



UTILITIES REPORT  
DOCUMENT 10  
March 2008

## Notice

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## Document Control

Project Number: 5055875			Document Ref: Services Report			
Revision	Description	Originated	Checked	Reviewed	Authorised	Date
0	Draft 1	TA/MB				25/10/07
1	Draft 2	TA/MB	JD			30/01/08
2	Draft 3	TA/MB	JD	MAS	MAS	10/03/08
3						
4						

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## 1.0 INTRODUCTION

Atkins Ltd (Atkins) has been commissioned by the Curborough Consortium to produce a Services Report for a proposed development near Fradley, Lichfield.

The initial brief and commission was to locate the type and number of Statutory Authorities' Services which are present within the site.

Atkins was subsequently commissioned to determine the available capacity of the network to supply the development. The scope of our commission was further extended to provide an indication of the budget estimate for the works which, may be required to service the proposed development. Atkins final commission was to identify wayleaves and easements within the site and to determine the associated protected area surrounding the wayleave or easement.

A site location plan is given in Figure 1 and the composite service location plan is given as Drawing 5055875/001.

Three working draft Masterplans were provided to Atkins in October and November 2007 and January 2008 during the preparation of this report:

- WORKING DRAFT Proposed Areas Plan, Drawing Number 002, Revision A. Dated 14/10/2007
- DRAFT Concept Masterplan, Drawing Number 001, Revision B. Dated 23/11/2007
- DRAFT Concept Masterplan, Drawing Number 001, Revision C. Dated 21/12/2007

For ease of reference, these have been identified in the text as Masterplan A, B and C. The primary spatial extents of the masterplan has not changed during this time, essentially the changes arise due to local changes specific layout e.g. school layout and further definition of roads and plot layouts/densities.

The Working Draft Proposed Areas Plan was released to Statutory Authorities to determine service locations. The Draft Concept Masterplan, Revision B was issued to statutory authority bodies to determine capacities and Revision C was issued for budget estimates although as numbers and quantities were not available its use by the Statutory Authorities was limited. Revision C was issued for the easements and wayleaves enquiries. Changes in site extent and the masterplan use may impact upon this report.

Private services/supplies are not incorporated within this report.

Due to the extremely large amount of information provided by the statutory authorities, the appendices to this report can be found on the attached CD.

## 2.0 CONTACTS

The following Statutory Authorities were contacted and requested to supply information regarding the presence of their apparatus:

Utility	Address
British Petroleum Association (BPA)	5-7 Alexandra Road Hemel Hempstead Hertfordshire HP2 5BS
British Telecom (BT)	National Notice Handling Centre PP3 WW18, Telecom House Trinity Street Hanley Stoke-on-Trent ST1 5ND Tel 0800 1693849
Cable and Wireless	Plant Enquiry Team working on behalf of Cable and wireless PO Box 290 260 Aztec West Almondsbury Bristol BS32 4WE
McNicholas Construction Ltd (Colt, KPN and VSNL Networks)	Plant Protection Lismirrane Industrial Park Elstree Road Elstree WD6 3EA Fax: 0208 236 6600
NTL	NTL: Telewest National Plant Enquiries Cable Phone House Small Heath Business Park Talbot Way Small Heath Birmingham B10 0HJ  (Company Name change) Virgin Media
Thus plc	1 – 2 Berkerley Square 99 Berkerley Street Glasgow G3 7HR Tel: 0141 567 1234

Trafficmaster Plc	University Way Cranfield Bedfordshire MK43 0TR Tel: 08705 561712
E-on Central Networks	Central Networks CNDS Bureau Services Toll End Road Tipton West Midlands DY4 0HH
Gas Transportation Company	Gas Transportation Company (GTC) Woolpit Business Park Woolpit Bury St Edmunds Suffolk IP30 9UQ Tel: 01359 240363
National Grid Company (Electric and Gas).	National Grid UK Transmission Transmission Enquires Team National Grid House Land and Development (B1) Warwick Technology Park Gallows Hill Warwick CV34 6DA  National Grid UK Distribution Plant Protection Lismirrane Industrial Park Elstree Road Elstree WD6 3FA  Asset Protection Team PO Box 3484 CV34 6TG
Severn Trent Water Limited	Severn Trent Water Ltd Waterworks Road Edgbaston Birmingham B16 9DD  Asset Protection Regis Road Tettenhal Wolverhampton WV6 8RU

South Staffordshire Water	Developer Services South Staffordshire Water plc Green Lane Walsall WS2 7PD
Ministry of Defence	Disposal Section Defence Estates Copthorne Barracks Copthorne Road Shrewsbury SY3 7LT

A summary of the replies is given in Section 3 and a copy of the correspondence received can be found in Appendices A and B. Although every effort has been made with the Statutory Authorities to identify the presence of services, private services may also exist on site, for which no records are available. In addition, a large proportion of the site area formerly comprised MOD airfield. Attempts have been made to recover service plans from the MOD but we have been unsuccessful.

The terms “Services Affected” and “Services Non Affected” relate to whether the service may be affected by redevelopment of the site.

