

5 DEMOLITION AND CONSTRUCTION ENVIRONMENTAL MANAGEMENT

Introduction

- 5.1 This chapter sets out the demolition and construction works of the proposed development and the key activities that would be undertaken during the works. This chapter also describes the management controls that form part of the development proposals that would be implemented to avoid, minimise and where not possible, mitigate the magnitude of potential environmental impacts.
- 5.2 Impacts arising during the construction and demolition processes are temporary, generally short-term and intermittent. Nevertheless, they can be sources of potentially significant effects on environmental resources and residential amenity.
- 5.3 It is not possible to predict in detail the specific environmental impacts and effects that may arise from the proposed development's demolition and construction works as detailed construction method statements and specifications have not yet been prepared and construction contractors not yet appointed. However, it is possible to establish the potential broad environmental impacts associated with the proposed development's demolition and construction works and to determine a framework for the management of these impacts to ensure that significant adverse effects are avoided. The framework would form the basis for a Construction Environmental Management Plan (CEMP), if required, to be implemented during the demolition and construction works. It is anticipated that the CEMP would be secured by means of an appropriately worded planning condition.
- 5.4 The CEMP would be prepared in accordance with standard best practice and regulatory requirements. The CEMP would include a Construction Traffic Management Plan (CTMP), as well as a Site Waste Management Plan (SWMP).
- 5.5 More specifically, the CEMP would set out policies, legislative requirements, thresholds/limits, procedures, roles and responsibilities relevant to the implementation of environmental and management controls throughout the duration of the works. The CEMP would be discussed and agreed with RBC in advance of works commencing on-site.
- 5.6 An outline of the anticipated environmental issues and necessary management controls that would be covered within the CEMP is provided within this chapter.
- 5.7 It is standard practice to allow the appointed Principal Contractor substantial input into documents such as the CEMP, CTMP and SWMP. However, at this stage of planning, contractors have not yet been appointed and detailed method statements have not yet been prepared. Nevertheless, the likely content of such documents can be reasonably predicted. As such it is considered that the identification and assessment of likely environmental effects is still achievable in the ES.
- 5.8 It is important to note that while this chapter does not assess the magnitude of potential impacts, nor the significance of likely effects during the demolition and construction works, as this is dealt with in individual technical assessments within ES Volume 1 (Chapters 6 - 10) and ES Volume 2 (Chapters 1 - 2). Controls set out in this chapter have been considered as embedded mitigation within of each technical assessment.

Programme of Works

- 5.9 Given the outline nature of the application, a detailed development programme has not yet been prepared. To enable assessment of likely environmental effects within this ES, an indicative, but feasible, programme has been developed by the Applicant based on a number of assumptions. These assumptions have been informed by an understanding of current and future projected market conditions, technical considerations and professional experience, all of which are considered to be reliable.
- 5.10 The indicative development programme is shown in Table 5.1 and is based on the assumption that planning consent is secured, and demolition begins in Q2 2021. For the purposes of the EIA, the development works are anticipated to be delivered in four phases and undertaken over a 51-month period, with completion targeted for Q2 2025.
- 5.11 The demolition of the existing on-site buildings and construction of the new buildings would take place sequentially in overlapping phases from west to east across the application site. Phase 1 would involve the demolition of the existing TGI Fridays and construction of Plot A. Phases 2 and 3 would involve the demolition of the existing Mothercare, Aldi and Majestic Wine buildings and the construction of Plot B and C. Finally, Phase 4 would involve the demolition of the Range and the construction of Plot D.

Table 5.1: Indicative Development Programme

Phases	Duration (weeks)	Commencement Date	Completion Date
Phase 1			
Demolition of existing TGI Fridays	12	06/04/2021	30/06/2021
Construction of Plot A Substructure	8	01/07/2021	25/08/2021
Construction of Plot A Superstructure	20	09/08/2021	10/01/2022
Construction of Plot A Envelope	30	01/11/2021	16/06/2022
Fitout of Plot A	56	17/01/2022	03/03/2023
Phase 2			
Demolition of existing Mothercare, Aldi and Majestic Wine	12	11/10/2021	14/01/2022
Construction of Plot B Substructure	10	17/01/2022	25/03/2022
Construction of Plot B Superstructure	22	02/03/2022	08/08/2022
Construction of Plot B Envelope	32	27/05/2022	24/01/2023
Fitout of Plot B	66	01/08/2022	27/11/2023
Phase 3			
Construction of Plot C Substructure	10	01/08/2022	10/10/2022
Construction of Plot C Superstructure	22	15/09/2022	01/03/2023

Table 5.1: Indicative Development Programme			
Construction of Plot C Envelope	32	07/12/2022	08/08/2023
Fitout of Plot C	74	22/02/2023	19/08/2024
Phase 4			
Demolition of existing The Range	12	25/04/2023	19/07/2023
Construction of Plot D Substructure	8	20/07/2023	14/09/2023
Construction of Plot D Superstructure	20	29/08/2023	29/01/2024
Construction of Plot D Envelope	30	20/11/2023	04/07/2024
Fitout of Plot D	65	05/02/2024	29/05/2025

Description of Works

Background

- 5.12 The proposed development would comprise the demolition of the two existing on-site buildings and the construction of four new buildings across Plots A-D.
- 5.13 The outline sequencing of construction works is identified below:
- Establish site including hoarding installation, welfare and any tree protection;
 - Establish vibration and noise monitoring points;
 - Enabling works including isolation of existing utilities;
 - Asbestos removal following surveys within the existing buildings (where identified)
 - Soft strip followed by hard demolition followed by grading to car park existing surface;
 - Piling works;
 - Utilities and drainage installation;
 - Capping beam construction and ground floor slab;
 - Superstructure core construction;
 - Superstructure concrete frame and slabs;
 - Envelope works;
 - Roofing works;
 - External landscaping and retail shop fronts;
 - Internal fit out works commence as soon as areas are weather tight – temporary weathering scheme to be adopted to advance (every 5th floor);
 - Internal works ahead of permanent weathering;
 - Mechanical, electrical and plumbing (MEP) main plant installation and infrastructure to commence as soon areas are cleared and weatherproofed;
 - Testing and commissioning (this would be an on-going process); and
 - External works.

Enabling Works

- 5.14 The aim of the enabling works phases would be to establish the construction site.

¹ HMSO, 2012. Control of Asbestos Regulations 2012. HMSO.

- 5.15 The enabling works would include the following works:
- Undertaking appropriate pre-commencement surveys and investigations;
 - Establishment of construction compound;
 - Diversions and stopping up of existing utilities; and
 - Possession of the existing on-site buildings.
- 5.16 Prior to commencement of works, the following third parties would be contacted and notified, as appropriate:
- RBC (to make arrangements regarding the commencement of demolition works and provide notification regarding hoarding licences, Section 61 agreement);
 - Local resident liaison meetings;
 - Highway and byways agencies (meetings to discuss logistics);
 - Statutory utility companies (to make notifications regarding the location and termination of supplies into the application site and provision of necessary temporary supplies);
 - Police and Fire Brigade (to be notified);
 - Health and Safety Executive (HSE) (to be notified); and
 - Environmental Health Office (to be notified).
- 5.17 All necessary awards, boundary agreement and permissions would be arranged and be put in place by the Applicant, before works commence on-site.

Pre-Commencement Surveys, Investigations, Consents and Licences

- 5.18 Prior to the commencement of the works, it is anticipated that the following investigations and activities would be required and secured by means of an appropriately worded planning condition:
- Asbestos Surveys of the buildings to be demolished;
 - Geotechnical Investigations;
 - Site Investigations (SI) works;
 - CAT Scan of existing services; and
 - Preparation of tender documents and method statements.
- 5.19 There would be a draining down and removal from site of pollutants/contaminants such as refrigeration gases, diesel fuel and engine oils, if any. In the event that asbestos is found within existing buildings, controlled and verified removal of the asbestos and any other hazardous material from such buildings would be undertaken.
- 5.20 Controlled and verified removal of asbestos or hazardous materials would be taken to an approved reception/disposal facility and in accordance with Control of Asbestos Regulations 2012¹, the Construction (Design and Management) Regulations 2015² and under a licence from the Health and Safety Executive (HSE).
- 5.21 Geotechnical and SI works would be required to inform the detailed structural design and to confirm ground conditions at the application site.
- 5.22 A Preliminary Risk Assessment has been undertaken of the application site and indicates the potential for contamination to exist (see Volume 3: Technical Appendix 2.3). In the event that contamination is identified following SI works, it would be dealt with by means of an appropriate Remediation Strategy to be secured by means of an appropriately worded planning condition.

² HMSO, 2015. Construction (Design and Management) Regulations 2015. HMSO.

Diversions and Existing Services

- 5.23 In addition to the above, the locations of existing apparatus, curtailment locations, diversions and de-activation of existing electricity transformers at the application site would be confirmed with service companies. The curtailment of existing domestic services would be arranged, as well as, the cut-off of existing private drainage within the boundary of the application site. Additionally, the protection and maintenance of the existing services would be carried out through liaison with the appropriate service companies to ensure continuity of supply.

Site Offices/Welfare Facilities and General Site Access

- 5.24 Hoarding would be erected around the application site perimeter or particular phase, as appropriate. The design of the hoarding would be agreed with RBC in advance. However, it is anticipated that the hoarding would comprise a 2.4 m high solid timber fence. The Principal Contractor would be required to maintain the hoarding to provide full security and safety for the general public. The hoarding would provide visual and acoustic screening of the application site from road level, as well as ensure the safety of pedestrians and vehicles.
- 5.25 The location of site accommodation and welfare facilities, such as drying rooms and toilets, would be agreed with RBC prior to commencement of works.
- 5.26 Separate access gates would be provided for pedestrian and vehicular access into the application site. Suitable security measures would be installed and operated, including 24 hours security as appropriate.

Temporary Works

- 5.27 Some temporary works would be necessary during the course of the proposed development demolition and construction stage, in order to protect the public and ensure the structural integrity of the construction works as they progress. These would range from simple propping of hoardings, to scaffold protection fans and crash decks for public protection, and temporary propping of temporary structures such as loading platforms. In all cases, these works would comply with legislation and would be designed and managed by the Principal Contractor who is obliged by law to employ a Temporary Works Co-ordinator.
- 5.28 Opening up works, where necessary, would be carried out to confirm assumptions made of the structure during the tendering process and to confirm the appropriateness of the demolition methodology. The demolition contractor would also utilise the existing record and archive drawings to produce temporary works solutions for back propping to the demolition floors and crane location requirements.

