

6 Construction

6.1 Introduction

- 6.1.1 This chapter was prepared by Quod in conjunction with the Applicant and the design and consultants' team and describes the anticipated enabling, demolition and construction works that will be undertaken prior to completion and occupation of the Development. Information on enabling and construction works is general at this stage and may be subject to modification at the future detailed construction planning phase once a contractor is appointed. For this reason, the EIA is based on reasonable assumptions as set out in this chapter and the collective experience of the design and consultants' team on similar projects.
- 6.1.2 It should be noted that this is an informative chapter. Assessments of enabling and construction effects of the Development are provided in each technical chapter of this ES (i.e. Chapters 7 to 9).

6.2 Programme of Works

- 6.2.1 The construction programme and phasing of the Development will be subject to market demand, although, for assessment purposes, it was assumed to be complete by 2023. The indicative programme for construction works is approximately 3 years with works assumed to commence in 2020. The construction programme may be subject to change, although this is unlikely to affect the findings of the ES as assessments have assumed a worst case where applicable (e.g. peak construction traffic).
- 6.2.2 Contractors are not yet appointed for any aspect of the Development. As a consequence of this, there is a degree of uncertainty about how the Development would be constructed and its phasing. Further information on construction phasing and methods are therefore not defined by the planning applications or chapter but will be dealt with through subsequent reserved matters applications, to be submitted for approval to CDC.

6.3 Description of Works

- 6.3.1 The following sections provide an overview of the anticipated enabling and construction strategy for the Development, to provide context.

Demolition (Applicable to Application 2 only)

- 6.3.2 All buildings (poultry sheds and the farmhouse building) currently within the Site would be demolished and hardstanding broken up (e.g. concrete/asphalt parking areas, concrete floor slabs and foundations). Prior to removal of the buildings an inspection would be undertaken to identify the presence of any potentially hazardous materials. If present, hazardous materials would be removed from the Site and disposed of appropriately by licensed contractors following prescribed health and safety procedures.

Enabling Works, Infrastructure and Services (Applicable to Application 1 and Application 2)

- 6.3.3 The following works are likely to form the basis of the enabling works, infrastructure and services stage, where relevant, for all phases of the Development, as required:
- Ground / drainage / utilities investigations would be undertaken, as required;
 - Hoarding or safety fencing would be erected around the boundary of construction areas, with fencing to protect sensitive features (e.g. vegetation to be retained, watercourse buffers);
 - Enabling works to utilities would be carried out, involving capping-off or removal of redundant utilities and boreholes, new supplies, diversions and connections, as agreed with the statutory authorities;

- To achieve the required site levels there will be some general civil engineering groundwork activities including excavation, grading and preparation of surfaces, and the placement/compaction of fill. During engineering groundwork activities the removal of topsoil and vegetation will be undertaken. In addition, it may be necessary for some remediation activities to be undertaken during this stage if contamination is identified, although this is considered unlikely; and,
- Infrastructure and services required by the Development would be installed including but not limited to electrical, telecommunications, gas, highways access, potable water, foul water, surface water drainage infrastructure (including SUDS) and flood compensation.

Construction (Applicable to Application 1 and Application 2)

6.3.4 The method of construction is dependent on the nature of the buildings, ground conditions, structures and detailed design for the outline application areas and, therefore, is not fixed at this stage. The standard construction activities anticipated for the Development are outlined below:

- **Foundations** – The specific type of foundations would depend on the design of the building and would be determined at the detailed design stage. Given that the majority of proposed buildings will be low-rise, it is likely that strip foundations would be used to create a continuous, linear strip of shallow foundation. If buildings require piles, it is likely that either Continued Flight Auger (CFA) or ‘mini’ piles would be used. A piling mat – a platform providing a stable base on which piling rigs can move around the site and operate – would be prepared for the rig, following which piled foundations to support each building would be installed;
- **Structures** – Construction methods are likely to vary depending on the detailed design of the buildings. It is anticipated that a mix of steel and concrete frame construction would be used. Buildings would be erected from the foundations using tower/mobile cranes or mobile platforms as appropriate;
- **Façade and Fit Out** – Once each building structure is sufficiently progressed the building façade would be installed, interior fit out and installation of mechanical, electrical and plumbing systems would then commence;
- **Access Roads** – Involves the construction of the road surface (known as the ‘pavement’) over an earthwork foundation (known as the ‘formation layer’) over the area allocated for the internal road network. The installation of kerbing and paved areas concerning footways, road restraint systems (e.g. vehicle and pedestrian safety barriers), road markings (e.g. white lining) and road signs would also be undertaken during construction of the pavement and formation layer; and,
- **External Works and Landscaping** – Areas of landscaping and open space would be prepared to establish the green spaces within the Site. This would include soil preparation, tree and vegetation planting, seeding and the sustainable drainage systems as part of each phase to relevant design standards.

