

**Land at Hatton
Warwickshire**

Site Assessment Report



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Watercourse Network	Drawing 10234-FL-01
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1 Introduction

- 1.1 Brookbanks Consulting Ltd is appointed by Bloor Homes to complete various preliminary infrastructure studies on land at Hatton, which is being considered as potentially suitable to support a residential development.
- 1.2 The objective of this technical note is to provide a preliminary review of potential development and infrastructure characteristics and to inform future assessments for promotion of the land. This report summarises the findings of the study and specifically considers the following matters:
- Transport
 - Flooding risk
 - Drainage
 - Ground conditions
 - Service supply infrastructure

2 Background Information

- 2.1 The proposed development site lies to the south west of the village of Hatton in Warwickshire, occupying an agricultural field extending to an area of circa 4.8ha. To the south, the site is bound by the Grand Union Canal with the Gog Brook forming the eastern boundary. To the north, the A4177 Birmingham Road bounds the site with a number of dwellings adjoining the site to the west.
- 2.2 The site location shown in Figure 2a below.

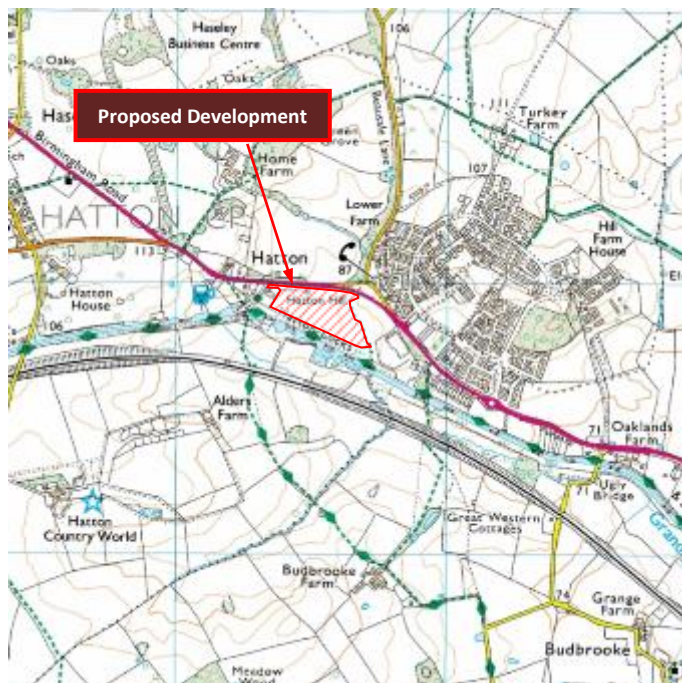


Figure 2a. Site Location

3 Transport

Local Policy Background

Warwick District Council New Local Plan

- 3.1 Warwick District Council is currently preparing a new Local Plan for Warwick District, which will guide the area's future development until 2029.
- 3.2 The first stage was to carry out a consultation exercise to determine what the local population considered as the important issues and challenges facing Warwick. Public consultation occurred between 18 March and 15 July 2011.
- 3.3 On 1st December 2011 the Council approved 'A Strategy for the future and sustainable prosperity of Warwick District' as the basis for future preparation of the Local Plan.
- 3.4 From June until August 2012, WDC consulted on where new developments should be located to best address the important issues, what infrastructure would be required and what type of new developments should be encouraging. On 4th June 2013 the Council Executive approved the revised Development Strategy for public consultation, which ran until 29th July. At the time of writing, the Council is considering the representations to the Revised Development Strategy.

Local Transport Plan (2011-2026) – LTP3

- 3.5 The LTP3, 2011 – 2026 identifies five main goals:
 - Transport and the Warwickshire Economy
 - Transport and Carbon Emissions
 - Safety, Security and Health
 - Equal Opportunity
 - Quality of Life in Warwickshire
- 3.6 Having identified the goals, LTP3 split Warwickshire into several graphical areas, with Warwick being one area identified in the Warwick District.
- 3.7 The LTP identifies that traffic flows in the major urban areas in Warwickshire are monitored every year to establish traffic growth (or reduction). The three main towns in Warwick District (Leamington Spa, Warwick and Kenilworth) have all experienced overall negative traffic growth between 2000 and 2009, i.e. a reduction in vehicular traffic.
- 3.8 The key objectives of the LTP strategy for transport within Warwick, Leamington Spa, Kenilworth and Whitnash are to:
 - Stabilise and grow the local economy of the area
 - Support the planned housing and employment growth within the District
 - Reduce the environmental impact of traffic within the District and improve local air quality
- 3.9 In line with the Bus Strategy, the County Council will work with the bus operator Stagecoach in Warwickshire to develop further Quality Bus Corridors (QBCs). The QBC concept has increased patronage on key commercial bus routes. The concept combines bus stop infrastructure and information provision upgrades by the County Council as highway authority, with improved vehicle and frequency enhancements provided by the operator.
- 3.10 Within the District, the following urban routes will be upgraded in the short/medium term:
 - Warwick – Millers Road – Coten End – Leamington Spa
 - Kenilworth – Abbey Hill – Coventry
 - Lillington – Leamington Spa

- Sydenham – Leamington Spa

3.11 In addition, the following inter-urban routes will be upgraded in the short/medium term:

- Leamington Spa – Kenilworth – Leyes Lane (Kenilworth) – Coventry
- Stratford upon Avon – Blackhill – Warwick
- Warwick – Kenilworth – Albion Street – Coventry.

3.12 Proposals to enhance facilities at bus stops and public transport interchanges, consistent with the aims set out in the Public Transport Interchange Strategy, include:

- Enhanced interchange facility at Leamington Spa Rail Station
- Provision of Bus Information Points (BIPs) at Warwick Hospital, Shires Retail Park
- Leamington Spa and the new Kenilworth Rail Station
- Provision of a bus lane on Europa Way

3.13 The LTP identifies that investment in improving the pedestrian environment will focus on the provision of safe and convenient crossing points to facilitate easy pedestrian movements and address safety concerns.

3.14 As detailed in the Cycling Strategy, investment in relation to cycling will focus on the continued development of cycle infrastructure in the main urban areas and on some inter-urban routes. The cycle route network development plan identifies key routes between residential areas and trip generators such as schools, employment areas, town centres, public transport interchanges and leisure centres. It is intended to develop the priority routes highlighted on the plan within this LTP period.