Due to the sheer size of the site, the Statutory Authorities have often provided a large number of plans that cover the site. For ease of reference, the service locations have been transferred onto a composite service plan (Drawing 5055875/001) and the text of the report presents a brief description of the service size and location. The extent of mapping provided by the Statutory Authorities has been plotted onto Drawing 5055875/002. Reference should be made back to the original plans for the larger scale detail to locate a particular service. The actual service locations must be determined on site prior to any works being undertaken.

It should be noted that three unclassified roads are present within the site. For ease of reference these have been identified on Drawing 5055875/001 as Road A, Road B and Road C. Road A is located to the south of Wood End Lane and to the east of the Car Sprint Course. It passes through the approximate centre of the site from Wood End Lane to the railway line in the south. Road B is also located to the south of Wood End Lane, in part of the Business Park to the east of the site. Road C is located to the east of Hilliard’s Cross. It links Brookhay Lane with Bears Hay Farm and Deans Hay Farm.

### **3.0 REPORT ON STATUTORY AUTHORITIES' APPARATUS**

#### **3.1 Telecommunications**

##### **3.1.1 BT Open Reach**

BT services within the site often appear as 'clusters' within the country lanes serving the properties within the site and occasionally running cross country. A summary of the BT services present on the site is presented below. The summary should be read in conjunction with the composite service plan and plan showing the extent of mapping provided by the Statutory Authorities (Drawing 5055875/001 and 5055875/002).

An underground cable with manhole covers and joint boxes runs along the western-side of Rykneld Street (A38). Several BT lines intersect this at the Hilliard's Cross road junction. An overhead cable runs parallel to the eastern-side of A38 from the Hilliard's Cross road junction. From the road junction a cable runs south to Deans Hay Farm 200m to the southeast. A second underground cable follows Brookhay Lane.

Underground cables are present from Hilliard's Cross along Wood End Lane providing services to the industrial/commercial units along Lancaster Road, Common Lane and directly off Wood End Lane on both sides of the road. Numerous joint boxes are located along Wood End Lane. Random underground services connect from Wood End Lane via the Skid Pan southwest towards farmland and from the rear of the auction house southwards across fields and are probably related to the former airfield.

The underground cable on the northern-side of Wood End Lane splits at the junction of Gorse Lane. One cable continues along Wood End Lane the second underground cable crosses northwards into Gorse Lane and services individual properties and commercial/industrial units and loops back around to Wood End Lane. Overhead cables cross Wood End Lane at Road A northwards to the commercial/industrial units and southwards along Road A towards the residential properties.

In the southeast of the site underground cables are shown running on both sides of Trent Valley Road. Underground cables branch off the cable on the southern-side of the Trent Valley Road serving three small industrial/commercial

properties. Two warehouses are shown in the south of the site but no cables are shown to serve them.

An overhead BT cable enters the site in the south near to the railway bridge close to Brownfields Farm. The cable splits into two with one of the cables serving Brownfields Farm and the other running up the western-side of Road A terminating at Brownfields Cottage.

In the west of the site, underground cables are present along Watery Lane. The cables which enter the site in the south-western corner run up the western-side of Watery Lane. The underground cable becomes an overhead line near to Curborough Hall Farm splitting into two with the original cable continuing north up Watery Lane serving numerous small properties while the second crosses the road to serve the farm. The cable continues across the fields to the east of the farm serving residential properties and splitting into two near to Curborough Hall Farm. One of the cables serves residential properties and splits into two. One of the cables serves Curborough Grange whilst the second continues across country to service the cluster of properties around Curborough House.

### **3.1.2 Cable & Wireless**

Cable & Wireless have confirmed they have no apparatus which will be affected within the site area.

### **3.1.3 McNicholas (Colt, KPN and VSNL Networks)**

McNicholas have confirmed they have no apparatus which will be affected within the site area.

### **3.1.4 NTL**

Several requests have been made to NTL/Virgin Media regarding the location of any plant which may be affected in the site area. No response has yet been received from NTL/Virgin Media.

### **3.1.5 Thus plc**

Thus plc have confirmed they have no apparatus which will be affected in the site area.

### 3.1.6 Trafficmaster plc

Trafficmaster have confirmed they have no apparatus which will be affected in the site area.

## 3.2 Water and Sewage

### 3.2.1 Water Supply – South Staffordshire Water

A variety and range of water supply pipes are found in two zones within the site, i.e. along Wood End Lane and in the south of the site north of the railway line.

#### Wood End Lane

A single 18" cast iron water main runs along the eastern-side of the A38 to the south of Hilliard's Cross road junction whilst 18" cast iron mains are present on both side of the road north of the junction. An 80mm PVC pipe runs down Brookhay Lane. An 18" cast iron, 400mm ductile iron and a 3" cast iron pipe skirt the eastern most boundary of the site along a small track identified as Road C.

