



GA2, Land north of Great Ashby Environmental Statement

Chapter 3: Utilities and Construction

Iceni Projects Limited on
behalf of Picture Estates
Limited

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3. UTILITIES AND CONSTRUCTION

Introduction

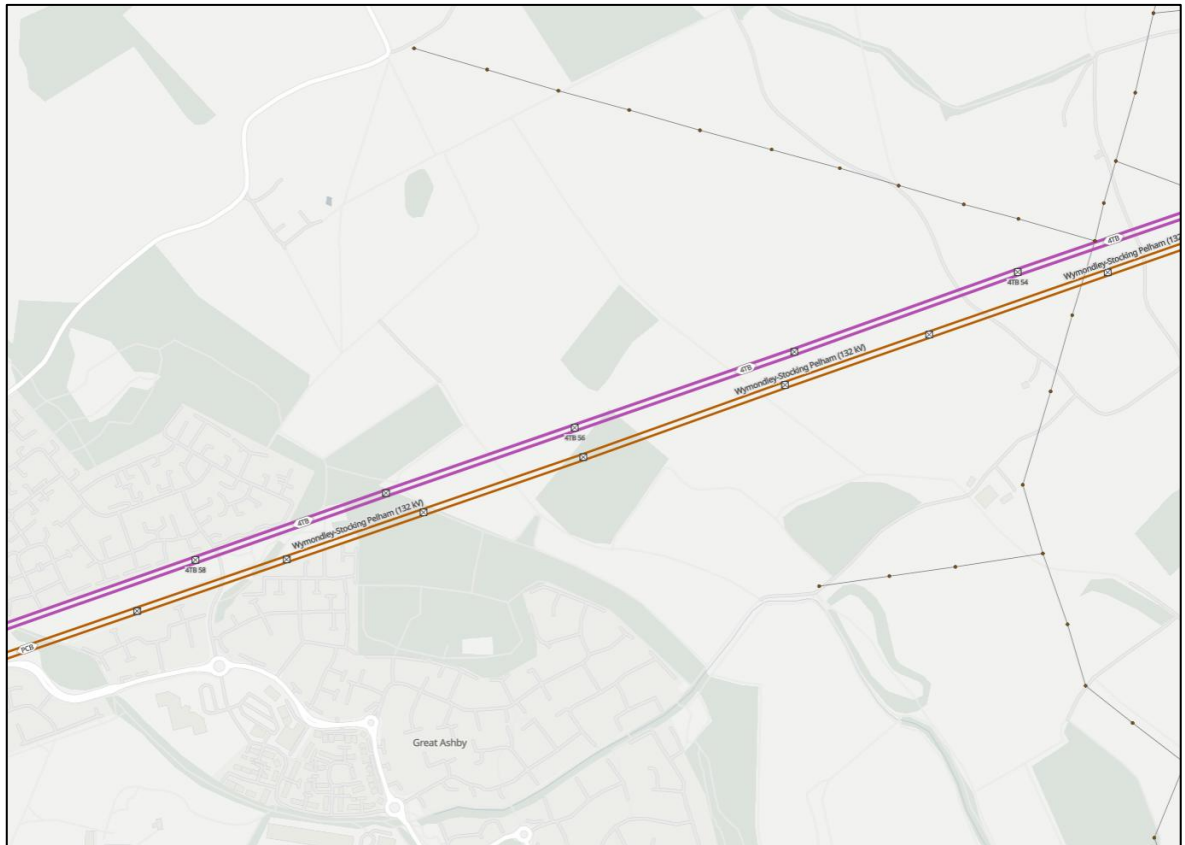
- 3.1 This chapter of the ES has been prepared by Iceni Projects and Brookbanks and presents the utilities and construction information associated with the Proposed Development.

Utilities

Existing Utility Infrastructure

- 3.2 Existing utility infrastructure in the vicinity of the site are owned and operated by the following asset operators:
- Electricity – UK Power Networks
 - Electricity – National Grid Electricity Transmission
 - Gas - Cadent
 - Water – Affinity Water
 - Telecoms – BT Openreach and Virgin Media
- 3.3 The electricity network in the United Kingdom is separated into two distinct operating systems with Transmission Network Operators (TNOs) managing transmission network voltages of 400,000V and 275,000V and Distribution Network Operators (DNOs) managing distribution network voltages of 132,000V, 66,000V, 33,000V, 11,000V, 6,600V and 415V. The transmission network in mainland Britain is operated regionally by 3 different operators and the distribution network is operated regionally by 6 different operators. The networks in the vicinity of the site are operated by National Grid Electricity Transmission (as the TNO) and UK Power Networks (as the DNO).
- 3.4 Both National Grid Electricity Transmission (NGET) and UK Power Networks (UKPN) own and operate infrastructure within the direct vicinity of the site and have been consulted as part of the design process. The below extract shows the location of NGET and UKPN infrastructure with NGET 400,000V cables shown in purple and UKPN 132,000V infrastructure shown in orange.

