Utility Assessment

Land off Bartlow Road
Linton
Cambridgeshire

RLC Ref: 151077
July 2015

Prepared for

G W Balaam & Sons Ltd and Pembroke College
## Revision Schedule

**Job No. 151077**

**July 2015**

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<th>Date</th>
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<td>16 July 2015</td>
<td>Utility Assessment</td>
<td>Richard Martin BEng(Hons), CEng, MStructE Technical Director</td>
<td>Mike Lloyd BEng(Hons), CEng, MStructE Technical Director</td>
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<td>01</td>
<td>20 July 2015</td>
<td>Utility Assessment</td>
<td>Richard Martin IEng, MICE Principal Engineer</td>
<td>Mike Lloyd BEng(Hons), CEng, MStructE Technical Director</td>
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1 Executive Summary

1.1 Rossi Long Consulting Ltd have been commissioned by B W Balaam & Sons Ltd and Pembroke College to prepare a Utilities Appraisal to form part of the supporting technical documentation for an Outline Planning Application to be submitted by Bidwells (Planning Department) to South Cambridgeshire District Council.

1.2 The application site is located on two separate land parcels, situated to the north and south of Bartlow Road, immediately adjacent to the village of Linton, Cambridgeshire CB21 4NA. The northern land parcel currently comprises of open grassland and the southern land parcel comprises of agricultural farmland, with trees and vegetation to their perimeter. Access to both land parcels is currently achieved off of Bartlow Road (adopted highway) approximately mid-way along their southern and northern boundary lines respectively.

1.3 The proposed development comprises of 78 residential dwellings with associated gardens, garages, private drives and amenity features. Both land parcels will be served by an adoptable highway network leading off Bartlow Road via new access points designed and constructed in accordance with the Cambridgeshire County Council design requirements.

1.4 The appraisal demonstrates that the development is viable in relation to the provision of electricity, gas, potable water, foul sewerage and telecommunications. There are costs associated with the provision of these services as detailed below:

<table>
<thead>
<tr>
<th>Utility Service</th>
<th>Supplier</th>
<th>Diversion Works</th>
<th>Off-site Reinforcement Works</th>
<th>New On-site Supply &amp; Connection</th>
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<td>Electricity</td>
<td>UK Power Networks</td>
<td>£29,000</td>
<td>£110,000 (Option 1)</td>
<td>£70,000(1) (Option 1)</td>
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<tr>
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<td>£Nil (Option 2)</td>
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<td>Gas</td>
<td>National Grid Gas</td>
<td>£15,000</td>
<td>£Nil</td>
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<td>(Contingency)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potable Water</td>
<td>Cambridge Water</td>
<td>£Nil</td>
<td>£Nil</td>
<td>Onsite Construction Cost = £245.00 per unit</td>
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<td></td>
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<td></td>
<td>Connection Charge = £440.50 per unit</td>
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<tr>
<td>Foul Sewerage</td>
<td>Anglian Water</td>
<td>£Nil</td>
<td>£Nil</td>
<td>Onsite Construction Cost = £TBC</td>
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<td></td>
<td>Connection Cost &amp; Infrastructure Charges = £433.00</td>
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Utility Assessment

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<td>British Telecom</td>
<td>£TBC</td>
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</table>

1.5 The discharge of surface water is beyond the scope of this report and this has been dealt with as part of the Flood Risk & Surface Water Drainage Assessment submitted with the planning application.

1.6 There are no known Government Oil Pipelines crossing the development and as such they are not affected by the proposed development of the site.

1.7 Please note that the appraisal has been undertaken using the best information available at the time of writing. The utility requirements will vary as the site is developed and this may have an impact on the budget costs and available capacity within utility networks. The appraisal considers the site in isolation and it is not possible to take account of the cumulative impact of other unknown development in the area which may also affect available utility capacity. Where further development is allocated, we have assumed that the utility providers will have taken this into account in reviewing local capacity.

1.8 A further stage to the utility and drainage appraisal will be required as the scheme progresses to detailed design to provide more robust information on the supply of utilities. This next stage will need to consider detailed supply and diversion costs and the programme issues associated with the supply of utilities at each phase of the proposed development.
2 Introduction & Development Description

2.1 Rossi Long Consulting Ltd have been commissioned by B W Balaam & Sons Ltd and Pembroke College to prepare a Utilities Appraisal to form part of the supporting technical documentation for an Outline Planning Application to be submitted by Bidwells (Planning Department) to South Cambridgeshire District Council.

2.2 The application site is located on two separate land parcels, situated to the north and south of Bartlow Road, immediately adjacent to the village of Linton, Cambridgeshire CB21 4NA. For the purpose of this report the land to the north of Bartlow Road will be referred to as Land Parcel A and the land to the south of Bartlow Road will be referred to as Land Parcel B.