From Hilliard's Cross, water mains run up both sides of Wood End Lane generally following the line of the road and comprise an 18" cast iron main on the south side and a 180mm MDPE pipe running along the north side. Connections cross beneath the traffic islands on Wood End Lane to supply industrial and residential properties to the north of Wood End Lane and the Business Park to the south. Individual premises are also served off Wood End Lane. A 300mm ductile iron pipe runs down the western-side of the unnamed lane near East Hill. The 18" main on the south side of Wood End Lane diverts westwards across country in the vicinity of the Auction centre, on entering the boundary of the site, it reduces to 12" steel and diverts northwest cross country towards Wood End Lane where it again becomes 18" cast iron and follows Wood End Lane to Wood End Lane Farm.

The 180mm MDPE on the north side of Wood End Lane Farm reduces to 150mm PVC midway between Hilliard's Cross and Gorse Lane. In the vicinity of Gorse Lane it becomes a 250mm Ductile Iron to the junction with the Spinney, from here it becomes a decommissioned 6" cast iron water main which formerly supplied residential and industrial/commercial properties on Gorse Farm past the Spinney. Gorse Farm is supplied by a 1¼" HDPE pipe from the 18" cast iron pipe located on Wood End Lane. A 63mm MDPE water main branches off the main 18" cast iron pipe running on the southern-side of Wood End Lane running roughly parallel

to Road A passing through the centre of the site to service the properties to the south to Lilac Cottage.

### **South of Site**

In the southeast of the site a 110mm MDPE runs along the southern-side of the A38. Several 4" and 6" cast iron mains intersect the 110mm MDPE main and run parallel to the road. A 500mm ductile iron main crosses the fields in the south of the site running roughly parallel to the north of the railway line. The water mains exit the site crossing the railway line near the road bridge on Watery Lane. A 32mm MDPE main runs up Watery Lane from Curborough Hall Farm towards the sewage treatment works. A small 1" iron main branches off from the 32" main to service Corporation Farm.

Fradley Pumping Station is located off Brookhay Lane to the east of the site and connects to an 18" cast iron main in the north, 400mm ductile iron and 3" cast iron main to the south.

### **3.2.2 Sewers – Severn Trent Water**

A combined use sewer crosses Wood End Lane in the area of the Auction Centre and heads in a south westerly direction where it becomes a combined gravity sewer at Road B. The combined gravity sewer continues in a south westerly direction entering the sewage treatment works located adjacent the western boundary of the site and Watery Lane.

There is a cluster of services on Wood End Lane of significance. A public surface gravity sewer, 600mm in diameter runs in a south easterly direction from the business park to the A38. A 250mm diameter foul use pressurised sewer runs from the business park and heads northwest across the county and joins the combined use pressurised sewer to the south of the Skid Pan. Two private combined sewers run in a southerly direction along Road B before joining onto the 250mm foul pressurised sewer.

In the south east of the site, a private sewer (up to 300mm in diameter) runs northeast towards Burton Road and runs parallel to it for approximately 200m servicing a number of properties before apparently connecting at a public gravity sewer which heads north east.

A combined use pressurised sewer enters the site from the south east from Burton Road. It continues in a north westerly direction following the course of the

railway line. The sewer crosses the railway line approximately 500m to the north of Burton Road.

A culverted watercourse is located to the south of the site between the Ringway Industrial Estate between the railway line and Eastern Avenue.

A public combined gravity sewer up to 1050mm in diameter enters the site in the southwest corner before running roughly parallel to the western-side of Watery Lane. The sewer crosses Watery Lane north of Curborough Hall Farm before continuing north alongside Watery Lane and exiting the site.

Adjacent the north western boundary of the site, a combined use pressurised sewer runs southwards to the sewage treatment works along Watery Lane.

### **3.3 Gas**

#### **3.3.1 National Grid UK Gas Distribution/Transco**

The majority of the site contains no gas services. Services are clustered around the Business Park Area in the east of the site. A local high pressure gas main (LHPM) is located near to Brookhay Wood. Medium pressure gas mains run beneath the majority of the roads in the business park on the southern side of Wood End Lane. A medium pressure main runs between the two traffic islands on the northern-side of Woods End Lane. The gas main crosses Wood End Lane shortly after the second traffic island and continues following the road to the west before turning south down Road C..

In the southeast of the site a low pressure gas main runs along the southern-side of the Burton Road with a number of LP mains branching off serving the premises on the southern-side of the road. Shortly before the LP main exits the site boundary it passes beneath the Burton Road and runs along its northern-side serving the properties located along it.

#### **3.3.2 Gas Transportation Company**

The Gas Transportation Company has confirmed they have no apparatus which will be affected in the site area.

### **3.3.3 British Petroleum Association**

A Linesearch conducted upon the site and immediate surrounding area reported that apparatus associated with the British Petroleum Association may be present within the site. They have been contacted and confirmed that no apparatus is present within the site.

## **3.4 Electricity**

### **3.4.1 E-On Central Networks**

E-On Central Networks have advised that they only issue drawings where services are present. The plans provided by E-On indicate numerous electrical services within the site. These have been summarised below.

In the east of the site, an overhead low voltage cable runs along Brookhay Lane before turning southwards along Road C. At Brookhay Farm it becomes an underground cable and enters the various buildings at five different points.