6.4 Materials

Excavation and Groundwork Activities

6.4.1 Construction of the Development will result in soils being disturbed over part of the Site. The location of buildings and the internal road network are not defined at this stage. Therefore, it is not possible to accurately quantify the amount of materials arising from the excavation and groundwork activities for the Development. However, due to the topography of the Site being relatively flat, it is not expected that major earthworks or cut and fill operations will be required as part of the Development. The Development is likely to achieve a balance of soil cut and fill, i.e. the Development could achieve no requirement for

large scale soil import or export. Where soil is to be disturbed it will be removed prior to construction operations and will be stored for reuse at the Site, where possible.

6.5 Construction

Plant and Equipment

6.5.1 An indicative list of large plant and equipment that are likely to be used at various stages of construction are shown in Table 6.1.

Table 6.1: Plant and Equipment

Equipment	Demolition	Enabling Works, Infrastructure and Services	Foundations and Structures	Facades and Fit-Out	Access Roads	External Works and Landscaping
Concrete Crusher	✓	X	X	X	X	X
360° Excavator	✓	✓	✓	X	✓	✓
Tower / Mobile Crane	✓	✓	✓	✓	X	X
Breaker	✓	X	X	X	X	X
Compressor & Air Tools	✓	✓	✓	✓	✓	✓
Drills / Cutters	✓	✓	✓	✓	✓	✓
Compacter / Roller	X	✓	X	X	✓	✓
Piling Rigs	X	✓	✓	X	X	X
Concrete Pumps	X	✓	✓	X	✓	✓
Generators	✓	✓	✓	✓	✓	✓
Concrete Vibration Equipment	X	✓	✓	X	✓	✓
Scaffolding	✓	✓	✓	✓	✓	✓
Fork Lift Truck	✓	✓	✓	✓	✓	✓
Goods / Passenger Hoist	X	X	✓	✓	✓	X
Scissor Lifts / Cherry Pickers	X	X	✓	✓	X	X
Mechanical Road Sweeper	✓	✓	✓	✓	✓	✓
Floodlights	✓	✓	✓	✓	✓	✓
Hydraulic benders and cutters	✓	✓	✓	✓	✓	✓

Equipment	Demolition	Enabling Works, Infrastructure and Services	Foundations and Structures	Facades and Fit-Out	Access Roads	External Works and Landscaping
Lorries and Vans	✓	✓	✓	✓	✓	✓
Ready mix concrete trucks	X	✓	✓	X	✓	✓

Hours of Work

6.5.2 Prescribed hours of work would be agreed with CDC. It is anticipated that the core working hours for the Development would be as follows:

- 08:00 – 18:00 hours weekdays;
- 08:00 – 13:00 hours Saturday; and,
- No working on Sundays or Bank Holidays.

6.5.3 Approval from CDC would be required for works that need to be undertaken outside of these hours. Typically, works that may need to be undertaken out of hours would be for the delivery and removal of abnormal loads, for which the principal contractor would be expected to make the necessary road closure applications to OCC, if required.

6.5.4 The following enabling activities are expected to be permitted to take place within the period before and after normal working hours as outlined above:

- Arrival and departure of workforce on Site;
- Deliveries and unloading;
- Checks and examinations of plant and machinery (including test running) and the carrying out of essential repairs / maintenance to plant and machinery;
- Site inspections and safety checks; and
- Site clean-up.

6.5.5 No continuous 24-hour activities are envisaged for works and any work on Sundays or Bank Holidays will be subject to reasonable notice. Any change to working hours will be agreed in advance with CDC.

6.5.6 These hours will be strictly adhered to unless or in the event of:

- An emergency demands continuation of works on the grounds of safety;
- Minor internal works are being carried out within the confines of the building envelope; and,
- Completion of an operation that would otherwise cause greater interference with the environment/general public if left unfinished.