2.3 The two land parcels currently comprise of open grassland for Land Parcel A and agricultural farmland for Land Parcel B, with trees and vegetation to their perimeter. Access to both land parcels is currently achieved off of Bartlow Road (adopted highway) approximately mid-way along their southern and northern boundary lines respectively.

2.4 The proposed development as shown in Appendix A comprises of 78 residential dwellings with associated gardens, garages, private drives and amenity features. Both land parcels will be served by an adoptable highway network leading off Bartlow Road via new access points designed and constructed in accordance with the Cambridgeshire County Council design requirements.

2.5 As part of the assessment all relevant utility providers have been contacted to supply record drawings and pre-development enquiries have been submitted to confirm available network capacity and to obtain budget costs where appropriate for new supplies and for diversions. All pre-development enquiries were submitted in May/June 2015, copies of the pre-development enquiries and record drawings are included within the appendices to this report.

<table>
<thead>
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<td>Anglian Water</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>British Telecom</td>
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</tbody>
</table>

2.6 The following sections consider the impact of the proposed development on existing services, within or in the vicinity of the site with regard to cost and programme issues associated with diversions and disconnections. Please note that the appraisal has been undertaken using the best information available at the time of writing. The utility requirements will vary as the site is developed and this may have an impact on the budget costs and available capacity within utility networks. The appraisal considers the site in isolation and it is not possible to take account of the cumulative impact of other unknown development in the area which may also affect available utility capacity. Where further development is allocated, we have assumed that the utility providers will have taken this into account in reviewing local capacity.

2.7 The discharge of surface water is beyond the scope of this report and this has been dealt with as part of the Flood Risk & Surface Water Drainage Assessment submitted with the planning application.
3 Electricity

3.1 A formal request for asset mapping and a pre-development enquiry has been submitted to UK Power Networks (UKPN) and their response has been included within Appendix B.

Diversion Works

3.2 UKPN have confirmed that there are above and below ground services that could potentially become affected by the proposed development. The total budget cost provided by UKPN for diversionary work is £29,000 with a breakdown of the works and their individual costs provided below:

- A budget fee of £14,000 has been provided for the undergrounding of the high voltage cable along the western boundary of the Land Parcel B. However the development layout has incorporated a buffer zone along this boundary and therefore undergrounding of these services may not be required;
- A budget fee of £15,000 has been provided for the diversion of the existing low voltage cable that runs through the centre of Land Parcel B.

3.3 Therefore the above cost of £29,000 is variable and should be considered as a contingency at this stage.

Off-site Reinforcements Works & New On-site Supply

3.4 UK Power Network have provided two options for the provision of electricity services to the site.

3.5 Option 1 – UKPN have provided a budget estimate of £110,000 for off-site reinforcement works and £70,000 for the new on-site supply based on a Point of Connection (PoC) from the existing Sub-station located to the north-west of Land Parcel B.

3.6 The budget fee includes:

- Undertake necessary upgrade works to the sub-station to ensure capacity is available to serve the development. This will be achieved by connecting the sub-station to the local ring circuit and includes the laying two high voltage cables approximately 340m to form the connection;
- Install new low voltage cables from the existing sub-station around the site to provide the new development connections;
- See Appendix B for UKPN's full list of assumptions and scope of works.

3.7 Option 2 – UKPN have confirmed that no off-site reinforcement works are required and have provided a budget estimate of £130,000 for the new on-site supply based on a PoC from the High Voltage network just outside of the northern boundary of Land Parcel A:

3.8 The budget fee includes:

- Install a new high voltage cable from the UKPN high voltage network north of Land Parcel A and into the site. The high voltage cable will then terminate with a new sub-station located on Land Parcel A (Adjacent to Bartlow Road). Land approximately 6m x 6m will be required to be leased, or transferred to UKPN on which their substation will be established;
- Install new low voltage cables from the new sub-station around the site to provide the new development connections;
See Appendix B for UKPN's full list of assumptions and scope of works.

3.9 All civil works within the site boundary, including sub-station bases, sub-station buildings where applicable and the excavation/reinstatement of cable trenches will be undertaken by the developer at no charge to UKPN.
4 Gas

4.1 A formal request for asset mapping and a pre-development enquiry has been submitted to National Grid Gas and their response has been included within Appendix C.