Figure 3.1 Location of NGET and UKPN Infrastructure



- 3.5 For infrastructure supported by pylons, the constraint associated with the infrastructure is described by the extent of the infrastructures sag (due to heating of the cables) and their swing (due to wind conditions). The extremes of these two conditions are mapped and stand off to various infrastructure types are specified within the Energy Networks Association (ENA) document ENA 43-8.
- 3.6 An extract of the ENA guidance documents, and UKPN's sag and swing information can be seen below.

Figure 3.2 ENA Guidance Document Extract

Item	Description of clearance	Nominal system voltage (kV)					
		Minimum clearance (m)					
		≤ 33 (NOTE 2)		66	132	275	400
		B	EI				
1	Line conductor at any point not over road. (NOTE 3)	<u>5.2</u>	5.2	<u>6.0</u>	<u>6.7</u>	<u>7.0</u>	<u>7.3</u>
2	Line conductor to road surface other than as specified in 3, 4, and 5. (NOTE 4)	<u>5.8</u>	<u>5.8</u>	<u>6.0</u>	<u>6.7</u>	7.4	8.1
3	Line conductor to road surface of designated '6.1 m high load vehicle' routes. (NOTE 5)	6.9	6.9	7.1	7.5	8.5	9.2
4	Line conductor to motorway road surface where scaffolding is to be used on:						
	a) Normal 3 lane motorways.	14.0	14.0	14.2	14.6	15.6	16.3
	b) Elevated 2 lane motorways (NOTE 6 & 7)	11.0	11.0	11.2	11.6	12.6	13.3
5	Bare live metalwork, e.g. transformer terminals, jumper connections, etc. (NOTE 8)	<u>4.3</u>	NA	<u>4.3</u>	Controlled Zone Safety Rules Apply		

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expected works for a development of this type and will not affect the deliverability of the project or adversely affect existing residents in the surrounding area.

Proposed Utility Infrastructure

- 3.10 In order to determine the availability of electrical capacity within the existing network, an application was made to UKPN for the provision of a point of connection. The capacity requested assumes that the site will be heated using a low carbon heating technology such as Air Source Heat Pumps. The assessment also allows for the provision of a home electric vehicle charging point on each dwellings.
- 3.11 UKPN confirmed that a connection could be provided from the existing Verity Way Primary substation approximately 2100m to the south of the site entrance. The connection will require the installation of 2No 11,000V cables from the existing primary substation to the site and approximately 4No secondary substations will be required to service the site.
- 3.12 The potential offsite cable route can be seen in the below sketch.
- 3.13 In general, electrical capacity allocations for air source heat pumps is reducing and a future capacity assessment made to determine the electrical point of connection for the site is likely to result in a reduction in maximum demand and therefore a potential improvement in the location of the point of connection. The introduction of alternative technologies such as ground source heat pumps provide further opportunities to reduce maximum demand.

Figure 3.4 Point of Connection



- 3.14 Previous engagement with Affinity Water as identified a point of connection from the 180mm distribution main located within Mendip Way near the site access. It is further noted that some reinforcement will be required to support the delivery of capacity to the site, including the amendment of settings on existing pumps remote from the site to increase the pressure in the area. These works will be carried out by Affinity Water at no cost to the developer. Further details of these works and the planning of them will be carried out upon receipt of planning permission for the site.
- 3.15 Telecommunications infrastructure capacity is not considered in the same way as electricity and water infrastructure, with the only consideration being the site ability to access the existing underground duct network of an existing telecommunications provider. In this case the site benefits from access to both BT Openreach and Virgin Media infrastructure located at the proposed site

access. It is therefore expected that BT Openreach Fibre to the Property service will be installed providing residents with access to superfast broadband. Virgin Media may also provide services utilising passive infrastructure access (PIA).