An 11kV underground cable runs in a north westerly direction crossing Hilliard's Cross Junction. It crosses the A38 before running parallel to the southern-side of Wood End Lane. This 11kV cable then splits into numerous cables passing beneath the northern and southern side of Wood End Lane. The northern lines follow the road layout, feeding into two substations along the course of the road, until it reaches Gorse Lane. The main southern cable becomes an overhead cable near the second traffic island and continues to run along the southern-side of Wood End Lane before returning to an underground cable next to the Skid Pan. Before returning to an underground cable, the overhead line heads south between the Skid Pan and Auction House.

At the junction of Gorse Lane, the underground 11kV services split into two cables. The cables run in a northerly direction up both sides of Gorse Lane servicing the properties. The underground line becomes an overhead cable at Gorse Farm and adjacent the northern boundary serving the former airfield buildings to the west and east of Gorse Lane, respectively.

In the northwest, near Fradley Junction, 11kV overhead cables are present. Underground and overhead cables are also present next to the Coventry Canal off New Bridge at the junction of Hay End Lane.

In the south east of the site, there are numerous low voltage cables branching off an 11kV cable. The cable which runs along the western-side of the Burton Road becomes an 11kV overhead cable near to Streethay Lodge. The overhead line runs in a north westerly direction before turning near the road bridge and following the course of the railway line northwest. At Brownfields Farm, it becomes an underground cable, splitting into numerous lines serving the adjoining area. One of the branches runs underneath the railway line, one serves Brownfields Farm while another follows Road B and terminates near Brownfield Cottage.

Underground 11kV are shown along Road B, adjacent Brownfield Cottage and the Car Sprint Course.

An overhead 132kV pylon is present in the southwest of the site. The overhead line crosses Water Lane and runs roughly parallel to the railway line before terminating at a point to the northwest of Road B.

Overhead 11kV services run up Watery Lane northwards to the sewage treatment works. The 11kV cables run up both side of Watery Lane with several low voltage cables branching off the underground cable to serve the properties located along Watery Lane. Many underground and overhead cables are located at the sewage treatment works with an underground line passing across country through the middle of the site to Wood End Lane. An overhead cable is also present to the north of the Field House, east of Curborough Farm Hall.

Four substations are present within the site; these are located at the junction of Gorse Lane, near East Hill and at the first and second traffic islands along Wood End Lane.

## 4.0 CAPACITIES

A formal approach has been made to British Telecommunications, South Staffordshire Water, Severn Trent Water, National Grid and E-On Central Networks to establish whether the current services have sufficient capacity, to serve the proposed development. However, many of the Statutory Authorities refused to comment on the initial enquiry due to the lack of information provided within the first draft Masterplan (Masterplan A). Masterplan A shows the proposed areas within the site and assumes the development of 5,000 residential properties.

A further version of the Masterplan (Masterplan B) was made available in November 2007 and this was provided to the Statutory Authorities (with the exception of BT). Masterplan B further refines the areas within the site and based on this information provided, the number of properties was estimated as 3,500 houses and 1,500 apartments. These figures were estimated by Atkins and based upon the area of the site covered by low / medium density and high density properties, respectively.

Masterplan C was not available at the time of the enquiries and the following comments are based upon Masterplan B. It should be noted that the comments provided by the Statutory Authorities are subject to the assumptions made and should only be used as a guide. The primary spatial extents of the masterplan has not changed during over the course of Masterplan A to C, essentially the changes arise due to local changes specific layout e.g. school layout and further definition of roads and plot layouts/densities.

Where costs have been provided by the Statutory Authorities, these should be viewed with caution as the figures quoted are based on current available capacities information and does not take into account any future demands (from other developments) which will further reduce the capacity leading to increased costs. As such, this information should be used as a guide only of the current likely costs associated with upgrading the existing network to supply the development.

A more detailed services capacity check and review must therefore be undertaken as the Masterplan and development plan details are developed and associated capacity requirements can be established.

A copy of all relevant information supplied by the Statutory Authorities has been included in Appendix C.

#### 4.1 Telecommunications - BT Open Reach

BT has not commented on the capacity of the existing network to supply the proposed development. However, in their correspondence Reference LF/224 dated 7<sup>th</sup> November 2007 and subsequent email dated 22<sup>nd</sup> November 2007, BT (Appendix C) has confirmed that:

*“they do not anticipate any problems providing network services to a development within the site”.*

The cost of this undertaking, together with the removal or disconnection of any redundant apparatus is usually met by BT. Any existing plant requiring repairs or alterations will incur a charge.

BT has also indicated that, where appropriate, BT may be prepared to enter into a contract that will allow a contributory payment for installation of their plant on site. This refers to a payment under the current national agreement with the House Builder’s Federation for residential sites of more than 10 plots.

#### 4.2 Water Supply – South Staffordshire Water

South Staffordshire Water was not in a position to assess the supply requirements and cost implications of the proposed development without the following information (SSW reference DS/Spec dated 31<sup>st</sup> October 2007, Appendix C):

- Detailed site layout ;
- Details of site history and associated soil testing to include pH, Antimony, Arsenic, Beryllium, Cadmium, Chromium, Chloride, Cyanide, Coal Tar, Toluene Extract, Mercury, Lead, Selenium, Phenols and Methane;
- Purpose of the water supply;
- Anticipated water consumption and maximum flow rates;
- Details of privately owned land; and
- A plan indicating the layout of the site.

