RichardJackson
Engineering Consultants

Our Ref: 48130/JDP/RNL – Rev A
Your Ref:

07 September 2017 **Email Only**

Consortium of Taylor Wimpey, Persimmon Homes & Hopkins Homes
c/o Ms R Rejzek
Bidwells
16 Upper King Street
Norwich
NR3 1HA

Dear Ms Rejzek,

Re: Land at White House Farm, Sprowston – Phase 3 – Utilities Constraints

I refer to our instructions to assess the utilities that are existing within the proposed development site and obtain budget estimates for supply the site and diversions that may need to occur. This report is to help the vision and identity plan for Phase 3, which is for approximately 1515 dwellings, and to be included in Broadland District Councils Local Plan. However, original budget estimates were sought for 1200 dwellings.

We have obtained utilities records for the area surrounding White House Farm to identify the constraints, if any, that existing utility apparatus poses to the proposed development site. We have produced a drawing **48130-PP-SK03** which shows all of the existing utilities within the site boundary, and the easements that apply to these utilities. It should, however, be noted that these utility locations are indicative and the exact locations of utility apparatus and private connections should be determined using CAT scanners, trial holes or similar before any works commence.

Existing Utilities

There are three main utilities that will affect the development area of Phase 3, these are National Grid Gas Plc, Anglian Water (Foul) and UK Power Networks (UKPN). There could be private connections to the existing dwellings of White House Farm but these are not shown on the existing records.

There is a 200mm diameter steel gas pipe of intermediate pressure (2bar) that runs between Rackheath and Beeston. This has a 14m easement either side of the centreline of the pipe and crosses the southern boundary with Salhouse Road in the south western corner of Phase 3. The main will have to be protected from any excavation work and National Grid will need to be contacted to ensure the main is properly protected during works. The main is estimated to be between 1.2m and 1.5m deep, however, trail holes will need to be undertaken to confirm the exact location/depth of the main where the proposed access to Salhouse Road is located above, during the planning stage.

The gas main and its easement cannot have any private structures built on top, and any excavation works need to be agreed with National Grid. Gardens of dwellings could encroach into the easement of the main, alternatively, the main could also be diverted. The depth of the main will need to be determined irrespective of whether the main gets diverted or not.

Cont'd.../

6 The Old Church
St Matthews Road Norwich
Norfolk NR1 1SP

Telephone: 01603 230240
www.rj.uk.com

Anglian Water (Foul) also have assets within the site boundary of Phase 3. There are two rising mains close to the south west boundary of the site near the existing dwelling of 22 Salhouse Road. One of 280mm dimeter and one of 450mm diameter. The 450mm dimeter main should not affect the development proposal, however, no structures can be built over the main or its 3.5m easement. The closest existing foul water sewers are located in the main spine road of Mallard Way.

The 280mm main which runs along the southern boundary of Phase 3 adjacent to Salhouse Road will have to be managed carefully. The access location from Phase 3 onto Salhouse Road will also have to be specifically located, therefore until the access location is finalised a strategy for the 280mm rising main should be put on hold. The 280mm diameter has a 3m easement and no structures can be built over the main or its easement. Correspondence with Anglian Water is required to identify whether the main needs to be diverted in the vicinity of the proposed access onto Salhouse Road.

The depths of the rising mains are not known, and trail holes should be undertaken in order to confirm their depth. It should also be noted that the current Anglian Water plans are not up to date as the diverted rising main and infrastructure from Phase 1 are not shown in full.

On the Anglian Water potable records there was no sign of any existing apparatus within the site boundary. There is a 7" galvanised iron main in the verge immediately south of Salhouse Road to the South of the site. This may require diversion depending on the finalised access type and location from the site onto Salhouse Road.

The buildings of White House Farm are served by high voltage overhead electric apparatus that run adjacent to the access track from the north of the existing buildings. At the present time the buildings of White House Farm are assumed to be remaining in place, therefore there is no need to divert or remove this network. A 3m easement is likely to be required if this apparatus is retained on site.