Summary and Conclusions

- 3.16 This assessment concludes that the impact of the existing utility infrastructure within the vicinity of the site has been fully considered and incorporated into the proposed masterplan. The proposed design is deliverable and would not be inhibited by the presence of either the 400,000V or 132,000V network within the site. Furthermore, there is no evidence to suggest that the presence of the lines contributes to an increased health risk for potential residents of the site. Localised diversion will be required to facilitate the site access however these are in keeping with works required to facilitate a development of this type and are viable and deliverable with no impact upon surrounding customers.
- 3.17 The existing electricity network can support the proposed development without impact upon supplies to the surrounding customers. It is no longer abnormal for developments of this scale to require offsite cable installation due to the transition to low carbon (and usually electrically driven) heating systems replacing traditional gas heating systems and therefore the works required to service the development are typical of a site of this scale.
- 3.18 A connection can be provided to the existing water network in close proximity to the site, and whilst reinforcement works are required, these works will be delivered by the water network operator to facilitate the site's development programme and plans to deliver the works will be progressed upon receipt of planning.
- 3.19 Telecoms infrastructure is present within close proximity of the site and can be extended into the development, providing residents with access to futureproofed superfast internet access.

Construction of the Proposed Development

- 3.20 The below sets out the indicative programme for the construction works for the Proposed Development, together with the key construction activities that would likely be undertaken on the Site. While the construction phasing is indicative, it gives an indication of how the Proposed Development could be brought forward. The exact strategy, phasing and delivery programme will be decided at the detailed design stage.
- 3.21 This is a descriptive section only. Assessment of construction impacts of the Proposed Development are provided in each technical chapter of this ES (i.e. Chapters 4-15). In addition, each technical chapter assesses the cumulative impacts of construction of the Proposed Development in conjunction with other schemes in the vicinity.

Indicative Construction Programme

- 3.22 It is anticipated that the Proposed Development will be delivered over a 5-year period from 2027 to 2032.