Demolition Works

- 5.29 The sequence of demolition allows the retail park to continue partial operations, as opposed to a wholesale decant.
- 5.30 Prior to the commencement of the hard demolition, a thorough soft strip of the existing buildings would take place. The soft strip would commence with the removal of all potential asbestos identified through the demolition and refurbishment asbestos survey, to be undertaken by licenced contractors.
- 5.31 The buildings would be demolished by means of a pneumatic scissors and concrete breaker. Materials suitable for crushing would be crushed, graded and stockpiled with some re-use within the application site. The remaining that cannot be recycled on-site is likely to be transferred to suitable tipper or waste haulage vehicles and removed off-site.

Construction Works

- 5.32 The construction works described in the following sections have been developed by the Client's appointed construction advisor, Mace, and describe the envisaged method of construction for the proposed development based on what is currently known about the application site and the development proposals, as well as standard industry practice.

Piling and Substructure

- 5.33 Following the removal of the existing car park and structures, the installation of the piling mat at ground floor level would occur before the piling works commence. Tests would be undertaken to confirm the bearing capacity of the mat before the rigs are delivered. Guide walls would be formed prior to the piling in order to correctly align the piles.
- 5.34 It is envisaged around two piling rigs would install the foundations end bearing piles to support the structure. Continuous Flight Auger (CFA) or Rotary rigs would be utilised depending on the ground investigation survey and interpretive report. CFA piling would be the preferred method as this is less intrusive to receptors.
- 5.35 The capping beam works would progress in line with the programmed work sequence to maintain suitable spatial separation between the activities. Excavators would remove the pile mat to capping beam formation level, prior to steel being fixed, shutters positioned, and concrete placed.
- 5.36 On completion of the capping beam, the reduced dig would commence to allow the below ground rain water attenuation tanks to be installed, followed by the ground floor slab. The subsequent vertical structures and slabs would be cast leading to the completion of the new structure.
- 5.37 During the substructure activities, excavation and installation of utilities provisions would be carried out.
- 5.38 Once sufficient substructure is in place, the tower crane can be installed which would be used to complete the ground floor slab and ready to start the superstructure.

Building Cores

- 5.39 Following the completion of the ground floor slab, the construction of the concrete core would commence.

Superstructure

- 5.40 Once the core is fully complete, or even partially complete, the columns and new floor plates would commence.
- 5.41 Static concrete pumps (located at ground level) would be used to place the concrete floor slab. The tower cranes would be used to service the superstructure works and cast the vertical concrete encasement elements and load out the decking, shutters and reinforcement.
- 5.42 The above follows a traditional form of construction. Subject to the detailed design, a prefabricated modular system could be used which would reduce the time on-site and number of deliveries to the application site.
- 5.43 External hoists would be installed to the new floor levels to facilitate the early vertical distribution of materials and removal of waste. Hoists would be located in strategic locations where materials can be easily offloaded.
- 5.44 The application site crane strategy would be prepared in accordance with the appropriate Aviation, Highways and Rail obligations. Possible impacts of the crane strategy, should tower cranes be used, might include road closures which would normally be necessary for the erection and dismantling of the

cranes. The timing and requirements would be discussed and agreed with the local authority and highways. The crane strategy would dictate the routing of deliveries to the crane pick points.

- 5.45 For the purposes of the EIA, it is anticipated that concrete would be delivered via ready mix concrete trucks from surrounding batching plants.
- 5.46 Modern Methods of Construction (MMC) would be considered in the construction of the proposed development, subject to commercial and technical viability.

Building Envelope

- 5.47 With the frame complete, the façade installation can commence. This would start immediately once sufficient structure allows clearance above the work zone. The cladding would be installed with the tower crane, working bottom up.
- 5.48 Scaffolding would not be required if the cladding is prefabricated and installed from the floor slabs.
- 5.49 After a suitable curing period of the new roof slab to the buildings, roof waterproofing and finishes would commence. This would complete the envelope works and so achieve a water tight structure.
- 5.50 On completion of the façade works, each level would be inspected and signed off prior to any following trades commencing.

Fit Out

- 5.51 Fit out would commence following the installation of the external envelope to each floor. (Approximately three floors below the current level of envelope installation). Temporary weatherproofing measures would be installed on every 5th floor. The finishes would be loaded out via the external hoists serving each tower. Due to the floor layout, a 'hoist apartment' on each floor would be created. This apartment would be the last to be fitted out on each floor following the removal of the external hoist and the bringing into (beneficial) use of the permanent lifts.
- 5.52 The installation sequence to each apartment is currently anticipated to be as follows (although potentially subject to change):
- 1st fix partition walls;
 - 1st fix services to walls and ceilings;
 - 2nd fix partitioning and ceiling installation;
 - Sub floor installation;
 - Kitchen and bathroom fit out (possibly pre-fabricated);
 - Decoration;
 - Final fix of components, white goods, sockets, switches, blinds, signage and floor finishes; and
 - Commission and clean.
- 5.53 Service risers within the common areas on each of the floors would be completed in advance of the individual apartments. Certain lift installations would be prioritised and completed early to allow the external hoist to be disconnected from individual floors and the remaining 'hoist apartment' fitted out. Common area finishes would be left as late as possible, to reduce the risk of damage. Finishes below ground would commence as soon as the structural works are completed.

Open Space, Public Realm and Road Works

Open Space and Public Realm

- 5.54 In respect of the newly introduced open space network and pedestrian friendly public realm, the following works would be undertaken on-site:
- Site levelling;
 - Introduction of appropriate paved materials; and
 - Provision of play equipment and street furniture, including litter bins, benches, signage and lighting.

Roads Works and Access Arrangements

- 5.55 Construction of access roads, internal streets and surface parking would be undertaken. The primary access road would be delivered in advance of this. Works would also include layering of road fill material, levelling, compaction and finishing off with specified material such as bitumen tarmac and paving blocks.

Landscaping Works

- 5.56 Installation of the proposed soft landscaping would only commence upon completion of associated construction and fit out works to minimise potential plant material loss. Clean topsoil would be imported to fill and shape lawn and landscaped areas, with subsoil used on the strategic areas of open space.

Utilities and Service Installation

Electricity

- 5.57 The main electrical point of connection (POC) to each plot would be from proposed new SSE (Scottish and Southern Electricity Network) substations located around the application site. These connections would be in addition to the existing supplies which would be retained to provide temporary power during construction.

Gas

- 5.58 Gas is not proposed for the proposed development.

Water

- 5.59 The point of connection for the water supply would be located along Vastern Road, taken from the existing Thames Water owned water main.
- 5.60 The water demand of the proposed development would be calculated according to the size and number of the proposed residential units. Upgrade work may be required for the proposed development to the existing local mains. This would be subject to detailed development.
- 5.61 It is proposed to discharge foul water flows to the Thames Water foul sewer which currently serves the application site and is located along Trooper Potts Way. Thames Water have confirmed that modelling and potential upgrade works would be required to ensure the receiving sewer would have capacity to accommodate the increased foul flows.

Demolition and Construction and Contracting Strategy

- 5.62 The Principal Contractor would be responsible for a number of sub-contractors (piling, concrete, cladding etc.) and ultimately for the environmental management during the construction process.
- 5.63 Stringent contractual procedural and performance obligations would be placed on sub-contractors under a clear management structure.

Demolition and Construction Employment

- 5.64 The construction of the proposed development would generate employment; a proportion of which is expected to be generated on-site, with the rest being generated elsewhere in the construction supply chain, possibly including modular unit production facilities.
- 5.65 The construction works would have local benefits through construction training and targeting the local labour force. This would be achieved through employment and training initiatives. Full details of construction employment are provided in ES Chapter 6: Socio-Economics.

Hours of Work

- 5.66 The hours of work would adhere to the procedures set out in the approved CEMP. The standard hours of working which would include hours of delivery, would be the following, unless otherwise agreed with the RBC in advance.
- 5.67 Working hours would be agreed with the RBC but are expected to be:
- 08:00 to 18:00 hours Monday to Friday;
 - 08:00 to 13:00 hours Saturday; and
 - No working on Sundays or Bank Holidays.
- 5.68 In order to maintain the above working hours, the Principal Contractor may require, at certain times, a period of up to one hour before and after normal working hours, to undertake start and close down activities (this would not include works that are likely to exceed agreed maximum construction works noise levels).
- 5.69 Although working outside the stated hours would not normally be undertaken, it is possible that some deliveries may take place at night, and that certain works may have to be done during this period for safety or other considerations. If required, such works would be subject to reasonable notice and either securing the required licenses or obtaining prior agreement with RBC, who may impose certain restrictions.
- 5.70 All work which is intended outside of these hours, excluding emergencies, would be subject to prior agreement, and/or reasonable notice to RBC in terms of Section 61 (S61) of the Control of Pollution Act 1974.

Security

- 5.71 The perimeter of the construction compound would be secured with the use of hoarding, as shown in Figure 5.1.



Figure 5.1: Example Site Hoarding

- 5.72 Only authorised persons would be allowed on the application site. A gate marshal would be employed to control access/egress from the key application site entrances, as shown in Figure 5.2 The contact number for out-of-hours security would be visibly marked at application site entrances.



Figure 5.2: Example of Site Control Access Points

Health and Safety

- 5.73 All works on-site would be undertaken in accordance with the provisions of the Construction (Design and Management) (CDM) Regulations 2015³. A CDM Principal Designer would be appointed by the Applicant

³ Construction (Design and Management) Regulations 2015. Guidance on Regulations. Health and Safety Executive.

- and would work with the Project Team and Principal Contractor to ensure compliance with these Regulations.
- 5.74 All method statements would incorporate regulatory safety matters and a Health and Safety File would be maintained on-site for inspection by the HSE, RBC and others as appropriate.