3.15 The LTP identifies that there are a number of issues in relation to Junctions 13 and 14 of the M40. These include:

- A high rate of accidents at Junction 13, caused in part by the short nature of the northbound off-slip
- High levels of congestion from traffic entering Leamington Spa in the morning peak via the A452 Europa Way. This can lead to queuing traffic backing onto the running lanes of the M40 between Junctions 14 and 15.

3.16 The County Council is currently in the process of investigating possible improvements to the A452 between Junction 14 of the M40, Greys Mallory and Heathcote to alleviate the problem of queuing traffic. At the time of writing, work on the Grey Mallory junction has recently commenced. The County Council and Highways Agency has also recently received funding for a strategic highway improvement at Junction 12 of the M40, which when implemented in 2014 will reduce traffic impacts at Junction 14, which presently results from traffic diverting early off the motorway to reach Jaguar Landrover.

Strategic Transport Assessment – February 2013

3.17 Arup have been commissioned by WCC to undertake traffic modelling to test the Warwick District Council (WDC) Core Strategy allocations, identify the potential impacts and investigate mitigation schemes. The key objectives of the study are:

- To determine whether an option that focuses growth south of Warwick and Leamington is feasible and whether there is a limit to the level of growth that can be accommodated within that area
- To assess the network mitigation required to enable growth to be realised
- To assess the network mitigation strategy required to deliver the PO growth option
- To compare the relative impacts of growth allocations, alongside the proposed mitigation packages
- To look at the specific impacts along the Europa Way corridor, in the context of the current queuing conditions, using the existing M40 PARAMICS model

3.18 This work tested two strategy options for housing allocations, identified as 'Preferred Option' and 'Southern Focus'. The housing numbers are consistent between the options with only the locations changing.

3.19 This report identifies a range of transport interventions that would mitigate the impact of the delivery of the Warwick growth strategy. Interventions are identified at the following locations:

- Myton Road junction with Banbury Road
- Europa Way junction with Europa Way
- Shires Retail Park junction
- Grey's Mallory Junction
- Heathcote Lane junction with Europa Way

3.20 The report proceeds to identify the costs associated with the interventions, with the fund secured through the planning process.

Existing Transport Conditions

Highway Network

3.21 The local road network is indicated below.

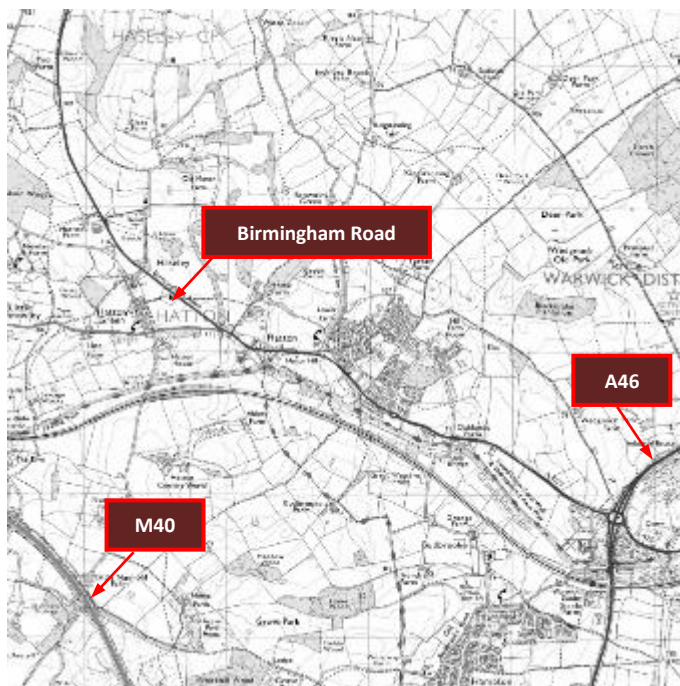


Figure 3a: Local Highway Network

3.22 The A4177 Birmingham Road lies adjacent to the site and is a single carriageway road that caters for trips between Birmingham and Warwick. A 40mph speed limit applies predominantly within the corridor adjacent to the site. There are several junctions along the length of Birmingham Road within the hinterland to the site, being a series of roundabouts and both simple and ghost island priority junctions. Frontage exists to a small number of properties, although it is predominantly a rural road by nature.

3.23 Some 2.5km to the east of the site, Birmingham Road intersects with the A46 via a grade separated junction. The A46 is a dual carriageway road that links to Coventry to the north and the M40 motorway at Junction 15 to the south. The A46

and M40 provide ready access to nearby towns of Stratford-on-Avon, Leamington Spa and Kenilworth as well as to further destinations such as Birmingham, Oxford and London

3.24 Beyond the A46, Birmingham Road then continues into the town centre of Warwick, there becoming the A425. From the grade separated junction, the nature and character of Birmingham Road alters, becoming more akin to a local urban road facilitating access to the residential areas of west Warwick.

3.25 Within the town centre, the A425 intersects with the town centre network, which includes Jury Street, The Butts and Church Street. The roads in the town centre are a mix of one and two way roads and in the peak periods can experience deal and queuing.

Rail Based Public Transport

3.26 Warwick Parkway is the closest train station, being some 3km to the east of the proposed site. This has the following facilities:

- 589 space car park
- Manned ticket office Monday to Sunday
- Customer help points
- Ticket machines with pre-purchased ticket collection facility
- Toilets with baby changing facilities
- Refreshment facilities

3.27 Services from the station include:

- Birmingham - two per hour – journey time 30 minutes
- Leamington Spa – two per hour – journey time 5 minutes
- Warwick – direct one per hour – journey time 3 minutes
- London Marylebone – two per hour – journey time 79 minutes

Bus Based Public Transport

3.28 There is only one route that serves the Hatton area, the 68 route with the details indicated below.

Service	Destination	Frequency	Operator
68	Hatton Park – Warwick – Leamington - Cubbinton	Monday – Saturday every 30 minutes	Stagecoach