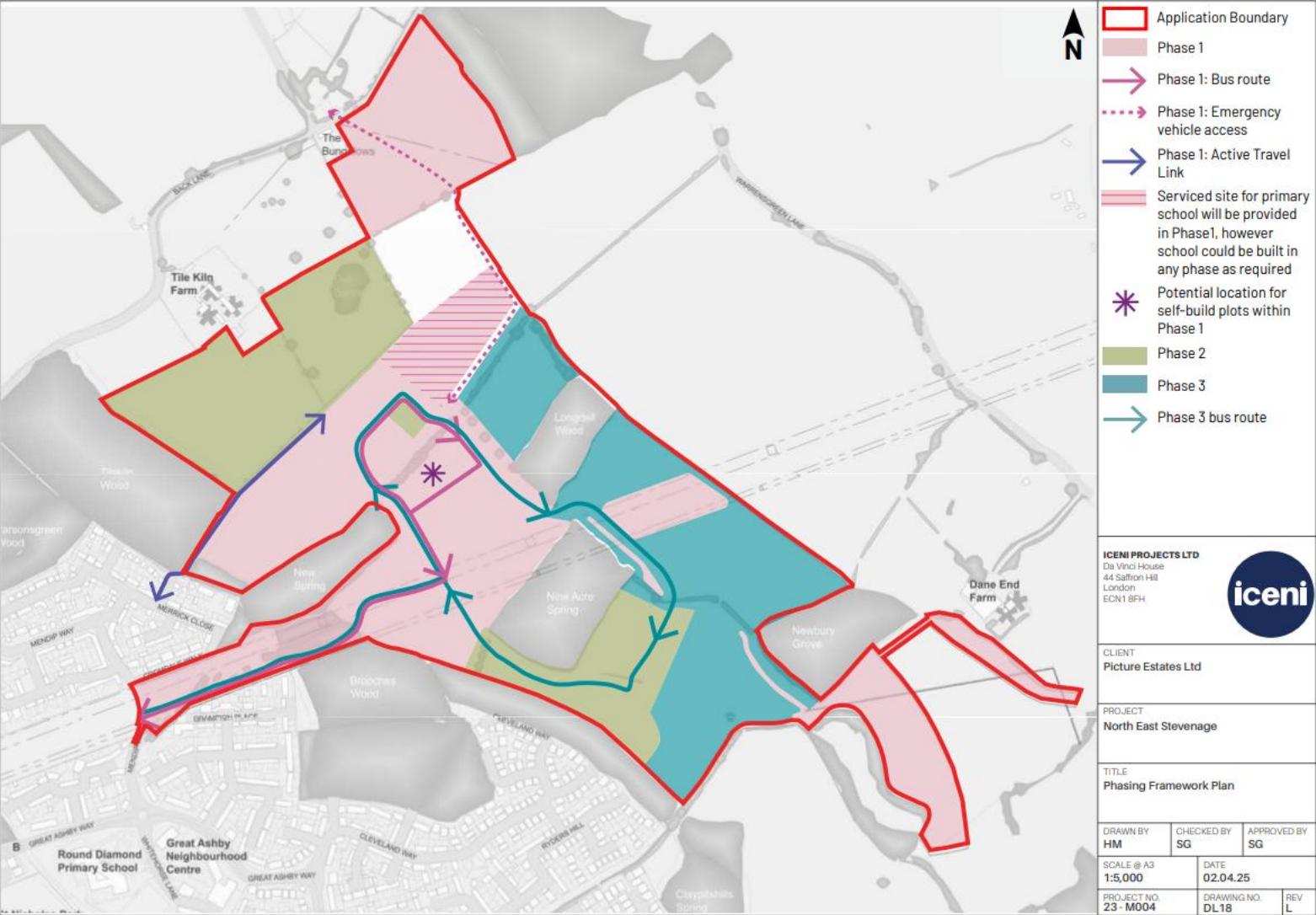
Construction Phasing

- 3.23 An indicative phasing plan for the purpose of assessment within this ES has been prepared in order to guide the delivery of the Proposed Development. It is envisaged that the Proposed Development will be brought forward in broadly three phases.
- 3.24 Whilst flexibility is sought in the consent, for the purpose of assessment it is proposed that the scheme will proceed through the following stages:
- **Phase 1:** Phase 1 could see the construction of the main access road into the Site off Mendip Way, and northwards towards the primary school. This would allow the housing alongside the primary street within the north of the Site to be constructed. This would also allow for the play area and parks along the new access road to be delivered, the parkland within the central green space and the creation of the western drainage basin. The emergency vehicle link should be built in Phase 1. The bus route should be implemented as soon as possible during Phase 1. Phase 1 could also see the delivery of the serviced primary school site, as well as the allotments. The swales and drainage basin within the east and south of the Site would also be required to serve this Community Hub area, and should also be delivered as part of Phase 1.
 - **Phase 2:** Phase 2 could include the housing area to the north west of the Site, as well as housing within the south west. It would also include the creation of the parkland at Dell Spring, and the provision of the Community facility.
 - **Phase 3:** Phase 3 could see the remainder of the housing and open spaces within the Site constructed, as well as the delivery of the habitat creation area in the far north of the Site. The

primary street would at this stage be complete, and the bus route would be provided linking through the Site in a clockwise direction along the primary street.

- 3.25 Although the serviced school site will be delivered in Phase 1, the school can be brought forward at any phase, in line with NHDC requirements.
- 3.26 **Figure 3.5** shows a map of the indicative construction phasing.

Figure 3.5 Indicative Construction Phasing Plan



Hours of Work

3.27 The prescribed hours of work would be agreed with NHDC. It is anticipated that the core working hours will be as follows:

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

3.28 The following 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;
- Check 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.

3.29 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; or
- Completion of an operation that would otherwise cause greater interference with the environment / general public if left unfinished.
- Approval from NHDC will be required for any works beyond the above that need to be undertaken outside of permitted hours.

Construction Waste Quantities Estimates

3.30 The BRE has set out the following Construction Waste Resource Efficiency Benchmarks in the most recently published BREEAM and HQM manuals:

Figure 3.6 Construction Waste Benchmarks

Up to three credits - Construction resource efficiency

- 4 Prepare a compliant Resource Management Plan (RMP) covering:
 - 4.a Non-hazardous waste materials (from on-site construction and dedicated off-site manufacture or fabrication, see Definitions on page 273), including demolition and excavation waste
 - 4.b Accurate data records on waste arisings and waste management routes.
- 5 Meet or improve upon the benchmarks in Table 10.1 for non-hazardous construction waste, excluding demolition and excavation waste.