Emergency Procedures

- 5.75 Procedures would be set in place to respond to any emergency incidents which may occur on-site. A site Pollution Incident Response Plan would be developed by the Principal Contractor prior to any construction works commencing on-site.
- 5.76 All appropriate staff would be trained and made aware of the spill contingency plan set in place. In the event of any incident the Applicant would be notified. Additionally, the Environment Agency and any other interested bodies would be notified as required.
- 5.77 Details on the emergency procedures would be provided in the Construction Phase Plan.

Communication
Community Liaison Manager

- 5.78 The Principal Contactor’s site managers would be responsible for fulfilling the role of community liaison manager. The community liaison manager’s responsibilities would comprise the following:
- Recording and responding to enquiries or complaints from the local community or public;
 - Communicating to the local community the nature of the construction work that would be carried out;
 - Communicating the programme of work to the local community, specifically highlighting any works that may result in complaints (e.g. noisy activities);
 - Updating the local community of any changes to the nature of works or programme of works as necessary; and
 - Establishing and maintaining good relationships with local stakeholder groups.
- 5.79 The contact’s name and telephone number would be displayed at the entrance to the application site and on the perimeter in prominent locations.

Complaints Procedure

- 5.80 The Principal Contactor’s site managers would make stakeholders aware of the complaints procedure as part of the communication programme. The complaints procedure would comprise the following aspects:
- Publicise the details for relevant application site contacts, including telephone and email contact detail;
 - Set up and maintain a complaint register, which records all correspondence/telephone contact from the public or stakeholders;
 - Classify the nature of correspondence (e.g. complaint, enquiry, comment);
 - In the event of correspondence that requires action, assign to an appropriate member of the management team; and
 - Ensure the close-out of actions and update complaints register with a record of all actions and outcomes.

⁴ International WELL Building Institute. The WELL Standard. <https://www.wellcertified.com/>
⁵ Declare – the nutrition label for buildings. <https://living-future.org/declare/>
⁶ Cradle to Cradle Certified Products Registry. <http://www.c2ccertified.org/products/registry>

Materials and Resource Use

Selection

- 5.81 A strategy for minimising carbon emissions would be used when selecting materials. The final CEMP would detail the approach for a range of resource efficiency principles, including locally sourcing materials and services, auditing materials to demonstrate environmental performance (e.g. ISO 140018 or equivalent) and options for reuse of supplies. It would be carried out alongside a carbon foot printing procedure that would minimise carbon demands of the proposed development, identify the use of renewable energy resources, and incorporate efficient energy supply and low carbon technologies.
- 5.82 The design of the proposed development should maximise the potential to use pre-fabricated elements, and standard profiles and sections which can be easily assembled and disassembled for reuse elsewhere. Materials efficiency would be integrated with the waste hierarchy principles adopted for the scheme, such as identifying opportunities to reuse existing materials and reducing construction waste on site via appropriate benchmarks. Local material selection and procurement would be explored by the Principal Contractor.
- 5.83 Vulnerable areas of the buildings and wider scheme would be identified to ensure impact protection features are incorporated, and durable materials are specified, to reduce the degradation and use of additional materials over the lifetime of the development.
- 5.84 The proposed development would seek to create high quality, healthy internal environments for those living and working in and visiting the scheme. Materials selection and procurement would also be informed by the increasing availability of healthy certified materials, where feasible, including but not limited to materials and products that:
- meet testing and emissions standards for low or zero VOC as defined by Building Research Establishment’s Environmental Assessment Method (BREEAM), Leadership in Energy and Environmental Design (LEED) and/or WELL⁴;
 - meet the toxic materials reduction standards set by the WELL standard;
 - are Declare⁵ label certified; and
 - are Cradle to Cradle Certified Products⁶.
- 5.85 Other tools would also be used to ensure that alternative materials with a recycled content and low embodied carbon are specified where possible:
- The Green Guide to Building Specification⁷ would be used to ensure that major building elements are specified which have higher Green Guide Ratings (A-C); and
 - WRAP’s net waste toolkit⁸ would be used to ensure that ‘quick wins’ and opportunities to increase recycled content are identified at early stages of the design.
- 5.86 Key materials are envisaged to include those indicated in Table 5.2.

Table 5.2: Indicative Key Construction Materials	
Materials	Materials Required For
Concrete	Piling, pile caps, superstructure frame, lift cores, stairs, shear walls
Steel Reinforcement	Piling, pile caps, superstructure frame, lift cores, stairs, shear walls
Steel	Long span structures, minor structural elements

⁷ Anderson, J, Shiers, D & Steele, K, 2009. The Green Guide to Building Specification – An Environmental Profiling System for Building Materials and Components, Fourth Edition, BRE Press.
⁸ WRAP,2017; [online] NetWasteTool. Available, <http://nwtool.wrap.org.uk/ToolHome.aspx>

Brick / Blockwork	External envelope, some internal walls
Cross Laminated Timber	Upper levels of BF-F – floors and walls
Glulam Timber Beams	Long spans over openings
Cladding	External envelope
Glazing	External envelope
Partitions (boarding)	Internal walls

Storage and Handling

- 5.87 Due to the limited amount of space on-site, where practical, contractors would be expected to operate a ‘just-in-time’ policy for the delivery and supply of construction materials, and packaging would be returned. This means that materials would be brought to the application site just before their incorporation into the work, thereby minimising the need for on-site storage.
- 5.88 Where possible, prefabricated elements would be lifted directly into position from delivery vehicles. This would assist in reducing on-site storage and labour requirements and construction noise levels, thereby reducing potential nuisances to surrounding receptors.
- 5.89 Oils and hydrocarbons would be stored in designated locations with specific measures to prevent leakage and release of their contents, include the siting of storage areas away from surface water drains, on an impermeable base with an impermeable bund that has no outflow and is of adequate capacity to contain 110 % of the contents. Valves and trigger guns would be protected from vandalism and kept locked up when not in use. Details of appropriate storage and handling measures would be presented within the CMP.
- 5.90 All liquids and solids of a potentially hazardous nature (e.g. diesel fuel, oils and solvents) would be stored on surfaced areas, with bunding, and within secure areas, in accordance with the EA’s requirements.

Enabling and Demolition Quantities and Waste Management

- 5.91 Table 5.3 provides an estimate of the quantities of material likely to be generated as a result of the enabling works and demolition of existing on-site buildings, structures, hardstanding, below ground features and foundations on-site.
- 5.92 Materials arising from the enabling and demolition stage of the proposed development would be recycled where reasonably practical.

Table 5.3: Indicative Estimate of Demolition Material Likely to be Generated on-site	
Waste Arising	Approximate Weight (tonnes)
Concrete	7,000
Steel/metal	2,000
Plasterboard	200
Timber	100
Total Enabling Works and Demolition Waste	9,300

Excavation and Construction Key Quantities Material

- 5.93 Estimates of bulk material quantities for key construction components are provided in Table 5.4.
- 5.94 Waste arising from site clearance, primary infrastructure and earthworks is expected to comprise vegetation (limited), topsoil, rubble, tarmac from former hard standings, gravel and clay material.

- 5.95 Suitable material excavated during ground-works would be crushed and used as back-fill and piling mat material.
- 5.96 Any clean excavated material that cannot be reused on-site would be removed by licensed waste carriers and sent for reuse at another development site, or sent for disposal at appropriately licensed facilities (these are expected to be inert waste landfill sites).
- 5.97 Construction materials would be selected following the BRE ‘Green Guide to Specification’. These include the following:
 - Minimising embodied energy content (the energy used in manufacture);
 - Using recyclable materials where they have high embodied energy; and
 - Maximising the recycled content of the material, ease of maintenance, appropriate sourcing of materials and totally excluding deleterious and hazardous materials.

Table 5.4: Bulk Quantities During Construction	
Waste Arising	Volume
Bulk Excavation and Pile Arisings	13,000 m³
Packaging	120 tonnes
Plaster/ Cement	110 tonnes
Miscellaneous	80 tonnes
Timber	180 tonnes
Concrete	55,000 tonnes
Insulation	20 tonnes
Metal	4,500 tonnes
Plastics	55 tonnes
Inert	170 tonnes

Landfill Capacity

- 5.98 All relevant contractors would be required to investigate opportunities to minimise and reduce waste generation in line with WRAP’s ‘Halving Waste to Landfill’ initiative by undertaking the following:
 - Agreements with material suppliers to reduce the amount of packaging or to participate in a packaging take-back scheme;
 - Implementation of a ‘just-in-time’ material delivery system to avoid materials being stockpiled, which increases the risk of their damage and disposal as waste;
 - Use of standard size components in design detailing to eliminate risk at source where possible to do so;
 - Attention to material quantity requirements to avoid over-ordering and generation of waste materials;
 - Re-use of materials wherever feasible, e.g. re-use of excavated soil for landscaping. The Government has set broad targets of the use of reclaimed aggregate, and in keeping with best practice, contractors would be required to maximise the proportion of materials recycled;
 - Segregation of waste at source where practical;
 - Re-use and recycling of materials off-site where re-use on-site is not practical (e.g. through use of an off-Site waste segregation facility and re-sale for direct re-use or re-processing);
 - Skips would be colour coded and signposted to reduce risk of cross contamination and covered to prevent dust and debris blowing around the site, these would be cleared on a regular basis; and

- Burning of wastes or unwanted materials would not be permitted on-site.
- 5.99 Relevant contractors would be required to carry out works in such a way that, as far as is reasonably practicable, the amount of spoil and waste to be disposed of by landfill is minimised and that any waste arising from the site are transported and disposed of in accordance with relevant legislation.
- 5.100 Waste generated by the proposed development would be minimised and reused wherever feasible. There is not predicted to be any significant effect upon landfill capacity as a result of the construction waste volumes.

Plant and Equipment

5.101 Consideration has been given to the types of plant and equipment that are likely to be used during the construction works. The typical types of plant and equipment associated with each key element of the works, as well as the estimated percentage on time for the equipment is set out within Table 5.5.