Diversion Works

4.2 The National Grid asset maps show below ground services that could potentially become affected by the proposed development as described below:

■ A 6” Intermediate Pressure (IP) pipeline crosses the north-east corner of Land Parcel A. It would not be a financially viable option to divert this IP pipeline and therefore the required easement has been incorporated into the development layout. Initial guidance provided by National Grid Gas has suggested an easement of 3-6m either side of the pipeline should be sufficient, however we are currently into the process of obtaining the wayleave agreement to confirm the exact easement requirements;

■ A 6” Low Pressure (LP) pipeline is located within the footpath of Bartlow Road along the northern boundary of Land Parcel B. It is unknown at this stage if this pipeline will require diverting/lowering as part of the access construction to Land Parcel B and a contingency sum of £15,000 should be allowed for at this stage.

Off-site Reinforcements Works

4.3 Nation Grid Gas have confirmed that the 6” LP pipeline located within the footpath of Bartlow Road has sufficient capacity to serve the proposed residential development without the need for off-site reinforcement works.

New On-site Supply

4.4 National Grid Gas does not undertake the works necessary to provide the new on-site supply to residential development. Therefore AWH Utility Services have been approached to provide a quotation for these works and have provided a budget fee of £25,000.

4.5 A review of the quotation provided within Appendix C should be undertaken, for full terms and assumptions of works to be undertaken.

Dual Fuel Quotation

4.6 GTC have provided a dual fuel budget cost of £54,392.19 as shown in Appendix D for the provision of on-site gas and electricity supply/connection to the proposed residential units. It has been assume by GTC that the PoC for the gas will be at low pressure and the PoC for the electricity will be onto the low voltage network. Therefore the cost associated with the offsite electricity works has not been incorporated into this fee quotation and a further quotation should be obtain during the detailed design stage.

4.7 All civil works within the site boundary, including sub-station bases, sub-station buildings where applicable and the excavation/reinstatement of cable trenches will be undertaken by the developer at no charge to GTC.
5 Oil Pipeline

5.1 A Linesearch enquiry has been undertaken and has confirmed that there are no oil pipelines within the vicinity of the site as shown in Appendix E.

5.2 Reference has been made to an Intermediate Pressure (IP) gas main passing through Land Parcel A. This has been discussed in more detail within Section 4 above with regards to easement requirements.
6 Potable Water

6.1 A formal request for asset mapping and a pre-development enquiry has been submitted to Cambridge Water and their response has been included within Appendix F.

Diversion Works

6.2 The Cambridge Water asset maps shows a 5” CI Main located within the footpath of Bartlow Road along the northern boundary of Land Parcel B. The main was likely to have been installed with sufficient cover and diversion/lowering of the main is unlikely to be required as part of the access construction to Land Parcel B.

Off-site Reinforcements Works

6.3 Cambridge Water have confirmed that the 5” CI Main located within the footpath of Bartlow Road has sufficient capacity to serve the proposed residential development without the need for off-site reinforcement works.

New On-site Supply

6.4 Cambridge Water have also confirmed that the approximate cost for installing the on-site mains is £700 per unit. The developer would be expected to make a contribution towards this cost, however the amount payable is dependent on a number of factors including build/occupancy rate. A typical rate payable by the developer is 35% equating £245 per unit.

6.5 In addition to the above, there will be charges associated with both Connection Cost and Infrastructure Charges as detailed below:

- Connection Charge = £440.50 per unit;
- Infrastructure Charge = £353.88 per unit;

6.6 All civil works within the site boundary, including the excavation/reinstatement of trenches will be undertaken by the developer at no charge to Cambridge Water.

Water Resources

6.7 To help reduce the burden on the local water resources, a series of measures of water efficiency could be considered within the development as part of the sustainability strategy.

6.8 The water efficiency measures to be considered would be as follows:

- Low use taps;
- Baths with a limited volume of 130 litres;
- Showers limited to 3.7 l/min;
- Duel flush low volume toilets with a 4/2 litre capacity.
7 Foul Sewerage

7.1 A formal request for asset mapping and a pre-development enquiry has been submitted to Anglian Water and their response has been included within Appendix G.

Diversion Works

7.2 The Anglian Water asset maps identify a foul sewer located along the developments north-west boundary of Land Parcel B between Manhole 1501 and Manhole 1502. It is not intended to divert this sewer as part of the site development, however a 3.0m easement will be provided where this enters into the development boundary.

Off-site Reinforcements Works

7.3 Anglian Waters Pre-development report and Addendum email has confirmed:

- The development will be served by the Linton Water Recycling Centre (WRC) and the WRC currently has capacity to serve the proposed development;

- The foul sewerage network has sufficient capacity to convey a gravity discharge from the proposed development and that the preferred connection point into the public sewer network would be via the existing Manhole 1502 located along the development sites western boundary.

- The foul sewerage network also has sufficient capacity to convey a pumped discharge (3.8 l/s) from the proposed development and that the preferred connection point into the public sewer network would be via the existing Manhole 7501 located approximately 280m to the west of the site (adjacent grassland).