Table 10.1 Construction waste resource efficiency benchmarks

BREEAM credits	Amount of waste generated per 100m ² (gross internal floor area)	
	m ³ (actual, not bulk volume)	tonnes
One credit	≤ 13.3	≤ 11.1
Two credits	≤ 7.5	≤ 6.5
Three credits	≤ 3.4	≤ 3.2
Exemplary level	≤ 1.6	≤ 1.9

The above resource efficiency benchmarks have been derived using data collected from hundreds of real life projects using BRE's SMARTWaste system, from July 2008 to July 2016. The BREEAM credits are aligned to the benchmarks as follows:

1. One credit: Performance in the top 50% of projects (better than standard practice).
2. Two credits: Performance in the top 25% of projects (good practice).
3. Three credits: Performance in the top 10% of projects (best practice).
4. Exemplary level: Performance in the top 5% of projects (exemplary practice).

3.31 North Hertfordshire Council do not set out a policy regarding the volume of construction waste generated, only the percentage of this that should be diverted from landfill. For the purposes of the Assessment, therefore, a level of waste generation that aligns with the achievement of one BREEAM credit has been applied. This would hold the contractor to a relatively standard level of performance.

3.32 Taking the same assumed GIA as applied for the Climate Change and GHG Emissions Assessment (64,516m²), the following volume of waste would be generated during the construction of the Proposed Development:

- **8,580.6 m³** (actual, not bulk volume); and
- **7,161.3 tonnes.**

3.33 As set out within the Sustainability Statement, it is intended that a minimum of 80% of non-hazardous demolition, excavation and construction waste materials be diverted from landfill for re-use, recycling or recovery. This equates to the following volumes of construction waste being diverted from landfill:

- **6,864.5 m³** (actual, not bulk volume); and
- **5,729.0 tonnes.**

Environmental Management and Mitigation Measures

Construction Environmental Management Plan

- 3.34 A Construction Environmental Management Plan (CEMP) will be prepared and agreed with the relevant bodies, prior to construction commencing. This would be secured through a planning condition and be prepared when the detailed design of each phase is developed.
- 3.35 The CEMP will set out the strategy, standards, control measures and monitoring procedures that will be implemented to manage and mitigate any adverse environmental effects of the demolition and construction process, including mitigation measures defined by the ES.
- 3.36 The CEMP will remain a live document to ensure that it is specific to the works and processes that are to be employed during construction site activities. The CEMP will include on roles and responsibilities, control measures and activities to be undertaken to minimise environmental effects, as well as monitoring and record-keeping requirements. It will also provide a framework for engaging with local residents and communities and their representatives throughout the construction period.

Dust, Air Quality, Noise and Vibration

- 3.37 Dust emissions escaping the work area may cause nuisance through, for example, surface soiling, loss of visibility due to deposition, and effects on nearby flora and fauna. Since it is difficult to suppress dust once it is airborne, it is optimal, where possible to prevent dust from being generated at source and good practice site mitigation measures, such as covering of stockpiles, on-site traffic management, wheel washing and good plant and vehicle maintenance, will be employed to minimise these effects as far as practicable.
- 3.38 Potential sources of noise and vibration include (but are not restricted to) plant and usage of heavy machinery, piling activities, crushing activities and vehicles movements. The Principal Contractor will implement the necessary management and operational controls on-site in order to minimise adverse noise and vibration impacts on nearby sensitive receptors from demolition and construction site activities.
- 3.39 Good practice site measures will seek to minimise potentially adverse noise and vibration effects that result from these activities. Should a complaint be received regarding noise and/or vibration, the Principal Contractor will consider installing monitoring equipment to measure the level of vibration being caused and, if it is deemed necessary, additional mitigation measures will be implemented to further reduce these impacts.

Water Resources and Land Pollution

- 3.40 Surface water, groundwater, foul water, potable water and land, will be protected from polluting materials through the demolition and construction process through adequate bunding, provision of

spill kits, implementation of correct storage measures and adherence to washing down and refuelling procedures. Contractors will adhere to vehicle washing and cleaning best practice to mitigate potential adverse effects during the construction phase. In the incidences of a spill work will be halted and the Site Manager will be notified. Mitigation measures which will be included in the CEMP. In the incidences of a spill work will be halted and the Site Manager will be notified.

References

ENA 43-8 Overhead Line Clearances - <https://www.energynetworks.org/>

Electric and Magnetic Fields – The Facts - <https://www.energynetworks.org/>