Table 5.5: Estimated Plant and Equipment Types										
Plant and Equipment	Enabling Works and Demolition		Substructure		Superstructure		Envelope		Fit-out	
Concrete Crusher	✓	50 %	x		x		x		x	
360 deg Excavators (Large)	✓	100 %	✓	100 %	x		x		x	
360 deg Excavators (mini)	✓	80 %	✓	50 %	x		x		x	
Face Shovel	x		x		x		x		x	
Concrete Breaker	✓	80 %	✓	20 %	x		x		x	
Compactors	✓	50 %	✓	100 %	x		x		x	
Piling Rigs	x		✓	50 %	x		x		x	
Mobile Cranes	✓	20 %	✓	20 %	x		✓	10 %	x	
Tower Cranes	✓	40 %	✓	100 %	✓	100 %	✓	100 %	x	
Concrete Pumps	x		✓	70 %	✓	70 %	x		x	
Cradles	x		x		x		✓	10 %	x	
MEWPS	✓	40 %	x		✓	100 %	✓	100 %	✓	50 %
Goods/ Passenger Hoists	x		x		✓	100 %	✓	100 %	✓	50 %
Cantilever Decks	x		x		✓	100 %	x		x	
Scaffolding	✓	80 %	✓	20 %	✓	20 %	x		x	

Table 5.5: Estimated Plant and Equipment Types										
Fork Lifts	✓	50 %	✓	50 %	✓	60 %	x		✓	80 %
Small tools (Drills / Cutters)	✓	100 %	✓	100 %	✓	100 %	✓	100 %	✓	50 %
Note: ✓ Usage of plant at the respective demolition and construction phase stage										

Trips, Access and Routing Arrangements

Trip Generation

5.102 Table 5.6 provides a breakdown of the anticipated two-way (in and out) vehicle movements for each stage of the demolition and construction works.

Table 5.6: Estimated Daily Vehicle Movements	
Activity	Estimated Daily Vehicle Movements
Demolition	24
Excavation	32
Piling	14
Sub-Structure and Superstructure	30
Envelope and Cladding	10
Internal Fit Out	10

- 5.103 The maximum number of HGV movements would be associated with the demolition, piling and earthworks, with an average of 70 trips (140 movements) per week for approximately 12 months. During the maximum peak construction period, when the substructure and superstructure works would overlap, this could increase to an average of 185 trips (370 movements) per week.
- 5.104 The most intensely used HGVs on the application site would likely comprise tipper trucks for the removal of excavated material, ready mix concrete trucks for the delivery of concrete, and articulated lorries for the delivery of cladding panels. These figures would be reviewed upon appointment of the Principal Contractor and be would be subject to prior approval of RBC. All contractors would be supplied with a vehicle route card and details of all access routes would be provided
- 5.105 Deliveries would be required to be booked in at least 24 hours in advance using electronic delivery booking system which would be controlled by the logistics manager. This booking in system would be followed and adhered to any unplanned deliveries would be turned away.

Site Access and Egress

- 5.106 The site is located within Reading town centre and is bounded by Reading railway station to the south and Vastern Road to the north. Given the constraints, the most suitable vehicle access would be from the west using Caversham Road.
- 5.107 The site would be accessed via the existing estate road to the west of the complex from Caversham Road. The main arterial route identified is A329 under the railway bridge with a height restriction of approximately 4.75 m, as shown in Figure 5.3.



Figure 5.3: Railway Bridge on A329

- 5.108 The access point to the application site would change in accordance with the different phases, as shown in Figures 5.4-5.6. This is to allow the existing on-site uses to remain operational while the early phases of the development are under construction, and then as the development progresses, to allow the later phases to be constructed and reduce the impact of demolition and construction traffic on new residential occupants of Plot A.
- 5.109 During phase 1, construction access to the application site would be from the west from Caversham Road.

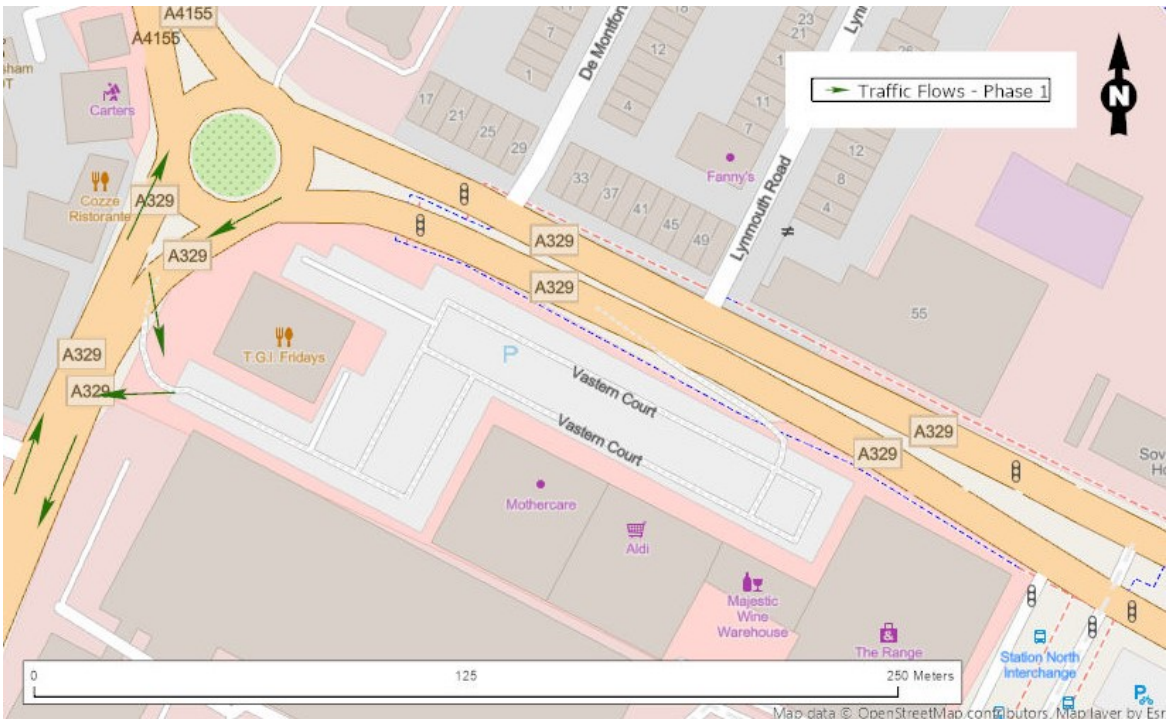


Figure 5.4: Construction Access for Phase 1

- 5.110 During Phases 2 and 3, access would be moved to the northern boundary of the application site, from Vastern Road, in the middle of the application site.

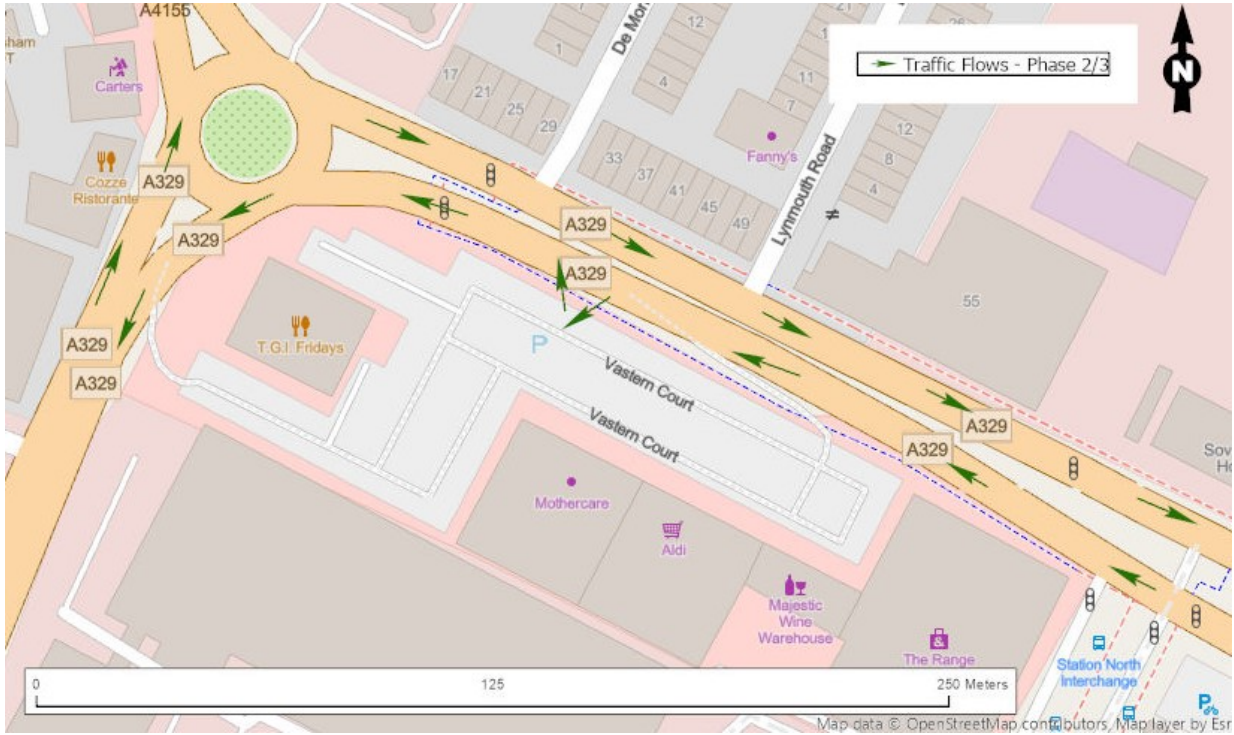


Figure 5.5: Construction Access for Phases 2 and 3

- 5.111 During Phase 4, access would remain along the northern boundary of the application site on Vastern Road, but would be moved further to the east, at the end of the existing car park.