7.4 Therefore no reinforcement works are required to serve the proposed development, however an on-site adoptable pumping station and offsite rising main may be required should a gravity discharge not be feasible for the entire site.

7.5 A possible alternative to constructing an on-site pumping station and installing an offsite rising main across third party land, could include the installation of individual sewerage treatment plants to serve each property. This would only be applicable to the lower residential units across the southern half of Land Parcel B where a gravity discharge into the public sewer may not be viable. The individual sewerage treatment plants could discharge via a combine drainage network into River Granta and therefore only a single outfall would be required. This option would require justification to the Environment Agency, giving reason why, not all residential units are fully discharging to the Anglian Water public sewer and could include abnormal construction costs.

New On-site Supply

7.6 The proposed foul water sewer network serving the development will be design and constructed in accordance with Sewers for Adoption (6th/7th Edition) and offered for adoption to Anglian Water under a Section 104 application.

7.7 There will be a cost to the developer associate with the design and construction of the adoptable sewer network. At this stage it is not possible to provide a budget figure for the proposed works as this can vary greatly with the final design, however the cost of these works would not be considered as abnormal costs for a development of this size. There will potentially be an additional cost associated with the construction of an adoptable on-site pumping station of approximately £100,000 when compared to a traditional gravity system.
7.8 In addition to the above, there will be costs associated with Infrastructure Charges and Connection Costs at £433.00 per unit payable to Anglian Water.
8 Telecommunication

8.1 A formal request for asset mapping has been submitted to British Telecommunications (BT) and their response has been included within Appendix H.

Diversion Works

8.2 The BT asset maps show existing underground and overhead networks in the vicinity of the western and southern boundaries of Land Parcel A and the eastern and northern boundaries of Land Parcel B.

8.3 The underground network along Bartlow Road is at risk of requiring diverting/lowering as part of the site access construction into the southern land parcel. During the detailed design stage, plans showing the layout and level design of the proposed access will need to be provided to Openreach for their consideration. Prior to submission of these plans, trial holes should be undertaken to determine the level of cover to their ducts in combination with the design drawings. The cost for lowering their equipment, if it is not possible to design out as part of the access design, is dependent on whether sufficient slack is available within their cable network to allow the existing ducts to be lowered in their current location, or whether duct and cable replacement is necessary.

8.4 To secure a detailed cost for lowering the BT apparatus in these locations, Openreach require a upfront design fee of £869.64.

Off-site Reinforcements Works

8.5 British Telecommunications are able to provide a connection from their existing infrastructure with the likely connection points for the site leading off Bartlow Road to the south of Land Parcel A and to the north of Land Parcel B. BT does not anticipate charging for the necessary off-site works.

New On-site Supply

8.6 British Telecommunications are prepared to enter into a contract which will allow a contributory payment against the on-site works to serve the site.

Alternative Telecommunication and Cable Television Suppliers

8.7 Enquiries to Virgin Media, Global Crossing UK Limited, BskyB, Energetics, Telent, CA Telecom, Verizon, Vodaphone, Vtesse and Interoute have all been made regarding their apparatus within the vicinity of the site. Their responses have been included within Appendix I and they have all confirmed that they have no services crossing the existing development site and that diversions are therefore considered unlikely.

8.8 At this stage they have not stated any preference to serve the proposed development, however this will be discussed in more detail as the scheme is developed further.
9 Discussion and Conclusion

9.1 The appraisal demonstrates that the development is viable in relation to the provision of electricity, gas, potable water, foul sewerage and telecommunications. There are costs associated with the provision of these services as detailed below:

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<td>Telecoms</td>
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<td>£TBC</td>
<td>£Nil (3)</td>
<td>£Nil (3)</td>
</tr>
</tbody>
</table>

(1). Assumed gas heated development or alternative fuel source such as oil.
(2). Duel Fuel quotation from GTC for on-site network installation and supply of gas and electricity.
(3). British Telecom do not anticipate charging for the necessary off-site works and are prepared to enter into a contract which will allow a contributory payment against the onsite works.

9.2 The discharge of surface water is beyond the scope of this report and this has been dealt with as part of the Flood Risk & Surface Water Drainage Assessment submitted with the planning application.

9.3 There are no known Government Oil Pipelines crossing the development and as such they are not affected by the proposed development of the site.

9.4 A further stage to the utility and drainage appraisal will be required as the scheme progresses to detailed design to provide more robust information on the supply of utilities. This next stage will need to consider
the detailed supply and diversion costs and the programme issues associated with the supply of utilities at each phase of the proposed development.
Appendices
Appendix A

Proposed Development
Appendix B

Electricity - UK Power Network Correspondence / Plans