Figure 3b: Bus Route closet to the site

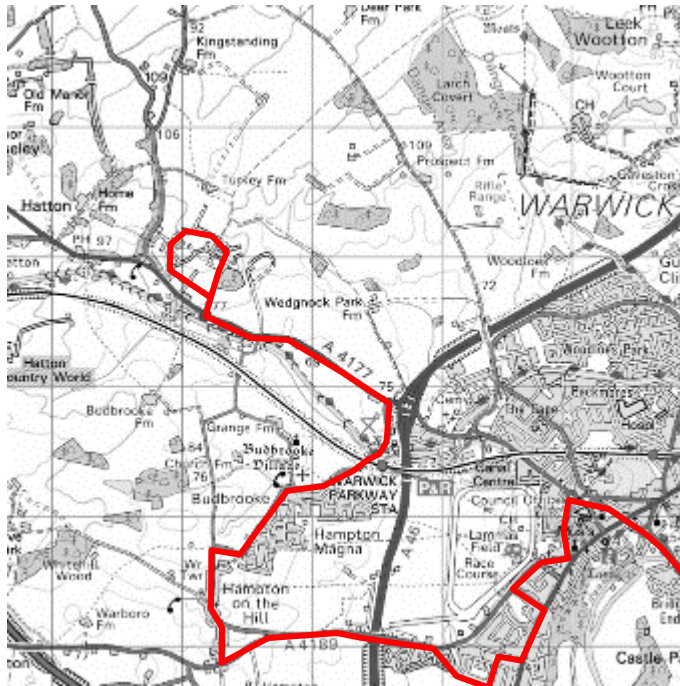


Figure 3c: Bus Route closest to the site

- 3.29 The closest bus stops to the site are situated in the Hatton Park area. The first bus calls at Hatton at 06:17, then at 07:17 and then at 30 minute intervals. The 68 stops at Warwick Parkway (journey time of 8 minutes) and at Warwick town centre (journey time of 30 minutes).
- 3.30 The recently published WDC Revised Development Strategy includes a requirement that the allocated sites to the south of Warwick and Leamington shall contribute to the a new bus service every 20 minutes to Leamington town centre. This includes a commitment to extended and improve Route 68.

Walking and Cycling

- 3.31 There are no cycling facilities across the site frontage, with trips being carried out on carriageway. Along the site frontage, a relatively narrow footway is provided along the northern verge of Birmingham Road.
- 3.32 Travelling easterly, footway provision is provided to the northern kerbline commencing from the junction with Brownley Green Lane. On approaching the roundabout with Charingworth Drive a further footway is provided to the south. After the Charingworth Drive junction, the northern footway becomes a cycle route.

Site Accessibility

- 3.33 It is generally accepted that journeys of less than 2km should be targeted for the promotion of walking as a suitable and sustainable mode of travel. The equivalent distance quoted for cycling is 5km. Isochrones for these target distances from the site are indicated below showing the approximate extent of coverage. This indicates that Warwick town centre is within cycling distance. Distances to other services and amenities are shown in Figure 3e, below.



Figure 3d: Distance Isochrones

Amenity	Approx Distance from proposed Site entrance (km)	Meet 2km Target Walk?	Approx Walk Time (mins)	Meet 5km Target Cycle?	Approx Cycle Time (mins)
Education					
Budbrooke Primary	3.9km		47	✓	14
Ferncumbe Primary	1.6km	✓	19	✓	6
Aylesford School	5.6km		67		20
Ridgeway School	4.8km		58	✓	17
Aylesford Sixth form college	5.6km		67		20
Health					
Budbrooke Medical Centre	3.7km		44	✓	13
GP Surgery – Dr White	3.7km		44	✓	13
Optician	4.3km		52	✓	15
Pharmacy	4.3km		52	✓	15
Dentist	4.0km		48	✓	14
Shops and Misc.					
Hatton Village Shop	600m	✓	7		2
Hatton Country World	1.6km	✓	19		6
Town Centre	4.5km		54	✓	16
Train Station	3.0km		36	✓	11
Library	3.2km		38	✓	11

Figure 3e: Distance to Key Local Amenities

Site Access Strategy

3.34 At the time of writing it is envisaged that the site is to be accessed from Birmingham Road. BCL have reviewed the potential access strategy, with potential options illustrated below.



Figure 3f: Option 1



Figure 3g: Option 2

3.35 Both options presented will access the site via roundabout, the principle difference is the treatment of Brownley Green Lane.

3.36 Option 1 stops up the slip onto Bromley Green Lane which will result in all the existing traffic that use this section of highway to use the existing T junction located to the east.

- 3.37 Option 2 rationalizes both Bromley Green Lane access points into a forth arm onto the proposed roundabout.
- 3.38 Following discussions with David Neale at Warwickshire County Council, it is considered that Option 2 is preferred. This option could deliver a safer point of access into Bromley Green Lane with the defunct highway forming a cycle route to segregate cyclists from the roundabout. Initial advice from Warwickshire County is that Option 2 could be agreed in principle.

Potential Development Modelling

- 3.39 Through BCL recent experience of WCC practices, it is likely that any subsequent Transport Assessment is likely to be based on the use of the Warwick Paramics model. A license fee is normally payable to WCC to gain access the model, with the fee level dependent on the expected level of trip generation.
- 3.40 An initial discussion indicates that Hatton forms the western edge of the model, so where this is appropriate to assess the impacts towards Warwick, should any sensitive locations need to be assessed to the west of the site, a more traditional approach may need to be utilized.

4 Flood Risk and Drainage

Watercourse Systems

- 4.1 Reference to the Flood Estimation Handbook CD dataset V3 shows the site to lie within the catchment of the Gog Brook on the eastern boundary of the site. Having an URBEXT2000 value of 0.0187 the catchment can be described as “essentially rural”. The FEH catchment is shown in Figure 4a, below.