Whilst South Staffordshire Water were unable to comment on the potential requirements of the proposed development, discussions with Development

Services at South Staffordshire Water, have suggested that there is insufficient capacity to supply the site. They have also indicated that as a minimum, the development will require the addition of a new Trunk Main to supply the development within the site.

Based upon Masterplan B, South Staffordshire Water response is summarised below. A copy of the letter, SSW Reference DS/spec/mb, dated 24<sup>th</sup> January 2008 has been attached in Appendix C.

#### **4.2.1 Diversionary Works**

SSW is unable to provide any comments at this stage. A copy of SSW “Special Requirements” clauses for works in the vicinity of SSW apparatus has been provided.

#### **4.2.2 Off-site**

Based on the minimum requirements for the current proposed development, a new 300mm diameter water main will be required to form the main infrastructure. The estimated cost of 5400 metres of pipe is £550,000 however; this cost will be re-evaluated when a detailed site plan is produced.

#### **4.2.3 On-site**

SSW is unable to offer comment on the likely on-site infrastructure required to serve the development. Further information regarding the proposed layout, site history and soil contamination testing is required to fully assess the requirement. In the interim, indicative costs for the laying of ductile irons mains and barrier service pipes are provided below.

- 3”/80mm at £57.00 per metre;
- 4”/100mm at £61.00 per metre;
- 6”/150mm at £70.00 per metre; and
- 8”/200mm at £80.00 per metre.

The above costs includes excavation, mains laying, backfill materials, labour costs, materials and plant hire but excludes the cost of permanent surface reinstatement. Where there is no risk of contamination MDPE pipes will be installed.

*“The final mains contribution will be calculated in accordance with Section 42 of the Water Industry Act 1991. Dependant on the number of houses being developed, the Developer can expect to pay approximately 7% of the total mains*

*scheme cost. However, the smaller the development the larger the percentage contribution”*

#### **4.2.4 Connection Costs**

An estimated budget of £2,170.00 should be allowed for connection onto the site from the existing mains in a Class B specification roadway (minor and estate roads). The cost includes excavation, labour, plant hire and reinstatement costs.

An estimated budget of £1,216.00 should be allowed for each branch connection within the site. The cost includes connection, labour, materials and plant hire. The cost of excavation, mains laying and backfilling has already been provided in the above rates.

#### **4.2.5 Other Fittings**

End hydrants are required within the site to allow washing out of the mains and at the request of the Fire Authorities. The cost for installing each end hydrant is estimated at £250.00.

#### **4.2.6 Easement Costs**

Where new roads are developed and remain in the ownership of the developer or subsequent owner, easements will have to be entered into at the expense of the developer. Depending on the complexity of the arrangements, a budget of £1,000.00 to £3,000.00 should be allowed.

#### **4.2.7 Water Service Connection Charges**

In accordance with S.64 of the Water Industry Act 1991, SSW can insist on the separately metered water service connection to each occupied premises which will terminate at the boundary of the public highway with a stop tap and meter box assembly, where applicable.

Properties of three storeys will need to ensure that adequate pump/storage facilities are installed to supply the third floor as SSW can only guarantee 10 metres (one bar) at the boundary.

SSW current connection charges for new/additional supplies up to 12m in length are as follows:

- 25mm connection charge in unmade ground (on-site and up to 12m) is £377.00;

- 25mm connection charge in Made Ground (public highway up to 12m) is £783.00;
- Additional connection in same trench (up to 12m) is £277.00;
- Permanent disconnection of any temporary supplied is £187.00; and
- 50/63 connection charges are subject to an individual estimate (approximately) £2,400.00.

Charges are also applicable for processing of new supplies applications, assessing demand, specific site requirements and where applicable, mains scheme design for new developments. These charges vary depending on the type of development from £53 to £200.

Under SSW “Scheme of Charging” these costs are applicable up to 31 March 2008.

#### **4.2.7 Infrastructure Charges**

These charges relate to every new property/premises requiring new connection and is currently charged at £276.81 for water and £276.81 for sewerage for a standard dwelling. Non standard premises will be charged as a Relevant Multiple (RM) of the standard charged based on the type and number of water fittings installed for domestic purposes. RM is calculated by reference to loading units attributed to the water fitting to be installed using the Assessment Sheet for Infrastructure Charges at the end of the most recent correspondence (Reference DS/spec/mb, dated 24<sup>th</sup> January 2008 and is included as Appendix C).

#### **4.3 Sewers – Severn Trent Water**

A Development Enquiry application was submitted to Severn Trent Water. The application was subsequently returned to Atkins (STW Reference 6,059 dated 21<sup>st</sup> November 2007, Appendix C), as there was inadequate information contained in Masterplan A to formulate a response. Additional supporting information required by STW should include the approximate numbers and types of properties within the development and total peak water flows for each property type.