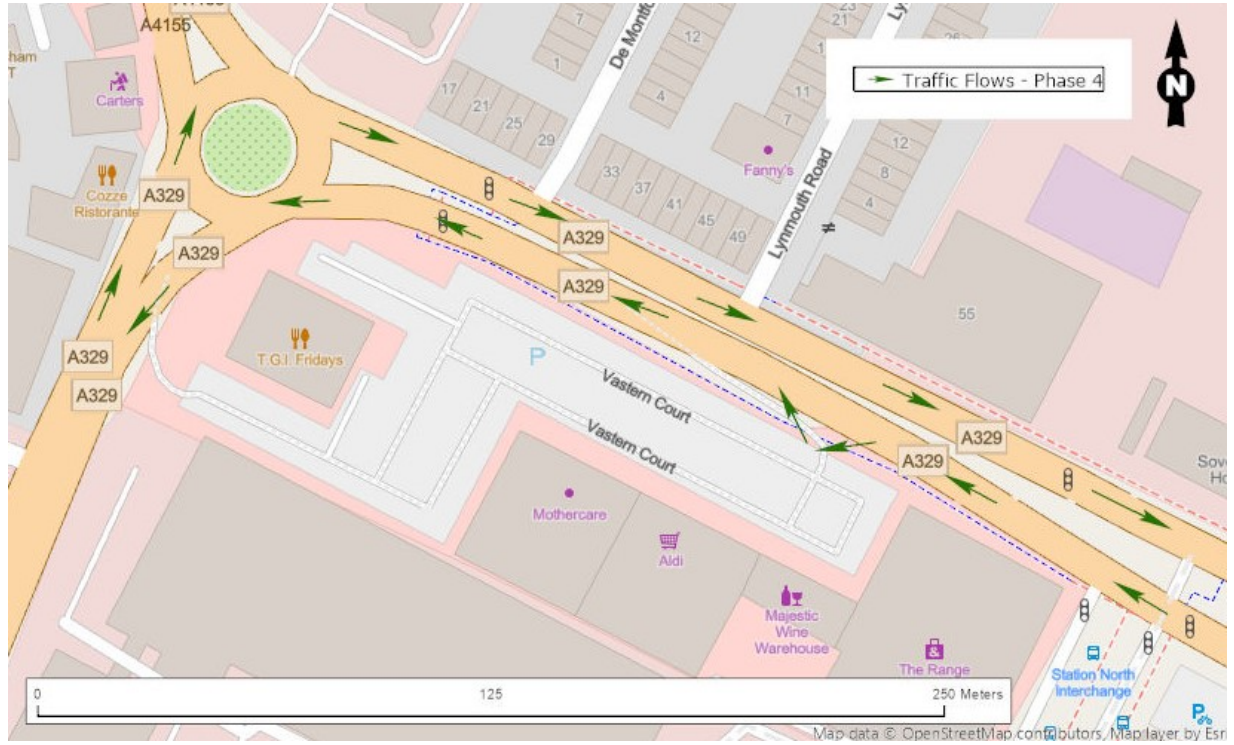


Figure 5.6: Construction Access for Phase 4

- 5.112 Access through the existing roads would be closely managed by traffic marshals and security with particular attention to cyclist using the cycle lane.

5.113 The application site would be able to accept all vehicle categories including a 10 m rigid truck and a 16 m articulated vehicle. Swept path analysis would be carried out at the detailed design stage.

5.114 Segregated traffic routes would be implemented on the site. Where the existing access to operational retail units is required for the public, it would require highway alterations in advance, but these can be positioned to eventually become the new permanent crossovers.

Construction Traffic Route

5.115 Construction traffic route is displayed in Figure 5.7.



Figure 5.7: Construction Traffic Route to Site

Closures and Diversion

5.116 Site activities with the potential to affect the public highways outside of the boundaries of the application site are as follows:

- Temporary footpath diversions/ closures may be required, and licences would be applied for in order to erect, adapt and dismantle this hoarding. Wherever possible the width of any retained footpath would be maintained at minimum 1.5 m wide;
- A mobile crane is required for erecting/dismantling the tower cranes. The tower crane contractor would develop a site-specific plan for this and seeking all relevant statutory approvals etc.;

- Delivery and installation of MEP capital plant. Whilst it is anticipated that the cranes on-site would be sized to carry out these lifting operations, the use of supplementary mobile cranes may be required from within the site boundary;
- Erection, adaption and striking of hoardings and scaffolding would be necessary in order to ensure the safety of operatives and the general public that would encroach into the public realm;
- Scaffolds would incorporate protection fans at an acceptable height and monarflex style sheeting; and
- Façade and external works at ground level where the works abut directly adjacent to the public realm. Wherever possible working access would be limited to ensure a minimum clear pedestrian footpath width of 1.5 m is maintained. A Method Statement would be agreed with RBC's Highways department for each eventuality and appropriate licences would be obtained where necessary.

Loading/Unloading Areas

5.117 The storage area for the proposed development would be within the application site boundary, utilising existing landscaping and parking areas. This would be constantly reviewed as works progress and the application site conditions change. Lighting, signage, fire points and pedestrian protection would need to be constantly updated and communicated to all as these works develop.

5.118 Unloading / loading and storage areas would be clearly defined and carefully considered to:

- Be established and maintained on-site, rather than off-site, as far as possible;
- Be segregated from pedestrian routes using barriers;
- Have sufficient room for all vehicle movements including turning space;
- Have adequate lighting and appropriate signage; and
- Have Fire Points and Spill Kits located in the immediate vicinity pertinent to the unloading / loading operations and / or materials being stored.

Pedestrian Access/Egress Routes and Parking Management

5.119 Pedestrian access routes for members of the public would be clearly displayed using appropriate and approved signage. Where necessary, such as through tunnels under scaffolding, additional lighting (including emergency power fittings) would be provided from the application site temporary electrical installation.

5.120 All pedestrian routes that are in close proximity to moving vehicles would be protected using appropriate physical barriers.

5.121 All operatives would access and egress to the application site via designated site control access points, which would be manned by site security. All contractors would book into the relevant security area for their area of works and having done so they would then proceed to their working areas using designated routes.

5.122 Once operatives have entered the application site they would only use designated pedestrian routes which would be clearly defined with relevant signage prominently displayed and updated as works progress and site dynamics change. Physical barriers would be installed to segregate vehicle and pedestrian movements and crossover points would be gated.

5.123 Safe 'green routes' would be established to ensure safe segregation between all vehicles and pedestrians/ construction operatives.

Environmental Controls and Mitigation

5.124 A review of the potential environmental impacts associated with the construction works has been undertaken to proactively inform the development proposals and agree appropriate mitigation measures.

Potential impacts can arise from day to day works or from individual instances of accidents, poor operation or management. They are, however, largely dependent on the implementation of effective controls e.g. the employment of dust suppression methods, use of a well trained workforce and properly maintained plant.

5.125 A summary of the potentially significant environmental impacts that could arise during the demolition and construction works and mitigation measures integral to the development proposals are provided in Table 5.6. Further detail and assessment of these likely impacts are provided in ES Chapters 6-10 and ES Volume 2.

5.126 Construction plant specifications have been defined allowing noise and other implications to be assessed. Potential impacts in many areas are largely dependent on attention to management control (e.g. watering to control dust, use of noise attenuated plant), which would be under the control of the Principal Contractors required, by tender requirements, to adhere to management controls and method statements.

Table 5.6: Summary of Potential Environmental Impacts during Demolition and Construction		
Receptor	Potential Impacts	Mitigation
Below ground Heritage Assets (Archaeology)	Damage to potential in-situ archaeological remains (if present).	Archaeological site evaluation following demolition works and prior to substructure works, with further evaluation e.g. including any watching briefs required during earthworks as necessary).
Transport and Pedestrian Infrastructure	Temporary traffic disruption caused by site traffic and an increase in HGV movements	- Implementation of a CTMP. - Use of RBC approved access points and routes to the application site, with deliveries outside peak hours where possible (and abnormal loads at quiet times, subject to agreement with RBC and TfL).
	Transfer of mud and materials from vehicles onto public highways causing the potential for pollution hazards	On-site wheel washing facilities or regular road sweeping to prevent water transfer to the road.
	Temporary disruption to pedestrian access and routes within the locality of the application site.	- Implementation of a CTMP - Maintenance of footpaths around the application site, where possible, ensuring access is maintained for all.
Noise and Vibration	Temporary increased noise levels at surrounding residential and commercial properties, from HGV vehicle movements and demolition / construction activities e.g. breaking out, crushing, piling, cutting etc.	- Installation of 2.4 m site hoarding. - Agreement of working hours with RBC, careful selection of quiet plant. - Appropriate siting and regular maintenance of plant. - Use of silenced and well-maintained plant conforming with the relevant EU directives relating to noise and vibration.
	Vibration impacts on local buildings, due to increased vibration from demolition works, piling, use of	The construction techniques proposed are considered unlikely to result in significant vibration impacts but the need for vibration

Table 5.6: Summary of Potential Environmental Impacts during Demolition and Construction		
Receptor	Potential Impacts	Mitigation
	heavy vehicles within the application site etc.	monitoring / setting of vibration action levels would be discussed and agreed with RBC.
Air Quality	Windblown dust generated from demolition works, earthworks, stockpiles, construction vehicle movements on unpaved surfaces, crushing etc.	- Dust suppression techniques, such as damping down, use of temporary screens, covering of stockpiles etc. - Preparation and Implementation of a Site Waste Management Plan (SWMP). - Appropriate sourcing of materials.
Soil and Groundwater	Pollution incident through spill of fuels or chemicals, or discharge of sediment laden water / runoff.	- Appropriate storage of fuels and potentially hazardous construction materials within a secure site compound. - Provision of on-site pollution control kits. - Use of settlement system prior to discharge.
	Siltation and contamination of surface water runoff and ground water.	Use of settlement tanks, bunding and street sweeping to prevent contamination of the stormwater system.
	Potential for soil contamination.	Geotechnical Site Investigations that are being undertaken would be used to characterise current soil and groundwater conditions at the application site. In the event that contamination is found, soil would be removed and an appropriate Remedial Strategy developed in conjunction with RBC and the EA.
Ecology	- Accidental spills and discharges from the storage of fuels and construction materials which may create pollution hazards. - Accidental release of surface water runoff containing elevated levels of suspended sediments or other contaminants	- Appropriate storage of fuels and potentially hazardous construction materials within a secure site compound. - Provision of on-site pollution control kits. - Use of settlement system prior to discharge.
	- Permanent damage and loss of habitats. - Injury or death of protected birds and animals.	Works to remove trees to be undertaken outside of the bird breeding season of March to August in the event that nesting birds are encountered.
Natural Resource Use	Waste generation and disposal of materials to landfill.	- Preparation and Implementation of an SWMP. - Waste minimisation at source, with segregation and recycling of waste generated.
	Use of natural resources	- Preparation and Implementation of an SWMP. - Appropriate sourcing of materials.