Construction Traffic

6.5.7 During construction, vehicles will access and egress the Site via the A41 and Wendlebury Road which is the only entrance to the existing highway network.

6.5.8 The estimated numbers of enabling works and construction-related vehicle journeys, including Heavy Goods Vehicle (HGV) movements, was projected for the busiest periods during the enabling works and

construction programme to allow for an assessment of the worst-case scenario; thereby making the assessment as robust as possible. It is estimated that enabling and construction works will produce no greater than 28 two-way HGV movements per day with construction worker vehicles amounting to approximately 10-30 movements per day. Further details on construction traffic is provided within ES Chapter 9: Transport and Access.

- 6.5.9 While there would be peaks in activity where vehicle movements would be more concentrated, typically to peak hours, efforts will be taken to minimise the number of movements during these periods. See Section 6.7 for further details on environmental management and mitigation measures, which includes information on Construction Traffic Management Plan(s) (CTMP).
- 6.5.10 On-site parking for construction workers will be restricted to a reasonable minimum. This will only be made available to those construction personnel who need to carry heavy equipment or materials to the Site. The labour force will be encouraged to use public transport. Local traffic management measures for Site access will be agreed with OCC prior to construction commencing.
- 6.5.11 An assessment of the impact of construction vehicle movements on receptors is presented within Chapter 9: Transport and Access and within Appendix 9.1: Transport Assessment.

6.6 Potential Environmental Effects

- 6.6.1 All construction sites have the potential to cause temporary nuisance and disruption to sensitive receptors situated within the Site or in the surrounding area. Table 6.2 provides a summary of potential effects which could arise in the absence of mitigation measures.

Table 6.2: Summary of Potential Effects Construction

Topic	Potential Effects
Socio-economics	Temporary increase in construction-related employment and jobs. Increased local expenditure as a result of the Development construction workforce in the surrounding area.
Transport and Access	Temporary traffic disruptions due to road closures and diversions, if required. Traffic disruption caused by Site vehicles and an increase in HGV movements. Transfer of mud and materials from vehicles onto the public highway. Disruption to pedestrian / cycle access and routes within the locality of the Site.
Air Quality	Temporary generation of windblown dust from cleared surfaces, stockpiles, vehicles, work areas. Generation of exhaust emissions from construction vehicles and plant. Temporary release of odorous compounds during Site remediation works, if required.
Noise and Vibration	Temporary increased road noise and vibration generated from construction vehicles, plant and machinery required for construction of the Development.
Biodiversity	Loss of arable habitat and associated loss of foraging and breeding habitat for birds. Loss of a bat roost in Building B1.
Landscape and Visual	Temporary visual intrusion of construction, with respect to hoarding/ machinery / plant / site offices / lighting etc., to nearby residents and occupiers of commercial and industrial properties in the surrounding area.

Topic	Potential Effects
Water Resources	Accidental spills and discharges from the storage of fuels, construction materials, plant and machinery to groundwaters and/or drains.
Ground Conditions and Soil	Accidental spills and discharges from the storage of fuels, construction materials, plant and machinery contaminating surface soils.

6.7 Environmental Management and Mitigation Measures

Construction Environmental Management Plans

- 6.7.1 An assumption is in place that contractors will adhere to Construction Environmental Management Plan(s) ('CEMP') during enabling and construction activities, which would be secured by planning condition. The CEMP will provide principles and detail measures that are to be implemented by the contractors and sub-contractors in order to minimise and mitigate the environmental effects of the works associated with construction at the Site.
- 6.7.2 Effective implementation of a CEMP will include good practice mitigation and will be in-line with measures set out in industry standards, good practice and guidance, such as the Considerate Constructors Scheme¹ and Environment Agency Guidance for Pollution Prevention (GPP) notes (i.e. GPP13: Vehicle Washing and Cleaning² and GPP22: Dealing with Spills³). The CEMP would be subject to approval by CDC Council and secured through an appropriate planning condition.
- 6.7.3 The mitigation measures within the technical chapters (i.e. Chapter 7 to 9) will be included within the CEMP, where applicable. These will be reviewed at the detailed enabling works and construction planning stage(s) to ensure that the mitigation measures and management controls and/or procedures adopted are sufficient to meet the commitments made throughout the assessments.
- 6.7.4 Standard best practice principles of environmental management will be adhered to on site during construction works. A CEMP will be prepared and agreed with CDC to ensure that the mitigation measures and management controls and/or procedures adopted are enough to meet the commitments made throughout the assessments.
- 6.7.5 The CEMP will include roles and responsibilities, detail on control measures and activities to be undertaken to minimise environmental effects, and monitoring and record-keeping requirements.
- 6.7.6 A commitment will be made to periodically review the CEMP and undertake regular environmental audits of its implementation during construction.
- 6.7.7 The CEMP will comprise, but not be limited to, the following elements to minimise the environmental effects of the Development's construction on the surrounding area:
- Construction Method Statement;
 - Construction Traffic Management Plan (CTMP);
 - Neighbour and public relations;
 - Management of trade contractors;
 - Noise and vibration;
 - Air quality;
 - Waste management;