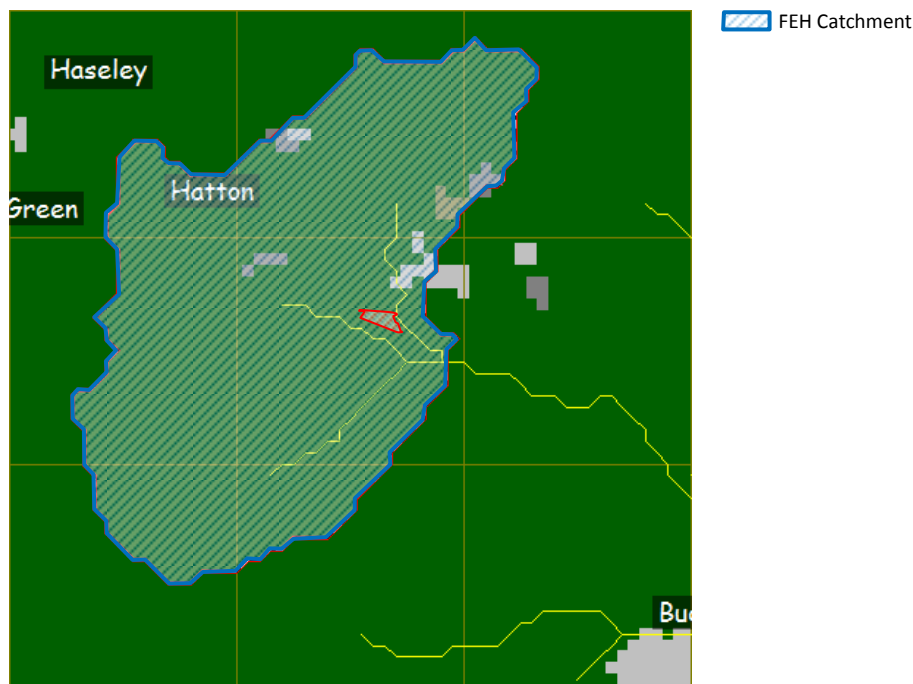


Figure 4a: FEH Catchment

- 4.2 At the point of origin, near Brownley Green Lane, the Gog Brook has a channel dimension of approximately 2m wide and 1.5m deep. The banks are lined by well-established trees coupled with dense vegetation for the majority of the upstream reach.
- 4.3 Flowing generally in a southerly direction from its point of origin, the watercourse passes through a culvert beneath the A4177, Warwick Road and into the proposed development site. The culvert is shown on Figure 4b below:



Figure 4b: Gog Brook culvert beneath A4177

- 4.4 The Gog Brook leaves the site in the south eastern corner, passing through an area of woodland before meeting the Grand Union Canal at Hatton locks, circa 55m south of the site, and passes beneath it in a large culvert of approximately 500mm diameter, this is shown in Figure 4c below.



Figure 4c: Gog Brook / Grand Union Canal Culvert

- 4.5 Hereon, the Gog Brook continues southerly for 100m before reaching the London - Midlands railway line. At this point a second watercourse originating 500m south at Hatton Country World makes confluence with the Gog Brook. Upon reaching this confluence, the Gog Brook turns 90° to flow in an easterly direction across agricultural land running parallel with the railway line and the Grand Union Canal towards Warwick.
- 4.6 From this point onwards, the watercourse flows in part parallel to and in interaction with the Grand Union Canal until it meets Warwick. The last point of interaction with the canal is at the Old Budbrooke Road and from here the brook turns southerly passing Warwick Racecourse.
- 4.7 The watercourse network is shown on 10234-FL-01 in the Appendix.

Canal Interaction

- 4.8 Along a length of approximately 2km, in the middle of the overall reach, the Gog Brook runs in parallel with the Grand Union Canal and has a number of interactions with same. Along this length a number of spillways are present providing the Gog Brook and the canal with hydraulic interactions which affect the brooks hydrological regime.

- 4.9 Spillways and other such linkages between the canal network and the watercourse network are commonly used as a means of controlling water levels and ensuring that while a flow remains on the watercourse, sufficient water is retained within the canal network to allow for successful navigation.
- 4.10 The first hydrological interaction between the Gog Brook and Grand Union Canal is recorded circa 2km into the reach of the watercourse where a spillway channel has been implemented to ensure a base flow remains within the Gog Brook channel. Yet during critical storm events, high flows are directed towards the canal network which has sufficient storage capacity to receive same. This is shown in Figure 4d below.



Figure 4d: Gog Brook / Grand Union Canal interaction

- 4.11 To ensure water levels in the canal remain within their design tolerance, various spillways are introduced. Figure 4e shows the spillways.



Figure 4e: Gog Brook / Grand Union Canal Spillway

- 4.12 These various outfalls, bifurcations and spillways appear to be self-regulating and allow the Gog Brook and Grand Union Canal to maintain optimum flows and water levels without constant monitoring and intervention.
- 4.13 However, should a problem occur in the network, failsafe measures are in place for example a tilting weir is present that allows the Gog brook or the canal to take more flows depending on the situation. This is shown below on Figure 4f.



Figure 4f: Gog Brook culvert beneath industrial unit

- 4.14 The linkages described above provide the Gog Brook with measures to regulate peak water levels, thus during times of peak flow, peak water levels are reduced due to the storage capacity within the canal network.

Flood Risk

- 4.15 The Environment Agency’s (EA) National Generalised Modelling (NGM) Flood Zones Plan indicates predicted flood envelopes of Main Rivers across the UK. In many circumstances, the NGM is based on basic catchment characteristic data and modelling techniques. Where appropriate, more accurate Section 105 / SFRM models are produced using more robust analysis techniques.

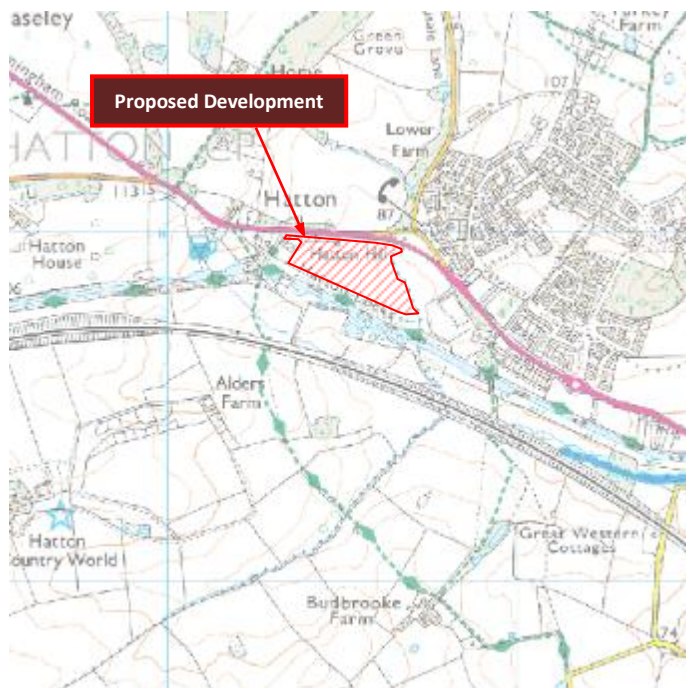


Figure 4g: EA Flood Zone Plan

- Flooding from rivers without defences – 1 in 100 year (1%) event (Zone 3)
- Extent of extreme flood – 1 in 1,000 year (0.1%) event (Zone 2)
- Flood defences
- Areas benefiting from flood defences