Table 5.6: Summary of Potential Environmental Impacts during Demolition and Construction		
Receptor	Potential Impacts	Mitigation
Site Workers	Release of asbestos during demolition	Completion of Asbestos Surveys and removal of all identified asbestos materials by a specialist contractor as part of the demolition works.
	Exposure of construction staff to contamination, if confirmed during planned site investigations works.	Use of Personal Protective Equipment (PPE).
Residential Amenity	- Temporary visual intrusion for nearby residents, occupiers of other land uses, pedestrians and passers-by. - Temporary visual intrusion of construction works on views into and out of the application site. - Temporary increases in road noise and vibration generated from construction vehicles. - Temporary increases in noise and vibration levels generated from the use of site plant and machinery. - Temporary generation of wind-blown dust nuisance from ground surfaces, stockpiles, vehicles, work faces and cutting and grinding of materials. - Temporary generation of exhaust emissions from lorries and plant delivering and removing materials including dust and particulates which may impact upon local air quality.	- Installation of 2.4 m site hoarding. - Standard, good site housekeeping. - Appropriate construction site layout. - On-site wheel washing facilities. - Dust management. - Demolition and construction traffic management. - Agreement of working hours with RBC careful selection of quiet plant, appropriate siting and regular maintenance, use of temporary acoustic barriers around specific activities etc. Setting of noise and vibration limits with associated monitoring during the works.

Mitigation and Scope of Environmental Management Controls

5.127 The following mitigation controls are typical for this type of development and would be committed to and delivered pursuant to either planning conditions, obligations contained in a legal agreement (under Section 106 of the Town and Country Planning Act, 1990) and supported as necessary by contractual obligations between the Applicant and the Principal Contractors or regulatory provisions in force from time-to-time.

Proposed Site Management Controls

Construction Environmental Management Plan

5.128 A CEMP would be prepared by the Principal Contractor and would include a Traffic and Logistics Plan (TLP).

5.129 The use of CEMPs is standard practice across the construction industry to reduce the risk of adverse effects during construction on sensitive environmental resources and to minimise disturbance to local residents. The CEMP can be expected to include matters such as:

- Commitments to follow Environment Agency Pollution Prevention Guidelines;
- Details of site waste management;
- Details of construction traffic management, including routes and signage;
- Details of working methods and their attendant mitigation measures;
- Measures to minimise / mitigate dust generation and dispersal;
- Measures to minimise / mitigate noise and vibration – using plant that conforms to the relevant standards on noise emissions; construction works would only be carried out during agreed hours of operation, except in emergency situations; the use of acoustic screening where appropriate; and
- Pollution incident response measures, including preparation of a spill management plan to prevent environmental effects in the event of a spill occurring.

Considerate Constructors

5.130 The Site would be registered with the 'Considerate Constructors Scheme'. This scheme ensures that contractors carry out their operations in a safe and considerate manner with due regard to passing pedestrians and road users.

Principal Contractor and Management of Sub Contractors

5.131 All contractors would be required to demonstrate how they would adhere to procedures set out within the CMP and EMP satisfying regulations and best practices regarding environmental control.

Environmental and Communication/Liaison Strategy

5.132 Roles and responsibilities would be clearly defined along with details on control measures and activities to be undertaken to minimise environmental effect and monitoring and record-keeping requirements. A commitment would be made to periodically review the documentation and undertake regular environmental audits implemented during the demolition and construction phase. Access would be given as required for Local Authority Environmental Officers to verify audits.

Emergencies and Environmental Incidences

5.133 Protocols to be implemented on-site in instances of emergencies and environmental incidents would be set out within the CEMP for approval by RBC.

Housekeeping and General Site Management

5.134 Hoardings would be erected around the application site to provide a clear and secure demarcation between operational activities and other areas and to provide information regarding the proposed development and its progress. Particular attention would be paid to locations supporting high volumes of pedestrian movement (for example on Vastern and Caversham Road), demolition and construction routes, access gates and security arrangements.

5.135 A 'clean site' policy would be maintained and contractors and their subcontractors would be expected to maintain a tidy application site. A street sweeper would be employed as required during the demolition, piling and excavation periods of the construction programme to make sure that the streets around the application site would be kept clean during the works.

Adjacent Residential Properties and Other Neighbours

5.136 The following mitigation and environmental controls would collectively limit potential visual, noise, vibration, traffic and dust impacts associated with the proposed development's construction works:

- Maintaining aesthetically appropriate site hoardings;
- Agreeing working hours with the RBC;
- Undertaking regular road sweeping;

- Arranging and locating potentially high impact site activities and plant away from neighbouring residential receptors;
- Selecting quiet plant and regularly maintaining plant;
- Implementing good site housekeeping measures;
- Directing site lighting away from sensitive receptors;
- Turning site lighting off outside of normal working hours;
- Screening scaffolding and active construction activities above hoarding levels, where practical;
- Implementing construction traffic management measures as agreed with RBC;
- Implementing and monitoring dust management measures;
- Implementing and monitoring noise and vibration measures; and
- Using temporary acoustic barriers around potentially noisy activities.

Archaeology

5.137 During demolition and substructure works, there is the potential for impacts on archaeological remains beneath the application site. The archaeological potential of the application site is likely to be limited to remains of no more than low significance and therefore further survey work (i.e. archaeological evaluation trial trenches or pits) is not considered to be necessary. It is recommended that an archaeological watching brief during preliminary ground preparation and subsequent foundation construction, would mitigate the impacts of the proposals and ensure that any archaeological assets were not removed without record.

Contaminated Soil

- 5.138 According to a Preliminary Risk Assessment undertaken of the application site (Technical Appendix 2.5, ES Volume 3) RBC currently classifies the application site as 'low risk' in terms of the potential for significant soil or groundwater contamination to be present at the application site. As is standard for redevelopment of sites of this nature, potential risks would need to be assessed through a site investigation and risk assessment.
- 5.139 During construction works, it is anticipated that a number of potentially contaminative liquids and chemicals including diesel required for emergency generators for site operations could be stored on-site. The following management and control measures would be included in the CEMP:
- Storing all liquids and solids of a potentially hazardous nature on surfaced areas, with bunding, in accordance with the EA's Pollution and Prevention Guidelines 2 (PPG2)⁹ preventing pollution from above ground storage tanks. Whilst the EA's PPGs are no longer valid, these represent good practice and would therefore be followed;
 - Ensuring that Contractors control and bund any hazardous substances used on-site (although at this stage none are anticipated), including oil drums or containers on-site, in accordance with Control of Substances Hazardous to Health (COSHH) Regulations (as amended) and ensure that oil or other contaminants are not allowed to reach water courses or ground water sources including aquifers;
 - Storing all oils and chemicals in bunded areas in order to contain any spillages, should these occur. Bunding would be specified to ensure secondary containment of at least 110 % of the volume of the largest tank within the bund;

- Siting all filling points, gauges and vents within the bund;
- Placing tanks on impermeable bases to reduce the risk of spillage to groundwater. Integral or self-bunded tanks would be favoured; and
- Sealing the drainage system of the bund with no discharge to any watercourse, land or underground strata. Associated pipe work would be located above ground and protected from accidental damage.

- 5.140 Furthermore, all site works would be undertaken in accordance with the EA's Pollution Prevention Guidance Note 6 (PPG6)¹⁰ and Pollution Prevention Guidance Note (PPG3)¹¹.
- 5.141 Construction vehicles would be properly maintained to reduce the risk of hydrocarbon contamination and would only be active when required. Construction materials would be stored, handled and managed with due regard to underlying soil and thus the risk of accidental spillage or release would be minimised.
- 5.142 As standard practice in brownfield development, the design of the construction would provide remediation. The construction of the proposed development would provide a clean cover layer in landscaped areas and give a concrete foundation slab to the correct design and thickness.

Water Resources

- 5.143 To ensure that no contaminant-pathway-receptors pathways are created and to reduce the potential for contamination to occur during construction, all site activities would be undertaken in accordance with the requirements of the Water Resources Act 1991¹², Water Act 2014¹³, Control of Pollution (Oil Storage) Regulations 2001¹⁴, and the Pollution prevention guidance¹⁵. The Applicant would also be responsible for obtaining all necessary consents and ensuring compliance with the conditions of the consents.
- 5.144 As a minimum the CEMP would cover the following provisions:
- all storage facilities should be located above ground and on suitably designed and managed hard-standing, bunded where necessary, to prevent any accidental spillages from being released to ground;
 - management and handling of construction materials is undertaken with due care and consideration to minimise the risk of accidental spills; and
 - material stockpiles should be adequately protected to avoid being washed or blown away from the immediate area.
- 5.145 Potential pathways for contamination would be minimised as follows:
- groundwater would be prevented from entering excavations by dewatering, if required;
 - surface water would be prevented from entering excavations by using cutoff ditches, covering the excavation, or captured within the groundwater pumping system;
 - potentially contaminating activities such as concrete preparation, vehicle washing and fuelling etc. are constrained to dedicated protected areas where contaminated water can be collected; and
 - contaminated water from excavations would be collected within a settlement tank or lagoon to enable treatment prior to release.
- 5.146 In addition, the construction drainage system for the proposed development would be designed and managed to comply with BS 6031:2009¹⁶, which details methods that should be considered for the general control of drainage on construction sites. Further advice is also contained within BS 8004:2015¹⁷.

⁹ Environment Agency, 2011. Pollution Prevention Guidelines 2 Above Ground Oil Storage Tanks. Environment Agency.

¹⁰ Environment Agency, 2012. Pollution Prevention Guidelines 6 Working at Construction and Demolition Sites. Environment Agency.

¹¹ Environment Agency, 2006. Pollution Prevention Guidelines 3 Use and Design of Oil Separators Environment Agency.

¹² Secretary of State, 2009. Water Resources Act 1991 (Amendment) (England and Wales) Regulations 2009. London. HMSO

¹³ Secretary of State, 2014. Water Act 2014. London. HMSO

¹⁴ Secretary of State, 2001. Control of Pollution (Oil Storage) Regulations 2001. London. HMSO.

¹⁵ Department of the Environment, Food and Rural Affairs (Defra), 2019. Pollution Prevention for Businesses. London. HMSO.

¹⁶ British Standard Institution, 2009. BS6031:2009 British Standard Code of Practice for Earthworks. London. BSi.

¹⁷ British Standard Institution, 2015. BS8004:2015 Code of Practise for Foundations. London. BSi.