BT has overhead apparatus present on the southern side of Salhouse Road and careful consideration will be required for the proposed access road onto Salhouse Road. Additionally, there is one pole on the northern side that provides the connection to White House Farm and this could be diverted or integrated into the proposed development. Their apparatus on the southern side may need to be diverted depending on the finalised access type and location.

Budget Estimations

All statutory utility companies that have apparatus within the site or its boundary have been contacted to request budget estimates for serving the originally proposed 1200 residential dwellings. The budget estimates detail whether any diversionary works need to occur and provide the cost of supplying the site.

UKPN have stated the point of connection for supplying Phase 3 would be from the extended high voltage network from Phase 2. The budget estimate assumes that the dwellings will be gas heated and that an appropriate route from Phase 2 into Phase 3 is available. The budget estimate for supplying the originally proposed 1200 residential dwellings is **£1,050,000.00**. Additionally, UKPN have included a £35,000.00 estimate to divert the over ground cables in the northern part of the site if they are not incorporated into the masterplan.

Cadent have been contacted regarding the intermediate pressure main and the constraints regarding the main. Cadent have confirmed that any utilities that cross the main will have to be a minimum of 600mm above or below the main. Cadent would have to be consulted on any utility locations that would cross the main and works would have to be carried out in accordance with National Grids document for safe working within the vicinity of high pressure gas pipelines.

Cont'd.../

GTC were contacted to provide a budget estimation for supplying the development with gas and an electricity supply. There are numerous strategies that could be employed to ensure that the phase 3 has a suitable gas network to serve the site. Depending on the capacity at the pressure reduction station and correspondence with National Grid will determine the method used. The possible methods are:

- Utilise the existing pressure reduction station to the north of phase 3 and the existing network in Salhouse Road to provide a connection similar to that of Phase 1.
- Incorporating a gas pressure reduction station into the phase 3 design in the south western corner of the site would enable this to be used as the connection point for the gas network.

The budget estimate from GTC is still pending and will be updated once received.

BT does not provide a duct and chamber design for new on-site apparatus or entertain any site specific dialogue until planning consent has been granted. BT provides free-issue materials for installation by the developer's appointed ground worker. BT generally carries out any network reinforcement work outside of the site boundary and in the public highway to provide capacity to a development.

Anglian Water have been contacted in the form of pre-development enquiry for both foul and potable water. The pre-development enquiry was for the finalised dwelling numbers of 1515 for Phase 3.

The potable costs have been split into offsite and onsite costings to enable a clear and robust assessment. The offsite costs are estimated to be **£210,849.97** which is for upgrading the Spixworth potable water distribution centre based on a required 22 l/s for the site. Onsite the costings are stated to be **£1,219,800.00**, giving a total of £1,430,649.97. However, Anglian Water pay for most of the costs and the developer contributes to the finalised total, on the pre-development the relevant deficit cost is **£358,106.** Additionally, an infrastructure charge per dwelling is applied which is currently £361.00 per dwelling, totalling **£546,915** for the site. Therefore the total developer cost for supplying potable water is **£905,021**.

The foul water requires further hydraulic modelling to ensure that there is not a detrimental effect downstream of the proposed development site. There is likely going to be a requirement for offsite upgrades and potential protection/diversion to the existing rising mains to the north of Salhouse Road. It is also likely that at least one new pumping station is needed for Phase 3 to control and direct flows to Salhouse Road. Finally, also included in the pre-development enquiry is that currently Whitlingham Trowse Recycling Centre has capacity to treat the expected flows from the site.

Yours sincerely,

Joshua Pitcher
on behalf of Richard Jackson Limited

Checked by Raymond Long – BSc (Hons), IEng, TMICE, MCIHT
on behalf of Richard Jackson Limited

Encs – Drawing 48130-PP-SK03 Rev A
Anglian Water Pre-Development Enquiry

CC - Mr T Hewett – Taylor Wimpey
Ms L Townes – Persimmon Homes
Mr R Eburne – Hopkins Homes