- 4.16 The Environment Agency does not hold a detailed SFRM model for the Gog Brook on the eastern boundary of the site at this location. The mapping is therefore based upon the more broadscale JFLOW modelling assessments completed for the 1 in 100 year (1%AEP) and 1 in 1,000 year (0.1%AEP) flood event outlines of the watercourse.
- 4.17 The mapping shows that the site lies well within Flood Zone 1; being an area of Low Probability of flooding, outside both the 1 in 100 (1% AEP) and 1 in 1,000 (0.1% AEP) year flood events of the Gog Brook. On this basis, when appraised against NPPF guidance, the site should be considered preferable when compared to those sites lying wholly or partially within Flood Zones 2 and 3.

Storm Drainage

- 4.18 Preliminary investigations indicate that storm drainage across site primarily discharges to the Gog Brook on the western boundary of the site which flows broadly in a north to south direction.
- 4.19 This watercourse conveys flows in a southerly direction from much of the surrounding land before passing beneath the Grand Union Canal circa 55m south of the site.
- 4.20 In accordance with policy, the site will need to implement a site storm water drainage system that provides Sustainable Drainage (SuDS) measures consistent with the recommendations of NPPF, local SFRA guidance and published documents in the form of CIRIA C522, C609, C697 et al.
- 4.21 The Warwick District Council SFRA underpins and extends national guidance on the provision of storm water drainage, encouraging the use of sustainable means of drainage at new developments and further outlines the following policy recommendation:

Flood Risk Objective 2: To Reduce Surface Water Runoff From New Developments and Agricultural Land:

- SUDS required on all new development (Section 10.3 outlines appropriate SUDS techniques for the county)
- All sites require the following:
 - SUDS
 - Greenfield discharge rates with a minimum reduction of 20% as required by the Environment Agency
 - 1 in 100 year on-site attenuation taking into account climate change
- Space should be specifically set aside for SUDS and used to inform the overall site layout
- Promote environmental stewardship schemes to reduce water and soil runoff from agricultural land

- 4.22 When appraising suitable storm water discharge options for a development site, Part H of the Building Regulations 2002 (and associated guidance) provides the following search sequence for identification of the most appropriate drainage methodology.

"Rainwater from a system provided pursuant to sub-paragraphs (1) or (2) shall discharge to one of the following, listed in order of priority -

- (a) an adequate soakaway or some other adequate infiltration system; or where that is not reasonably practicable,.**
- (b) a watercourse; or where that is not reasonably practicable,**
- (c) a sewer. "**

- 4.23 Site investigations have yet to be undertaken to confirm the potential of infiltration type drainage at the site. However, reference to the BGS published mapping shows the ground conditions to consist of Mercia Mudstone bedrock with overlying Alluvium superficial deposits to the west of the site associated with the Gog Brook. While needing to be proven through intrusive investigations, the BGS records suggest it is unlikely the ground conditions will be suitable for a wholly infiltration based strategy.
- 4.24 Should infiltration drainage ultimately prove unviable, the current building regulations and associated guidance advises that the next most appropriate receptor for site run-off is to a watercourse. As such, the Gog Brook on the western boundary of the site provides a suitable receptor for run-off from the proposed development.
- 4.25 A potential sketch option has been considered to inform the strategic drainage network across the site. It is proposed that the drainage system will utilise SuDS to control peak discharges to no greater than the baseline rate.

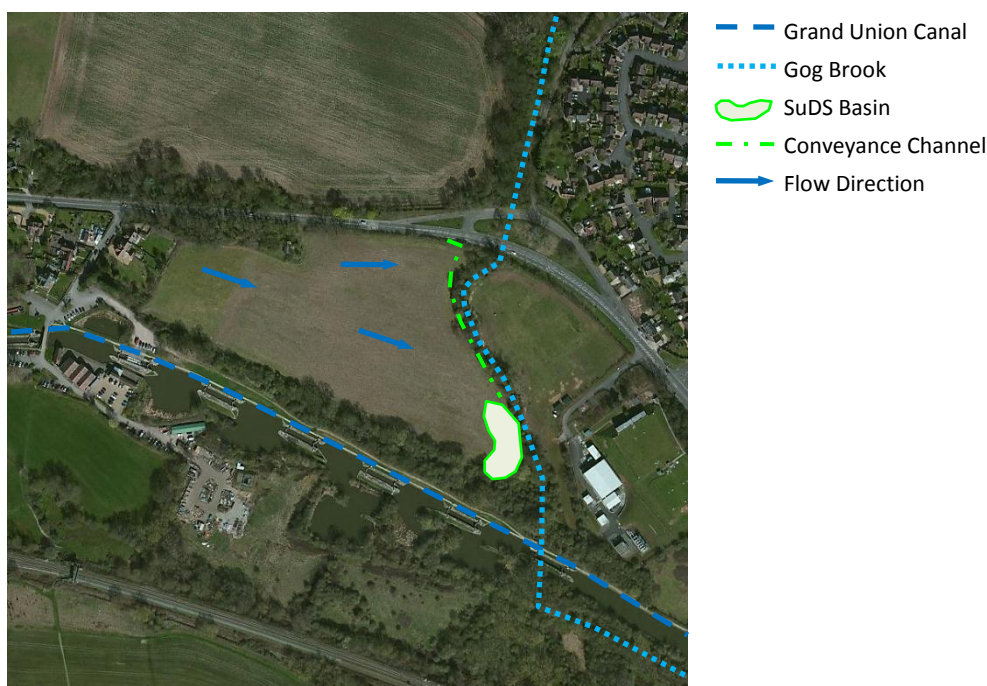


Figure 4h: Potential Drainage Option

Foul Drainage

- 4.26 Severn Trent Water has confirmed the presence of an existing 225mm \varnothing foul sewer passing through the proposed development site, as shown in Figure 4i, below. It will be possible to relocate this sewer as part of any site development proposals.
- 4.27 Severn Trent Water confirms that a foul connection may be made to a suitable point on the existing foul sewer without upgrading.
- 4.28 The land lies within the catchment of the Longbridge Sewage Treatment Works (STW) which is located approximately 6km to the south east of the site. Severn Trent confirm that the works currently has headroom to accommodate approximately 3,500 residential units and as such it is considered that the proposed development can be connected to the treatment works without the need for upgrading works.