Further discussions with Asset Protect at Severn Trent Water, has revealed that whilst they are unable to respond to our enquiries, there is insufficient capacity for the existing network to serve the development.

The application was re-submitted with Masterplan B on the basis that the 5,000 residential properties will consist of 3,500 houses and 1,500 apartments. The response formulated by STW (STW Reference CJB/WTATKINS dated 29<sup>th</sup> November 2007, Appendix C) recommends that a strategy for sustainable drainage should be developed for the site and this should be prepared in consultation with all of the Stakeholders, including the Environment Agency and Local Planners. The additional comments have been included;

#### **4.3.1 Foul Water Drainage**

- Some of the properties north of Gorse Lane are connected to the public sewer system via the private pumping station and rising mains. Any new developments could make use of these, subject to submitted design flow against capacity of the system;
- The village of Fradley to the east of Wood End Lane is / or will drain into the existing rising mains, which currently discharges into Lichfield sewage treatment works. These mains were constructed in 1999 to serve Fradley Village and would not be available to drain the proposed development. New provisions for pumped or gravity sewers will be required to discharge into the works.

#### **4.3.2 Foul Water Treatment**

- The sewage treatment works would be unable to accept the additional significant flows generated by the development,
- The works were upgraded to accommodate the Fradley developments that were contained in the Local Plans. Severn Trent Water are currently in consultation with the operator of the works and are waiting their response.

#### **4.3.3 Surface Water Drainage**

- There are no public surface water sewers within or adjacent to the site;
- There are a number of local watercourses which drain through the site;
- Severn Trent Water anticipates that the impact of un-attenuated discharge on the watercourses would be unacceptable giving rise to major risk of flooding. Severn Trent would therefore expect a planning requirement for sustainable drainage in which drainage from piped systems is limited to Greenfield runoff of 5 litres per second for each hectare;

- Piped systems designed to 'Sewers for Adoption' standard with or without balancing ponds, maintained by public bodies, would be potentially adoptable by Severn Trent Water.

#### 4.4 Gas – National Grid UK

National Grid has confirmed that the nearest gas main to the site with sufficient capacity is a Low Pressure Main located along Burton Road in Streethay, approximately 100m from the site boundary (Reference E3974541 dated 22<sup>nd</sup> November 2007, Appendix C). Reinforcement of the main will be required to support the existing main. The degree of reinforcement required for the site and estimates to carry out the works could be sought from OFGEM following the receipt of detailed site layouts and service requirements.

However, further discussions with Fulcrum Connections, suggests the Low Pressure Main will be unable to serve the development. The most likely alternatives would be to provide a link from the Medium Pressure Mains, which currently serves the adjoining Fradley (Industrial) Park. However, if this was possible, the mains would require reinforcement. The second alternative would be to link the site to the network via one of the existing High Pressure Mains. These are located near Fradley Pumping Station adjacent the eastern boundary and approximately 1.6km to the north east of Fradley Junction. An outline cost estimate could be provided following receipt of a detail site layout and the loading requirements for the site.

Atkins Building Services subsequently estimated that the anticipated requirements for the site are expected to be in the region of about  $1 \times 10^8$  KW hr. This was forwarded on to Fulcrum Connections, together with a copy of the Draft Master Plan Revision B for their additional comments with a view to provide a proposal and budget estimate for reinforcement works.

In an email dated 1<sup>st</sup> February 2008 (Appendix C), Fulcrum Connections have confirmed that reinforcement costs in the region of £500,000 will be required to bring suitable gas supply to the development. This estimate is based on the current capacity information of the network which will decrease as capacity is used, therefore increasing the cost to reinforce the network. It is also understood that the network supplying Arlewas is reaching full capacity and costs to reinforce this network for any future development is in excess of £500,000.

Fulcrum Connections has indicated that a Design Study will be required at a cost of approximately £1,500.00.

The cost for infrastructure works for the main development has also been provided and this based on the proposed number of properties and not specific layout cost and would therefore be subject to change. A budget estimate of £2 million should be allowed.

#### **4.5 Electricity – E-On Central Networks**

E-On were unable to respond due to the lack of information on the numbers and types of properties proposed and the potential loading requirements for the site. This enquiry was forwarded onto their Design Team who is currently estimating the current loading requirements, determining the off-site works required to reinforce the existing network to supply the development and budget estimate. We are still waiting for a response from the Design Team.

Atkins Building Services have subsequently estimated that the anticipated requirements for the site are expected to be in the region of about  $300 \times 10^5$  kW hr. This information has been forwarded on to E-On.

Further discussions with E-On Energy Services have confirmed that there is insufficient capacity at the existing primary substation to support the development. As a minimum, the new development may require the installation of a new Primary Substation (s) together with numerous Distribution Substations within the site. We are still waiting for the cost for off-site reinforcement works, however, E-On Energy Services have provided an approximate budget estimate for providing on-site services (email dated 29<sup>th</sup> January 2008, Appendix C). A cost in the region of £5 million includes high voltage infrastructure from Fradley primary grid to the site, all on-site substations and connections to 5,000 dwellings.

