

5.0 CONSTRUCTION METHODOLOGY & PHASING

Introduction

- 5.1 This chapter describes the anticipated construction methodology and phasing of the Development. Consideration of likely significant effects on the environment that may arise during the construction phase, and any necessary mitigation measures, are provided within the respective technical chapters of this ES.
- 5.2 Planning for construction is necessarily broad at this stage and may be subject to modification. This chapter is based on reasonable assumptions and experience and allows assessment of the realistic “worst case” construction phase effects.

Anticipated Programme

- 5.3 Demolition is expected to start in April 2021, subject to gaining planning permission, and construction take approximately 4.5 years to complete with the Development fully complete in 2025. The traffic data used for the air quality and noise assessments assesses an opening year of 2024.

Outline Construction Methodology

Construction Machinery

- 5.4 Consideration has been given to the types of plant and equipment likely to be associated with each key element of the construction process and are set out in Table 5.1.

Table 5.1: Typical Construction Plant

Plant	Stage		
	Enabling Works	Infrastructure and substructures	Construction
Tracked/wheeled 360-degree Excavators	✓	✓	✓
Excavator mounted hydraulic breakers	✓	X	X
Excavator mounted hydraulic crushers	✓	X	X
Dumpers	✓	✓	✓
Concrete Crushing Plant	✓	X	X
Mobile Craneage/Tower Cranes	X	✓	✓
Eight-wheeler trucks	✓	✓	✓
Air Compressors	✓	✓	✓
Diamond cutting tools / saws	✓	✓	✓
Hand Held Tools including	✓	✓	✓

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

Site Preparation and Enabling Works

5.5 Site preparation will involve the establishment of on-site parking provision and any construction worker facilities (including site compound area with offices and welfare facilities for management and construction workers). Enabling works would comprise:

- Arboricultural works – including the protection of trees to be retained and removal of trees where applicable;
- Installation of site hoarding and further security fencing; and
- Installation of temporary surface water management measures if required.

Infrastructure and Drainage works

5.6 Appropriate infrastructure to serve the Development will be installed and the sustainable drainage systems (SuDS) will be constructed. All site works will be undertaken in accordance with CIRIA (2001) Control of Water Pollution from Construction Sitesⁱ which promotes environmental good practice for control of water pollution arising from construction activities.

5.7 Construction vehicles will be properly maintained to reduce the risk of hydrocarbon contamination and will only be active when required. Construction materials will be stored, handled and managed with due regard to the sensitivity of the local water environment and thus the risk of accidental spillage or release will be minimised.

5.8 In accordance with the Control of Pollution (Oil Storage) (England) Regulations 2001ⁱⁱ, any tanks storing more than 200 litres of oil will have secondary bunding. Bunding will be specified having a minimum capacity of "not less than 110% of the container's storage capacity or, if there is more than one container within the system, of not less than 110% of the largest container's storage capacity or 25% of their aggregate storage capacity, whichever is the

greater.” Any above ground storage tanks will be located on a designated area of hardstanding. No underground storage tanks will be used during the construction period. Storage of liquids such as degreasers, solvents, lubricants and paints will be in segregated, bunded enclosures.

- 5.9 The construction drainage system will be designed and managed to comply with BS6031 “*The British Standard Code of Practice for Earthworks*”ⁱⁱⁱ, which details methods that should be considered for the general control of drainage on construction sites. Further advice is contained within the Geotechnical Design, General Rules (BS EN 1997)^{iv} which should be read in conjunction with Basis of Structural Design (BS EN 1990)^v.

Construction of Substructure

- 5.10 This will involve foundation excavation, the installation of below ground services and construction of new foundations. Substructure works will include installation of foundations. Foundations will be piled for all blocks and houses. The superstructure will be formed from *in situ* concrete for all blocks.

Construction of Superstructure

- 5.11 This stage will involve the construction of the main building envelope of residential dwellings.

Fit Out

- 5.12 Fit out of the Development will involve the installation of drylined party walls, internal walls, domestic mechanical and electrical installations with fitted kitchens and bathrooms.