- 5.147 Wherever possible, the Applicant would minimise the amounts of wastewater discharged from the application site. Surface drainage and wastewater would pass through settlement tanks and oil interception facilities before discharge to sewer. The Applicant would ensure that all potentially contaminated water, e.g. dewatering effluent, is disposed of in accordance with the Water Resources Act 1991¹⁸ and Water Industry Act 1999¹⁹, to the satisfaction of the EA and Thames Water.
- 5.148 An Emergency Incident Plan would be in place for the application site to deal with potential spillages and/or pollution incidents. This would include the provision of on-site equipment for containing spillages, such as emergency booms and chemicals to soak up spillages.
- 5.149 Any pollution incidents would be reported immediately to RBC and the regulatory bodies such as the EA.

Ecology

- 5.150 Dust generated from construction works would be managed by means of 2.4 m high site hoarding and dust suppression measures, such as the use of water sprays, dampening down of roads and covering of storage areas, such that the potential for adverse dust generation is reduced.
- 5.151 Construction drainage, air quality and noise management controls would be actively implemented at the application site to minimise potential construction impacts.
- 5.152 All lighting would appropriately be aimed, controlled and switched off when the application site is not operational (where practicable).

Transport

- 5.153 A CTMP would be developed and agreed in accordance with RBC to take into account legislative requirements (e.g. Highways Act 1980, the New Roads and Street Works Act 1991, Town and Country Planning Act 1990, Traffic Management Act 2004) Police, Fire Authority and HSE Guidance, Local Authority Transport Schemes and Neighbourhood Lorry Restrictions. The Traffic Management Plan would be reviewed and updated in line with the construction programme and would typically include details of the following:
- preferred hours of deliveries and removals (out of peak hours);
 - agreed demolition and construction traffic routing and application site access points;
 - road cleaning facility provisioning;
 - temporary traffic control measures;
 - temporary and permanent access to the works - for personnel/vehicles;
 - off-loading and storage areas;
 - traffic management procedures for waste disposal vehicles;
 - personnel and vehicle segregation;
 - equipment e.g. temporary fencing, signage etc.;
 - temporary and permanent closures and diversions of footpaths;
 - street furniture removal, if required; and
 - site inductions.
- 5.154 Wheel cleaning facilities with adjoining hard standings would be located, when appropriate, at the access and egress points of the application site. These wheel cleaning facilities would be supplemented by regular road cleaning during the excavation and basement works and would have appropriate catchment areas.

Vehicle Routing

- 5.155 Vehicles making deliveries to the application site or removing spoil material would travel via designated routes which would be agreed with RBC as required. The Principal Contractor would liaise with RBC to provide directional signage on the principal routes on the highway network surrounding the application site, if required, in order to improve navigation.
- 5.156 In line with RBC's standard approved working hours, construction traffic movements are likely to take place on the local and wider highway network between 08:00 and 18:00 hours from Monday to Friday and 08:00 to 13:00 hours on Saturdays unless the times are constrained by planning conditions. Where possible vehicle movements would be scheduled out of peak hours (i.e. 08:00 – 09:00 and 17:00 – 18:00 during the weekdays.). Deliveries of the modular blocks would be made outside of peak hours, between 19.00 and 21.00.
- 5.157 Vehicles coming to the application site would have specific timeslots booked. It would be the responsibility of the driver and company to ensure they arrive on site at the designated time.
- 5.158 The construction sequence for the application site would be programmed to minimise the need for road closures. However, there may be instances when they are unavoidable. Where this is the case, road closures would be requested 6 - 12 weeks in advance and authorised by RBC.
- 5.159 The Principal Contractor would co-ordinate all deliveries and collections to/from the application site, and ensure that as far as possible that:
- all delivery and collection vehicles are aware of the proposed routing;
 - prior to a delivery or collection, haulers would notify the relevant authorities in accordance with the Road Vehicles (Authorisation of Special Types) (General) Order 2003²⁰ if required;
 - liaison would be undertaken with occupants of adjacent buildings to avoid delays to service deliveries due to construction vehicles; and
 - deliveries would be made on a 'just in time' basis.
- 5.160 Larger vehicle movements would be scheduled to avoid peak hours on the local road network if at all possible. If an alternative construction traffic route is required, this would first be agreed with RBC.
- 5.161 Suppliers would be encouraged to consolidate deliveries where feasible. Where possible all deliveries would be made to designated areas within the application site. If for any reason it is necessary to load and unload outside site boundaries, the details and procedure for this would be agreed in advance with RBC.
- 5.162 There would be no waiting areas for site vehicles in the roads around the application site.

HGV Management

- 5.163 The most intensely used HGVs on the application site would be ready mix concrete trucks for the delivery of concrete and articulated lorries for the delivery of fabricated steelwork.
- 5.164 It is assumed that HGV construction traffic would be spread evenly over an 8 hour long working day (to avoid peak periods), although there may be slight peaks.
- 5.165 Loading and unloading of vehicles, dismantling of equipment such as scaffolding or moving equipment or materials around the application site would be conducted in such a manner as to minimise noise impacts to existing surrounding residential properties.

¹⁸ Secretary of State, 1991. The Water Act 1991. HMSO.

¹⁹ Secretary of State, 1999. Water Industry Act. London. HMSO.

²⁰ Secretary of State, 2003. Road Vehicles (Authorisation of Special Types) (General) Order. HMSO.

Parking Management and Staff Travel

- 5.166 A key aspect of the demolition and construction process would be the management of demolition and construction worker travel to and from the application site. Construction workers would be encouraged to access the application site by public transport, walking and cycling in order to reduce the potential impact of vehicle traffic during this temporary period. A series of measures would be implemented to encourage workers to travel using sustainable modes, which would form part of the CTMP, These may include:
- Cycle parking would be provided and this would be covered and secure;
 - Facilities for changing and storing cycling clothes would be provided;
 - The developer would investigate the provision of public transport vouchers to encourage workers to travel to the application site by bus or rail;
 - The contractor would encourage workers to car share where possible and would set up a car sharing database to identify where matches could be made; and
 - Travel information packs would be provided to all workers. These would be provided in either paper form or electronically and would include public transport timetables and information on cycling routes.
- 5.167 Parking provision would be provided on site, if possible, however this would be limited and spaces would be managed.
- 5.168 Vehicle movements would be managed to avoid queuing outside the application site access points.

Noise and Vibration

- 5.169 Effective co-ordination and time management of demolition and construction activities would be used to avoid adverse effects from noise and vibration to surrounding areas. Early and helpful communications with the surrounding and on-site receptors would assist in managing any complaints arising during the demolition and construction works of the proposed development.
- 5.170 Contractors would be required to ensure that works are carried out in accordance with best practicable means as stipulated in the Control of Pollution Act 1974. A full explanation of measures to control construction noise would be detailed in all construction method statements.

Noise Emissions

- 5.171 The precise needs and intentions in regards to noise control cannot, however, be specified until detailed construction planning and phasing programmes are complete.
- 5.172 As set out in Chapter 8: Noise and Vibration, noise levels from the demolition and construction of the proposed development have been predicted at noise-sensitive properties on-site and in close proximity to the application site and the impact of the noise assessed. Noise levels likely to be generated by the demolition and construction works have been predicted based on the type and number of plant likely to be in operation.
- 5.173 Noise control measures would include:
- Planning deliveries and removals out of peak hours where possible;
 - Plan working hours to take account of the effects of noise upon persons in areas surrounding site operations and upon persons working on-site;
 - Parking construction traffic off the public highway;
 - Controlling the discharge of trucks from site to avoid congestion;

- Implementing traffic management systems at the entrances to the application site to control the traffic into the application site;
- Maintaining the 2.4 m site hoarding around the application site boundary to screen noise from low level sources and/or street level receptors;
- Agreeing working hours with RBC;
- Using 'silenced' plant and equipment wherever possible and maintaining plant on a regular basis in accordance with the relevant EU directives relating to noise;
- Selecting electrically driven equipment where possible in preference to internal combustion powered; hydraulic power in preference to pneumatic; and wheeled in lieu of tracked plant;
- Operating plant at low speeds where possible and incorporating automatic low speed idling;
- Siting noisy activities away from sensitive receptors, where possible;
- Certifying plant to meet relevant standards;
- Minimising disturbance from reversing beepers through measures such as site layout, provision of screening or use of broadband sound emitting reversing alarms;
- Keep internal haul routes well maintained;
- Use rubber linings for chutes and dumpers to reduce impact noise;
- Switching off vehicle engines where vehicles are standing for extended periods and avoid unnecessary revving of vehicle engines;
- Start-up plant and vehicles sequentially rather than all together;
- Lowering materials whenever practicable rather than dropping; and
- Making all contractors familiar with the guidance in BS 5228²¹ which would form a pre-requisite of their appointment.

Vibration

- 5.174 There are sensitive receptors located immediately along the eastern and southern boundaries of the application site. Noise and vibration surveys were carried out between 22 and 25 March 2019. An additional vibration survey was carried out on 26 June 2019.
- 5.175 BS 5228 Part 2²¹ contains historic vibration measurement data for piling works, including the CFA method proposed for the proposed development.
- 5.176 Historic data presented in Table D.64 of BS 5228 suggest that vibration levels would fall to below 1 mm/s within 10 m of the piling works. The resulting PPV from CFA piling would likely be between 0.14 mm/s – 0.3mm/s. Vibration of less than 1 mm/s is unlikely to generate complaints from those living within nearby off-site sensitive properties. Historic data suggests that this method of piling is unlikely to lead to vibration that would cause damage to buildings, even cosmetic damage.
- 5.177 The following measures would be employed:
- Sequencing the piling programme so that numerous piles within 10 m of an affected property or buried utilities are not carried out successively. A maximum of three piles would be installed within 10 m of an affected property or buried utilities with a break before continuing in that area;
 - Carrying out vibration monitoring during early piling works, away from any affected property or buried utilities, to quantify the levels of vibration likely to be attained; and
 - Compiling an appropriate action plan for incorporation into the CEMP to ensure that the adverse effects of subsequent piling work, if identified, are minimised at all works.