## 5.0 WAYLEAVES AND EASEMENTS

A final approach was made to the Statutory Authorities to establish whether any of the plant located within the site have associated wayleaves or easements. Wayleaves and easements are written consents between a company and the landowner/occupier which confers the right to use the land under and over the property for statutory purposes. Easements are legally binding. The associated wayleave or easement width is the protected area around the service where development, alterations or damage to the land is strictly prohibited.

It should be noted that the protected areas are generally applicable to all service and not just those provided in the responses by the Statutory Authorities.

A copy of the consents, Deed of Grants and plans obtained have been included as Appendix D. The approval for the BT easement enquiry has not been provided by the Curborough Consortium.

### 5.1 British Telecommunications – BT Open Reach

Requests have been made to BT regarding the presence of wayleaves or easements within the site. The cost for this undertaking is £840 excluding VAT, Atkins have not been instructed to proceed with this search at this time.

Wayleave and easement enquiries made to BT on other Atkins projects suggest a typical easement width for BT buried plant is 1m either side of a cable.

### 5.2 Water Supply – South Staffordshire Water

An approach has been made to SSW and discussions with Developer Services have confirmed wayleaves exist within the site. However, they are unable to respond to our query at this stage. It is understood that a request has been made by other parties regarding the precise location of the water mains running along the south western boundary of the site. The Land Agent working for SSW is in the process of mapping the exact location of this water main and until this information has been provided to SSW, SSW are unwilling to release any information. However, in our experience the protected area is typically 4.5m either side of a standard buried water pipe.

### 5.3 Sewers – Severn Trent Water

Enquiries have been made to STW regarding the presence of wayleaves or easements within the site. Subsequent correspondences and discussions with both STW Developer Services and STW Legal Department have confirmed that there are no wayleaves or easement associated with any of their buried plant. This is because, all STW water mains and sewers, up until 2000, were laid by the Local Authority, on behalf of STW. Easements and wayleaves were not arranged by the Local Authorities. Instead, STW have adopted the use of 'Protected Strips' surrounding all their public sewers. The widths of the protected strips are dependant on the diameter of the pipe and depth placed in the ground but for guidance, the following distances have been provided by STW Legal Department for guidance:

- Public sewers of 225mm diameter and less – 8m protected strip from the centre line (or 4m either side of pipe);
- Public sewers of 300mm in diameter and above – between 10m and 20m protected strip from the centre line (or 5-10m either side of pipe); and
- Public sewers of >1000mm – are to be reviewed on an individual basis

### 5.4 Gas – National Grid UK

Seven easements have been recorded within the site. These relate to the high pressure mains, adjacent the eastern boundary of the site. The table below summarises the location of the easement, area covered by the easement and associated easement width.

Reference	Date	Location of easement	Easement area and associated width
WM2401	30-12-1966	Two easements. SE of site approx. 350 yards to the south of Fradley Pumping Station. East of the site on land to the west of Mare Brook along Brookhay Lane.	Strip of land marked in red on the deed.
WM2401	07-04-1967	Three easements. Areas A-B is to the north of the site (between Common Lane and Hay End Road). Areas C-F to the east of site adjacent the railway line in the	Red lines marked between the points A-B, C-D and E-F as indicated on the deed. No alterations or deposition on said strips of land without written

Reference	Date	Location of easement	Easement area and associated width
		vicinity of Fradley Pumping Station.	consent 10 feet (approx 3m) in any direction from the strips of land.
WM2401	13-05-1967	East of site on land to the east of Mare Brook along Brookhay Lane.	Strip of land marked in red on the deed.
WM2401 and Title No. SF290418	29-06-1990	24" diameter HP gas pipeline located to the east of the site on former Hilliard's Cross Valve Compound (land between railway line, Brookhay Wood and Brookhay Lane).	Strip of land in width coloured pink on the deed.

The Deeds of Grants for these easements have been included in Appendix D. These confirm full and free rights of access to National Grid to and over the strips of land and also over the ten feet support strips (approximately 3m), as identified in the attached deeds.

In addition, no changes, alterations or deposition is permitted within the strip of land or within ten feet in any direction from the strip of land (support area) without prior written consent from National Grid.

## 5.5 Electricity – E-On Central Networks

Twenty two wayleaves are shown to exist throughout the site and two adjacent the site. These have been summarised in the table below and a copy of the consents and locations of the wayleaves are presented in Appendix D.