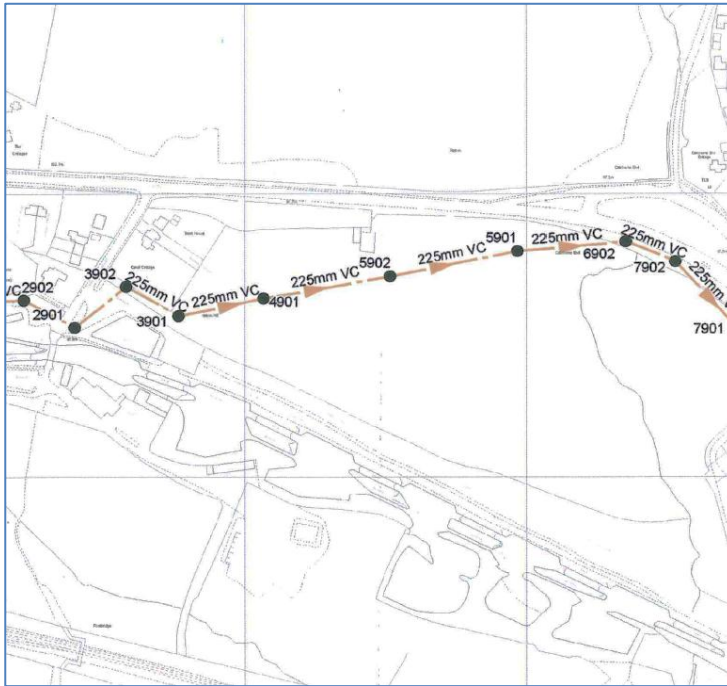


Figure 4i: Existing Severn Trent Foul Drainage

4.29 The location of the sewage treatment works is shown in Figure 4c.



Figure 4i: Longbridge Sewage Treatment Works

5 Noise

- 5.1 A detailed noise assessment will need to support any future planning application to define the environment conditions across the site. Preliminary discussions with the Environmental Health Officer indicates the following legislation will need to be considered.

NPPF / PPG24: Planning and Noise

- 5.2 The Department of Communities and Local Government published the National Planning Policy Framework (NPPF) in March 2012. This was produced to support the reforms of the planning system and to promote sustainable growth. The NPPF has resulted in the withdrawal of PPG24. However, current thinking across most Environmental Health offices is to continue to support the PPG24 Noise Exposure Categories during the transitional stages.
- 5.3 PPG 24 provides advice on how the planning system can be used to minimise the adverse impact of noise without placing unnecessary restrictions on development or unduly adding to the costs and administrative burdens of business. The document contains advice to local authorities regarding the use of their planning powers to minimise the adverse impacts of noise when considering planning applications for new residential developments. Noise Exposure Categories (NECs) are identified for residential development, with recommended levels for exposure to different noise sources. These categories are shown below.

NEC Boundary	Road Traffic Noise Sources		Planning Advice
	Daytime (0700 – 2300) $L_{Aeq\ 16hr}$ dB	Nighttime (2300 – 0700) $L_{Aeq\ 16hr}$ dB	
A	<55	<45	Noise need not be considered as a determining factor in granting planning permission, although noise at the high end of the category should not be regarded as a desirable level.
B	55 – 63	45-57	Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection against noise.
C	63 – 72	57-66	Planning permission should not normally be granted. Where it is considered that permission should be given, for example because there are no quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise.
D	>72	66>	Planning permission should normally be refused.

Figure 5a: PPG24 NEC Categories

British Standard 8233:1999; Sound Insulation and Noise Reduction for Buildings

- 5.4 BS8233 gives recommendations for the control of noise in and around buildings and suggests appropriate criteria and internal noise limits for habitable rooms of residential dwellings. In accordance with the requirements of BS8233, the following internal and daytime noise limits will need to be met within sensitive rooms of the residential dwellings:

- 40dB $L_{Aeq\ (16\ hour)}$ during the daytime in living rooms
- 35dB $L_{Aeq\ (8\ hour)}$ during the night time in bedroom areas
- 45dB L_{AMAX} should not be exceeded during the night-time in bedroom areas

Noise Monitoring

- 5.5 As a result of the small number of sensitive receptors within the vicinity of the site, and the railway line lying a significant distance from the site boundary, it is anticipated that noise monitoring will not be required.

Noise Assessment

5.6 Preliminary noise level of the present day conditions has been completed using the computer modelling software SoundPLAN. This noise model has incorporated digital terrain mapping data for the proposed site and its immediate environment, thus incorporating all the pertinent site features and the levels of the roads. Past experience suggests, based on the nature and location of the site, traffic noise is expected to be the dominant noise source. Traffic flows have therefore been obtained from the Highways Agency TRADS site, which identifies the present day traffic levels. These flows have been used to assess the impacts on the environment.