- Ground conditions and soil;
- Protection of water resources;
- Ecology; and,
- Energy and water usage.

Construction Method Statement

6.7.8 The Construction Method Statement (CMS) will form part of the CEMP. The CMS will outline the different activities and procedures to be undertaken in order to complete the various construction works. The CMS will include the following main items:

- A detailed construction programme for works, highlighting the various stages and their context within the project, including a full schedule of materials and manpower resources, as well as plant and equipment schedules;
- Detailed site layout arrangements (including requirements for temporary works), plans for storage, accommodation, vehicular parking areas, delivery and Site access and egress;
- Prohibited or restricted operations (locations, hours, etc.);
- Details of operations that are likely to result in disturbance, with an indication of the expected duration of each phase with key dates, including a procedure for prior notification of the CDC and relevant statutory and non-statutory (including neighbours) parties so that local arrangements can be agreed;
- Provisions for affected parties to register complaints and the procedures for responding to complaints; and,
- Provisions for reporting to the Applicant and CDC, if required.

Construction Traffic Management Plan

6.7.9 A CTMP will be prepared and submitted to CDC, prior to commencement of on-site works. The CTMP(s) will ensure that a strategy for planning of the construction access routes will be implemented to take into account current legislation, police, fire authority and Health and Safety Executive guidance, local authority transport schemes and neighbourhood lorry restrictions.

6.7.10 Directional signage will be implemented to ensure that construction traffic utilises designated routes to minimise the effect on the surrounding road network. Locations for temporary signage for the approved route will be discussed with the BCC Highway Officer.

6.7.11 Heavy Goods Vehicle (HGV) movements will be restricted as far as reasonably possible to avoid peak traffic flow periods (i.e. from 08h00-09h00 and 17h00-18h00).

6.7.12 All construction traffic entering and leaving the Site will be closely controlled and during delivery times traffic marshals will be positioned, as necessary, at the egress/ingress point to control and record entry and exit movements.

6.7.13 The CTMP(s) will be reviewed and updated in line with the construction programme and is expected to include details of the following:

- Temporary traffic control measures, if required;
- Timing controls (e.g. limiting peak period vehicle movements);
- Temporary and permanent access arrangements for personnel/vehicles;

- Traffic management procedures for waste disposal vehicles;
- Personnel and vehicle segregation;
- Safety measures to protect the public/Public Rights of Way;
- Equipment (e.g. road cones, temporary fencing and signage);
- Provision to ensure that vehicles can be loaded and unloaded off the public highway where possible;
- Measures to encourage the site labour force to use public transport to travel to and from the Site;
- Housekeeping measures (e.g. HGV wheel washing prior to vehicles leaving the Site, use of road sweepers); and,
- Consultation and liaison process with neighbouring businesses, construction sites and other stakeholders.

Neighbour and Public Relations

6.7.14 A key aspect of the successful management of the project will be the maintenance of good relations with Site neighbours and the general public. The Applicant will appoint or require the principal contractor to appoint a community liaison manager, who will be the first line of response to resolve issues of concern or complaints. Reasonable steps will be taken to engage with local residents during the Development. Site boards outlining information on the project and forthcoming works will be erected at the entrance to the Site. Site contact numbers will be displayed as appropriate along with the complaints procedure.

REFERENCES

¹ Considerate Constructors Scheme. [Online] Available: <https://www.ccscheme.org.uk/>

² Environment Agency (EA), 2017. Guidance for Pollution Prevention, Vehicle Washing and Cleaning: GPP13, April 2017.

³ EA, 2018. Pollution Prevention Guidelines, Dealing with Spills: GPP22, October 2018.