Consent No.	Date	Location	Details
<b>On Site</b>			
24/00R516	05/10/1961	Brookhay	Overhead line over railway
24/003684	26/04/1963	Gorse Farm	11kV Overhead line at gorse farm
24/006030	26/11/1965	Curborough house adjacent Millhurst	3 No. Overhead conductors
24/008337	28/05/1970	Central	High voltage overhead line linking existing overhead line via underground cable
24/003759	22/10/1970	Bearshay Farm	Overhead lines. Wayleave relating to section over the canal and railway line.
99/PD2010	15/06/1971	Lichfield Terminal Tower	Relates to original overhead line and steel tower (southern side) which is proposed to be removed

Consent No.	Date	Location	Details
24/00C327	17/06/1971	Brookhay	Proposed 11kV over canal
24/008675	24/09/1971	Southern tip	Overhead cables on southern point. Underground cables from road just off Trent Valley Road leading to overhead line.
24/008674	06/10/1971	Western edge	Overhead line and underground cable leading onto narrow road (to Brownsfield Farm)
24/004049	06/12/1973	North west of Gorse Farm	Overhead cable.
24/009391	18/09/1976	Brownsfield Farm	Overhead cables.
24/003690	01/12/1986	Hilliard's Cross	Existing overhead cables on eastern side of Hilliard's Cross Junction with underground cables under roads. Proposed overhead cables on western side of Hilliard's Cross.
24/010917	10/06/1988	Unclassified road	Overhead cable and underground line below road.
24/801207	23/03/2001	Bears Hay Farm	Existing low voltage overhead cables linking Bears Hay Farm to Bearshay Lane in north.
24/801535	16/03/2004	Curborough Hall Farm	Two high voltage underground cables.
24/801533	09/04/2004	Brownsfield Farm	Two 11kV underground cables.
24/801534	12/04/2004	Curborough house	Two high voltage underground cables.
24/800557	27/04/2004	Bearshay Bridge	Proposed overhead line over Coventry Canal linking Bears Hay Farm to existing low voltage overhead lines up to Brookhay Lane in the north.
99800163	May-04	Lichfield Terminal Tower	132 kV overhead line, 132 kV underground cable and 132kV support positions.
24/801552	Jan-05	South of site : northern side of railway line off Netherstone Lane	Two 11kV (high voltage underground cables).
24/801349	15/05/2007	Hilliard's Cross Farm	Proposed underground cable
<b>Off Site</b>			
24/008774	18/02/1974	East of site	Overhead lines.
24/002663	01/04/1972	Diary Farm, Elmhurst	High voltage and medium voltage overhead and underground lines.

One Deed of Grant has also been supplied for the site. The Deed relates to the high voltage (132kV) overhead cables and all other equipment including buried cables, located on the northern side of the railway line off Eastern Avenue. Central Networks maintains full rights and liberties to break open and excavate under the Property and the 3m width of the property as indicated on the deed.

Further discussions with the Central Networks Proximity Department have confirmed the following easement widths should be adopted for their plant:

- Buried plant – 1m either side of cable;
- Overhead cables on wooden poles (11kV and 33kV) – 6m either side of the outer conductor; and
- Overhead cables on pylons (132kV) – 15m (but may be up to 20m) either side of the outer conductor.

## 6.0 CONCLUSIONS

Atkins has been commissioned by the Curborough Consortium to produce a Services Report for a site located in Fradley, Staffordshire. This was subsequently extended to determine the available capacity of the network to supply the development and then to provide an indication of the works which may be required to service the proposed development. Atkins final commission was to identify wayleaves and easements within the site and to determine the associated protected area surrounding the wayleave or easement.

This report has been undertaken to ascertain the services present on and around the site

Responses from Statutory Authorities generally indicate that services exist within the site.

Plans obtained from E-On Central Networks indicate that electricity cables, where present in developed areas, typically comprise 11kV cables. Low voltage cables are generally shown to connect the 11kV cables to individual premises. A 132kV overhead cable crosses fields in the southwest of the site.

Water mains are present within the site especially along the A38, Wood End Lane, Gorse Lane and Watery Lane. The mains vary in size and in their material of construction. The water mains are generally confined to developed area however, a 500mm diameter water mains cross the country in the south of the site.

A number of sewers have been identified within the site. These are generally limited to areas of development however; a pipeline transects the approximate centre of the site from the Auction House in the east to the sewage treatment works in the west.

Numerous BT cables exist within the site. These are typically overhead cables due to the predominantly rural nature of the site however underground cables are present running along main roads in particular the A38 and Wood End Lane.

Responses from several other service providers indicate their plant will not be affected by the proposed works at the site.

Enquiries have been made to the Statutory Authorities regarding the capacities of the networks to supply the development. Many of the Statutory Authorities were

reluctant to provide a response due to the absence of loading requirements and proposed site layout. However, initial responses from the Statutory Authorities following the receipt of Masterplan B, estimated residential properties and estimated loading requirements, suggest that given the size of the proposed development, the rural location of the site and lack of mains services supplying many areas of the site that there is currently insufficient capacity within the appropriate networks to service the site. Any deficiencies in capacity will be addressed as part of the development of the new settlement. A more detailed services capacity check could be carried out following the receipt of additional information pertaining to the specific requirements of the development. STW and National Grid were able to provide a budget estimate for the cost of upgrading the network however; we are still waiting responses from E-On and SSW regarding their estimated requirements and costs to service the development. BT has confirmed that they are obliged to provide network services to the boundary of the site.

A number of wayleaves and easements exist within the site. Whilst, no information has yet been provided by SSW and we were not asked to proceed with the BT enquiry, wayleaves and easements exist throughout the site. The typical easement widths for the various plant have been included in the preceding section.



**FIGURES**