5.7 The NEC contour maps produced for the day time and night time intervals can be seen below:

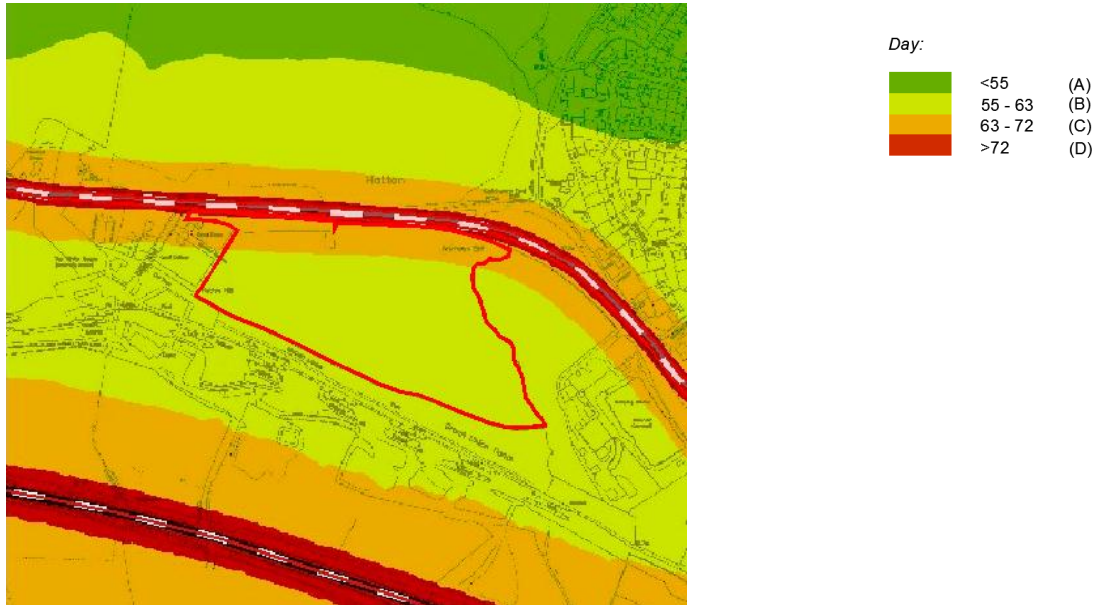


Figure 5b: Baseline Day Time Contours

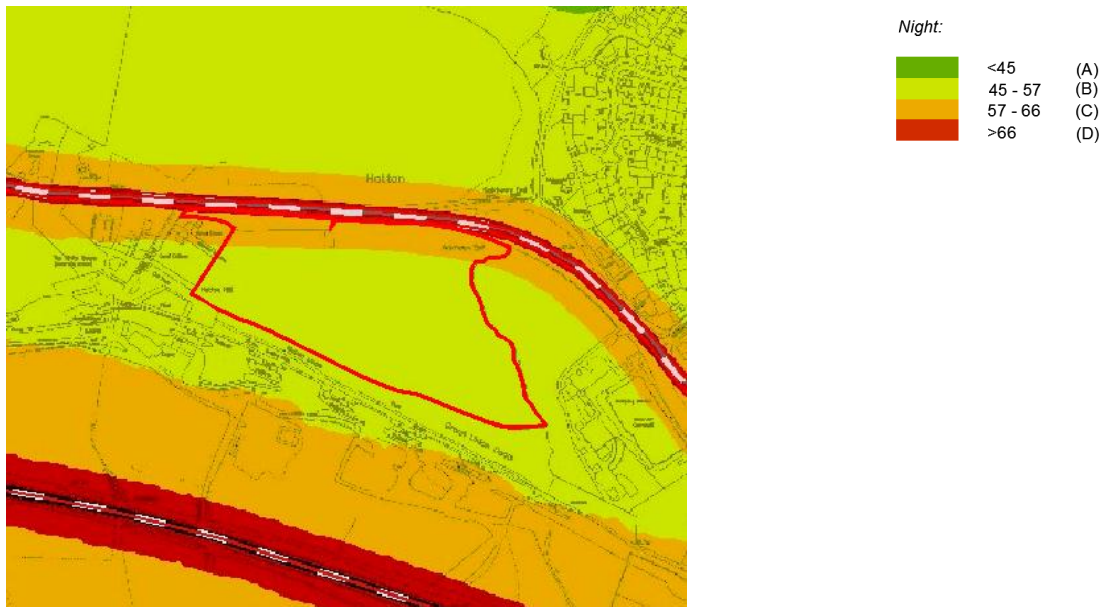


Figure 5c: Baseline Night Time Contours

5.8 The existing situation shows the majority of the site to lie within NEC boundary B, with a small strip along the main road within NEC C and partially within NEC D. In order to provide an acceptable noise environment, the properties within these boundaries will require nothing more than the standard thermal double glazing. PPG24 states that this will provide a sound insulation performance of 33bB(A).

- 5.9 However, opening windows for ventilation purposes would reduce the insulation provided by the building façade and may cause internal design standards to be exceeded. However, an open window will still provide noise attenuation; with PPG24 highlighting that attenuation of 15dB will be delivered.
- 5.10 Therefore, if it is considered necessary to satisfy internal noise standards with a degree of ventilation, mitigation measures may be required to enable occupiers to obtain ventilation with windows closed. Passive acoustic ventilators with the appropriate attenuation can be installed within the walls of habitable rooms or utilise 'trickle' vents within the window frames.
- 5.11 Any development within the small strips of land contained within NEC C/D may require further mitigation. However, the layout of the development may be able to accommodate this area and internal arrangements of properties can also account for this environment. For example, consideration can be given to the internal layout of the properties such that sensitive locations i.e. bedrooms, are located to avoid facing onto the A4177 directly and finally consideration should be given to orienting buildings to minimise windows that face onto the noise source.
- 5.12 Further assessments are yet to be carried out upon receipt of the proposed masterplan and future traffic flows.

6 Ground Conditions

- 6.1 Reference to the British Geological Society indicates bedrock of Mercia Mudstone with overlying superficial deposits of Alluvium to the east of the site associated with the Gog Brook. The published geology is shown in Figure 5a, below.