Townscape

- 5.13 Landscaping works will involve some ground modelling works and the establishment of green spaces within the Site.

Material and Resource Use

- 5.14 The primary construction materials to be used will include concrete, and brick. ‘A’ rated materials from the Building Research Establishment’s Green Guide to Specification^{vi} will be preferred. The resource use from the Applicant’s latest cost plan is shown in Table 5.3 below.

Table 5.3 Projected material and resource use

Resource Use	Quantity	Measure
Excavation (for reduced levels and foundations)	6,142	m ³
Bearing piles	792	Nr*
Concrete in pile/core caps and ground beams	2,299	m ³
Reinforcement in foundations	274.699	t
Concrete in ground floor slabs	1,887	m ³
Remove spoil from site (reduced levels, foundations and piling)	10,618	m ³
Reinforced concrete in columns	1,350	m ³
Formwork to concrete columns	13,574	m ²
Reinforcement to columns	339.351	T
Reinforced concrete in walls	3,261	m ³
Formwork to concrete walls	26,076	m ²
Reinforcement to walls	391.137	T
Reinforced concrete in upper floor slabs / roof (including podiums)	14,394	m ³
Formwork to concrete slabs / roof	57,572	m ²
Reinforcement to slabs / roof	1,871.092	T
Roof coverings (standard, brown and green)	7,524	m ²
Brickwork external walls	20,836	m ²
External windows and doors	9,890	m ²
Internal party and partition walls	57,717	m ²
Apartment entrance and plot circulation doorsets (single and double)	3,521	Nr
Communal circulation / riser doorsets (single and double)	153	Nr
Emulsion paintwork to walls	215,030	m ²
Ceramic tiling to bathroom / ensuite walls	9,330	m ²
Ceramic tiling to bathroom / ensuite floors	3,385	m ²
Painted skirtings	55,999	M
Plasterboard and paint to ceilings	45,134	m ²
Manholes / inspection chambers	76	Nr
Underground drainage runs	1,750	M
Drainage channels	351	M
Surface water attenuation crates	600	m ³

*Nr denotes number of

Construction Phase Vehicle Movements

- 5.15 Construction vehicle movements will be managed to minimise the impact on the local road network. The HGV movements would be dispersed across the working day outside of the AM and PM peak periods. The arrival and departure of light vehicles would be concentrated during the morning and evening periods but would be less than the predicted levels of traffic during the operational phase of the Development.

- 5.16 Construction traffic estimates have been calculated based on information provided from previous experience of construction projects. A detailed construction programme has not been produced at this stage, however estimates of the likely number of vehicles generated by the construction of on-site infrastructure and buildings, together with potential staff movements have been made. The estimated number of construction vehicle movements is summarised in Table 5.4 below.

Table 5.4: Estimated Daily Construction Traffic

	Arrivals	Departures	Total
Light Vehicles	10	10	20
HDVs	15	15	30

- 5.17 During the initial stages, vehicular movements will solely be associated with construction traffic. As the development plots are completed, there will be a mix of development and construction traffic. Construction traffic movements during peak periods are likely to be restricted to light vehicles, associated with the movement of construction workers with large HDV movements discouraged.

Construction Traffic Access and Management

- 5.18 If abnormal or oversized loads are required to deliver materials to the Site, notice will be given to LBWF, depending on the routing, and also the Police, the Fire Brigade, and other emergency services, sufficiently in advance of the required closure or diversion dates. Should any hazardous materials arise during the course of the works, these materials will be transported to a licensed disposal site using permitted routes as identified in the Construction Traffic Management Plan (CTMP).
- 5.19 All vehicle unloading will take place within the Site and will not affect public highways or adjacent occupiers.
- 5.20 All management of construction traffic and access will be carried out in accordance with a CTMP as set out below:
- Planning and managing both vehicle and pedestrian routes;
 - The elimination of reversing, where possible;
 - Safe driving and working practices;
 - Protection to the public;
 - Adequate visibility splays and sight lines;
 - Provision of signs and barriers; and
 - Adequate parking for off-loading storage areas.