²¹ British Standards Institution, 2009 and 2014. British Standard 5228: 2009+A: 2014 Code of practice for noise and vibration control on construction and open sites. BSI

Air Quality

5.178 Dust and emission control and mitigation at the application site would be particularly important during earthworks and dry weather periods. To minimise adverse effects due to dust, the site-specific best practice measures described in Table 5.7 would be implemented by the Principal Contractor.

Table 5.7: Proposed Development Demolition and Construction Mitigation Measures for High Risk Sites	
Works	Mitigation Measure
Communications	- Implement a stakeholder communication plan that includes community engagement before work commences on-site. - Display name and contact details of responsible person for dust issues on the application site boundary in addition to head/regional office contact information.
Dust Management Plan	Develop and implement a Dust Management Plan (DMP), to be approved by the RBC.
Site Management	- Record all complaints and incidents in a site log. - Make the complaints log available to the RBC if requested. - Take appropriate measures to reduce emissions in a timely manner, and record the measures taken within the log. - Record any exceptional dust incidents on or off site in the log book, and the action taken to resolve the situation. - Hold regular liaison meetings with other high-risk construction sites within 500 m to limit the potential from cumulative impacts and to co-ordinate DMPs.
Monitoring	- Undertake regular on and off-site visual inspections where there are nearby receptors. - Carry out regular inspections to ensure compliance with the DMP and record results in the site log book. - Make the inspection log available to the RBC if requested. - Increase the frequency of inspections during activities with a high potential to create dust or in prolonged dry weather.
Preparing and Maintaining Site	- Plan application site layout during construction to locate dust generating activities as far as possible from receptors. - Use solid screens around dusty activities or site boundary that are at least as high as any stockpiles. - Avoid application site runoff of water and mud. - Fully enclose the application site or specific operations where there is a high potential for dust production and the application site is active for an extensive period. - Keep site fencing barriers and scaffolding clean using wet methods. - Remove dusty materials from the application site as soon as possible. - Prevent wind whipping from stockpiles by covering, seeding, fencing or damping down. - Carry out regular dust soiling checks of buildings within 100 m and provide cleaning if necessary. - Agree monitoring locations with RBC. - Install screens to minimise dust and pollution. - Provide showers and ensure a change of shoes and clothes are required before going off-site to reduce transport of dust.
Operating Vehicle/Machinery and Sustainable Travel	- Enforce an on-site speed limit of 10 mph. If long haul routes are required then speeds may be increased with suitable additional control measures, subject to approval of the nominated undertaker and with the agreement of the RBC. - Ensure vehicles switch off engines when stationary – no idling.

Table 5.7: Proposed Development Demolition and Construction Mitigation Measures for High Risk Sites	
	- Avoid use of generators where possible. - Produce a CEMP to manage the sustainable delivery of materials. - Implement a sustainable travel plan for site workers.
Operations	- Cutting, grinding or sawing equipment only to be used with suitable dust suppression equipment or techniques. - Ensure adequate water supply for effective dust and particulate matter suppression (use recycled water where possible). - Use enclosed chutes, conveyors and covered skips. - Minimise drop heights of materials from loading and handling equipment and use fine water sprays on such equipment wherever appropriate. - Ensure suitable cleaning material is available at all times to clean up dry spills and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
Waste Management	- Re-use and recycle waste to reduce dust from waste materials. - No bonfires.
Measures Specific to Demolition	- Soft strip inside buildings before demolition of external walls and windows. Ensure effective water suppression is used, preferably through the use of hand held sprays. - Ensure water suppression is used during demolition operations. - Avoid explosive blasting, use appropriate mechanical or manual alternatives. - Bag and remove biological debris or damp down material prior to demolition.
Measures Specific to Earthworks	- Re-vegetate earthworks and exposed areas/soil stockpiles as soon as practicable. - Use hessian, mulch or tackifiers* where it is not possible to re-vegetate or cover with topsoil. - Only expose small areas of ground or stockpile when working.
Measures Specific to Construction	- Ensure aggregates are stored in bunded areas and are not allowed to dry out. If required dry for a particular process appropriate additional control measures are required. - Avoid concrete scabbling** where possible. - Ensure bulk cement and other fine powder is delivered in tankers and stored in silos with suitable emission control during operation and delivery. - Smaller supplies of fine powder material to be in sealed containers and stored appropriately.
Measures Specific to Trackout	- Regular use of water-assisted dust sweepers to clean access and local roads. - Avoid dry sweeping of large areas. - Ensure vehicles entering and leaving the application site are appropriately covered to prevent emission during transport. - Inspect on-site haul roads for integrity and repair as necessary. - Inspections of haul roads to be recorded in site log, including any remedial action taken. - Implement a wheel washing system, with rumble grids where reasonably practical. - Ensure there is an adequate area of hard surfaced road between wheel wash facility and the application site exit, site size and layout permitting. - Access gate to be located at least 10 m from receptors, where possible. - Apply dust suppressants to locations where a large volume of vehicles enter and exit the application site.
Notes:*Tackifier is a sticky substance used to temporary bind the surface of stockpiled material at risk of generating dust emissions. ** Scabbling is the process of removing the surface layer of a concrete structure.	

5.179 The Applicant would give detailed dust control protocols as part of their contracts for the application site.

Waste Management

5.180 Waste produced during all construction activities on site would be subject to the 'Duty of Care' under The Waste (England and Wales) Regulations 2011. It is the joint responsibility between the Principal Contractor and the Client to ensure that waste produced onsite is disposed of in accordance with legislation. The Waste Duty of Care Practice (November 2018) sets out practical guidance on how to meet waste duty of care requirements. It is issued under section 34(7) of the Environmental Protection Act 1990 (the EPA) in relation to the duty of care set out in Section 34(1) of that Act.

5.181 The Principal Contractor would audit waste carriers and disposal facilities and maintain documentary evidence that these requirements are being met. A register of waste carriers, disposal sites (including transfer stations) and relevant licensing details would be produced and maintained on site.

5.182 An area for waste collection and materials delivery and storage is expected to be provided within the site boundary. Materials that can be beneficially used in the future development of the site would be segregated directly on site.

Recycling

5.183 All generated waste would be sorted for reuse, recycling or disposal, and placed into their respective lorries. All non-hazardous waste that is not suitable for reuse on site would be loaded out onto waste trucks from the registered waste contractor, and once full, transported to a licensed recycling centre or nominated landfill site.

Disposal

5.184 All construction materials that cannot be re-used or recycled or would be disposed of at appropriately licensed disposal facilities. The destination of all waste or other materials from the application site would be notified to the relevant authority for approval. Deposition would be in accordance with the requirements of the:

- EA;
- Environmental Protection Act 1990²²;
- Controlled Waste Regulations 2012²³;
- Waste Regulations 2011²⁴;
- Hazardous Waste (England and Wales) Regulations 2005²⁵;
- Waste Duty of Care Code of Practice 2018²⁶; and
- Environmental Permitting (Amended) Regulations 2016²⁷.

5.185 No burning of construction waste would take place on-site.

Cumulative Demolition and Construction Impacts

5.186 Site preparation, demolition and construction activities, when undertaken at the same time, have the potential to give rise to combined (cumulative) impacts and effects. Although temporary, these combined impacts, if not managed can give rise to potentially adverse effects on sensitive receptors in proximity to the application site, i.e. existing residential, community and open space receptors.

²² Security of State, 1990. Environmental Protection Act 1990. London. HMSO

²³ Department of the Environment, Food and Rural Affairs (DEFRA), 2012. Controlled Waste (England and Wales) Regulations 2012. London. HMSO.

²⁴ Security of State, 2011. The Waste (England and Wales) Regulations. London. HMSO.

5.187 Such impacts are typically restricted to short periods of time. Even then, not all receptors would experience impact interactions during this time depending on phasing and proximity to the sensitive receptor. The majority of interactions are likely to arise from activities such as demolition works, noise and vibration from construction plant and vehicles, dust from plant and vehicles, the visual impacts of the work and passing HGVs.

5.188 In terms of residential amenity, demolition and construction works would typically be carried out outside of those hours when residents could reasonably expect quiet enjoyment of their properties. Demolition and construction works would typically be carried out between the hours of 08:00 to 18:00 hours, so residents would not be subjected to unreasonable impacts during daytime demolition and construction works periods.

5.189 Impact interactions that are likely to occur would generally be of a temporary and short term nature and would be carefully co-ordinated to ensure minimal disruption to sensitive receptors.

5.190 It is anticipated that the stringent management controls set out in this chapter would ensure that the potential construction and demolition of the proposed development would be kept to a minimum and as such, would limit the potential for further predicted impacts when considered in conjunction with the development proposals in the surrounding area. It is expected that other schemes in the area would also adopt similar stringent management controls.

5.191 The CEMP, to be secured by an appropriately worded planning condition, would be implemented during the demolition and construction works and would provide a framework within which activities on-site would be managed 'at source' to minimise impacts on all sensitive receptors.

Deconstruction of Proposed Development

5.192 The deconstruction of the proposed development would follow a demolition method and sequence. Safe working practices would be devised and implemented and would be undertaken according to typical dismantling techniques prevalent at the time.

5.193 The application site would be hoarded. Soft stripping works would then commence, removing all fixtures and fittings bringing the structure back to its shell.

5.194 When the development is at an appropriate level, long arm track mounted shear cutters would be used. The application site would then be taken down to ground level and temporary works installed to make the application site safe.

Summary

5.195 The development programme comprises the demolition of existing buildings, and construction of the proposed development as described in Chapter 4: Proposed Development Description. Assuming planning permission is secured, on-site works are projected to start Q2 2021 and the construction works to be completed in Q2 2025.

5.196 Demolition and construction works have the potential to cause environmental impacts, from subsurface works, noise, wastes, surface water runoff, and emissions to air. Measures to control potential environmental impacts would be set out within the CEMP (including a CTMP and SWMP) to be secured by appropriately worded planning conditions or obligations by means of a Section 106 legal agreement.

²⁵ Department of the Environment, Food and Rural Affairs (DEFRA), 2005. Hazardous Waste (England and Wales) Regulations, 2005. London. HMSO.

²⁶ Department of the Environment, Food and Rural Affairs (DEFRA), 2018. Waste Duty of Care Code of Practice 2018, HMSO.

²⁷ Security of State, 2016. Environmental Permitting (England and Wales) (Amended) Regulations, London. HMSO.