LDA\UK-DATA\PROJECTS\7456_BRISLINGTON_MEADOWS\CAD\DRAWINGS\7456_01TY_CAPACITY_TESTING.DWG

LEGEND

- Site boundary
- 2 bed
- 3 bed
- 4 bed
- Apartments

REV. DESCRIPTION APP. DATE

LD&A DESIGN

PROJECT TITLE
7456 Brislington Meadows

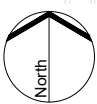
DRAWING TITLE
Layout Plan

ISSUED BY	Bristol	T: 0117 203 3628
DATE	17 Nov 2021	DRAWN RH
SCALE@A1	1:1,000	CHECKED RF
STATUS	Draft	APPROVED RF

DWG. NO 7456_01TZ

No dimensions are to be scaled from this drawing.
All dimensions are to be checked on site.
Area measurements for indicative purposes only.

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Sources Ordnance Survey



Appendix C: Construction Programme

[to be inserted by the Principal Contractor]

Appendix D: Construction Traffic Management Plan

[to be inserted by the Principal Contractor]

Appendix E: Environmental Mitigation and Control Measures

[to be inserted by the Principal Contractor]

London

15 Bermondsey Square
London
SE1 3UN

T: +44 (0)20 7340 1700
E: london@campbellreith.com

Birmingham

Chantry House
High Street, Coleshill
Birmingham B46 3BP

T: +44 (0)1675 467 484
E: birmingham@campbellreith.com

Surrey

Raven House
29 Linkfield Lane, Redhill
Surrey RH1 1SS

T: +44 (0)1737 784 500
E: surrey@campbellreith.com

Manchester

No. 1 Marsden Street
Manchester
M2 1HW

T: +44 (0)161 819 3060
E: manchester@campbellreith.com

Bristol

Unit 5.03,
HERE,
470 Bath Road,
Bristol BS4 3AP

T: +44 (0)117 916 1066
E: bristol@campbellreith.com

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A list of Members is available at our Registered Office at: 15 Bermondsey Square, London, SE1 3UN
VAT No 974 8892 43