Controls to Protect the Environment

5.21 The environmental controls (or mitigation measures) to eliminate, reduce or offset likely significant adverse effects on the environment during the construction phase are identified below. It is anticipated that these controls will be secured by appropriately worded planning conditions or obligations:

- Preparation of a CEMP, including the CTMP, which clearly sets out the methods of managing environmental issues for all involved with the construction works, including supply chain management;
- Requirement to comply with the CEMP included as part of the contract conditions for each element of the work. All contractors tendering for work will be required to demonstrate that their proposals can comply with the content of the CEMP and any conditions or obligations secured through the planning permission;
- In respect of necessary departures from the above, procedures for prior notification to LBWF, as appropriate, and affected parties will be established;
- Establishing a dedicated point of contact and assigning responsibility to deal with construction related issues if they arise. This will be a named representative from the construction team; and
- Regular dialogue with LBWF and the local community.

5.22 The preparation of a CEMP is an established method of managing environmental effects resulting from construction works.

5.23 The CEMP will be submitted to LBWF (and other statutory authorities) prior to the commencement of the works. Compliance with the CEMP will be to be secured by planning condition. The structure of the CEMP will include the following:

- A table showing the objectives, activities (mitigation/optimisation measures), and responsibilities for the implementation of those activities;
- The broad plan of the work programme including working hours and delivery times;
- Details of prohibited or restricted operations (location, hours etc.);
- Institutional arrangements for its implementation and for environmental monitoring: responsibilities, role of the environmental authorities, participation of stakeholders;
- Contact during normal working hours and emergency details outside working hours;
- Provision for reporting, public liaison, and prior notification of particular construction related activities;
- The mechanism for the public to register complaints and the procedures for responding

- to such complaints; and
- The details of proposed routes for HGVs travelling to and from the Site.

Hours of Work

5.24 Working hours on the Site will be agreed with LBWF through the CEMP and will be subject to COVID-19 restrictions where necessary, however, it is likely that the standard hours of work will be adhered to. These are:

- Monday to Friday, 8am to 6pm;
- Saturday, 8am to 1pm; and
- Sunday and Bank Holidays, no working.

5.25 All work outside these hours will be subject to prior agreement of, and/or reasonable notice to LBWF as appropriate. Night-time working will be restricted to exceptional circumstances and work internally with buildings. By arrangement, there may be some out of hours construction deliveries made to the Site.

Management of Construction Works

5.26 All contractors will be required to complete a method statement and risk assessment and obtain a works permit from the Applicant prior to commencement on Site.

Response to Complaints

5.27 Any complaints will be logged on-site and, where necessary, reported to the relevant individual within LBWF, as appropriate, (and vice versa) as soon as practicable.

Prior Notice

5.28 In the event of unusual activities or events, these will be notified to LBWF, as appropriate, and relevant property owners or occupiers in advance. The relevant activities will be agreed with LBWF, as appropriate, once the detailed programme of construction is defined. This will include:

- Necessary night-time, weekend or evening working (outside core areas) of a type which may affect properties; and
- Road or footpath closures/diversions and movements of wide loads (unlikely to be

required).

5.29 The community will be kept informed during the construction phase as appropriate through the Applicant's website.

REFERENCES

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- ⁱ CIRIA C532 (2001) Control of Water Pollution from Construction Sites Guidance for consultants and contractors
 - ⁱⁱ The Control of Pollution (Oil Storage) (England) Regulations 2001, Statutory Instrument 2001 No. 2954
 - ⁱⁱⁱ British Standards Institution (December 2009) BS6031:2009 Code of Practice for Earthworks
 - ^{iv} British Standards Institution (December 2004) BS EN 1997-1:2004 Eurocode 7. Geotechnical Design. General Rules.
 - ^v British Standards Institution (2002) BS EN 1990: 2002 Basis of Structural Design
 - ^{vi} Building Research Establishment Online Resource, available via <http://www.bre.co.uk/greenguide>