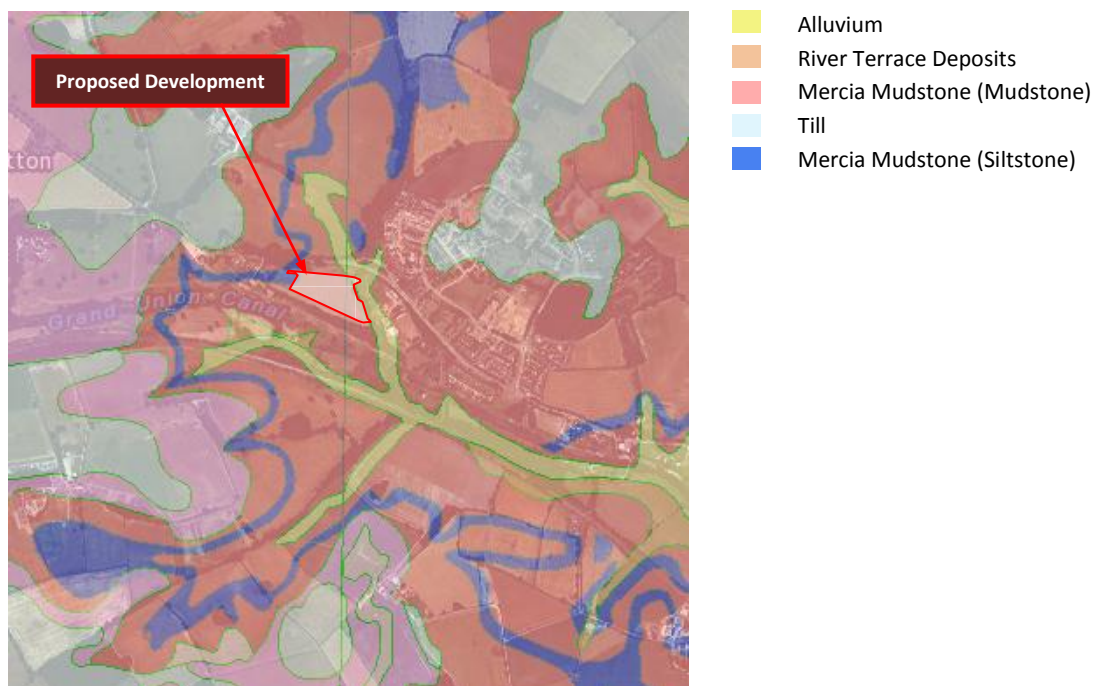


Figure 6a: Published geology

7 Services

Existing Services

- 7.1 Discussions have taken place with the respective service companies to identify the locations of their existing apparatus serving Hatton. Preliminary investigations indicate that only Severn Trent Water has apparatus within the site boundary. The details of all available services locations have been transferred onto the plan 10234-SU-01, which is appended to this note.

- 7.2 **Water:** Two water mains are identified within the site, running in a west to east direction parallel with the canal which service the existing developed areas surrounding the site. On the northern boundary of the site the water main is recorded to be 4in diameter whilst running along the southern boundary a 250mm diameter is shown.
- 7.3 **Gas:** National Grid have provided a location plan of their existing network which identifies the presence of both Low Pressure and High Pressure gas mains within the Birmingham Road on the northern boundary of the site. Low Pressure mains are also identified to the west of the site serving Hatton Hill cottages.
- 7.4 **Electricity:** Western Power Distribution, who owns and operates the electricity supply network within the area, has confirmed the location of two 11kV underground cables, one to the east of the site running through Winderton Avenue and one to the west within Canal Road. A low voltage underground cable has also been identified to the north of the site within Brownly Green Lane, this continues south east into the A4177. The approximate locations of the 11kV and LV underground cables are shown on drawing 10234-SU-01.
- 7.5 **Telecommunications:** BT has confirmed the location of their apparatus however none is identified within the site boundary. The residential areas to the west and east of the site are served by BT infrastructure with a number of cables also identified within the Birmingham Road to the north. The approximate location of the BT cable is shown on drawing 10234-SU-01.

Supplies

- 7.6 **Water:** Severn Trent Water confirms the presence of a number of water supply mains within and surrounding the site as shown on drawing 10234-SU-01 appended to this note.
- 7.7 It is anticipated that a supply connection could be taken from either the 250mm or 4in main within the site, although detailed investigations will be required to determine if reinforcements are required to facilitate the full development demand.
- 7.8 **Gas:** National Grid confirms that a Medium Pressure Gas Main is situated in the Birmingham Road on the northern boundary of the site coupled with a number of Low Pressure mains. It is anticipated that a point of connection can be made to the existing medium pressure main within Birmingham Road and that supplies will be brought to the site from this point.
- 7.9 It will be necessary to liaise further with National Grid to confirm whether reinforcements will be required to facilitate the demand from the development. Should reinforcements be necessary, the gas operator will undertake an economic test and in all likelihood this process will demonstrate that no financial contribution will be necessary to support the upgrading.
- 7.10 **Electricity:** Western Power Distribution confirms that two 11KV underground cables and an LV cable are present within the adjacent road network. It is anticipated that a point of connection will be taken from this electricity network. Certain non-prohibitive reinforcements may be required.
- 7.11 Further discussions are currently taking to place with Western Power Distribution to confirm whether reinforcements will be required to accommodate the demand from the development. Should reinforcements be required, a feasibility study will be completed to fully assess the impact of development on the existing network. Reinforcement details will be identified and associated costs will be provided by Western Power Distribution upon completion of the study.
- 7.12 **Telecommunications:** Investigations confirm the presence of BT apparatus within the Birmingham Road. It will be a straight forward task of providing on-site communication ducts distributing services into the development from the existing infrastructure.

Appendix



Brownley Green Lane access to be stopped up
Three arm compact roundabout

Potential link to properties fronting Canal Road

NOTES

1. Do not scale from this drawing.
2. Site boundary and highway works are shown indicatively.

KEY

— Site Boundary

Rev	Revision Details	Drawn	Checked	Approved	Date
	PRELIMINARY				MAR 13
	Issue Status	Approved			Date
Drawn	RM	Checked	PAB	Date	05/03/13

PROPOSED DEVELOPMENT
LAND AT HATTON

HIGHWAY ACCESS
OPTION 1

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Scale at A3
1:2000

Drawing No.
HATTON/01

Rev.
-



Rev	Revision Details	Drawn	Checked	Approved	Date
	PRELIMINARY				MAR 13
	Issue Status		Approved		Date
Drawn	RM	Checked	PAB	Date	05/03/13

NOTES

1. Do not scale from this drawing.
2. Site boundary and highway works are shown indicatively.

KEY

— Site Boundary

PROPOSED DEVELOPMENT
LAND AT HATTON

HIGHWAY ACCESS
OPTION 2

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Scale at A3 1:2000	Drawing No. HATTON/02	Rev. -
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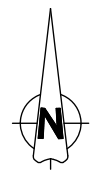


Culvert Beneath A4177



- NOTES**
- 1.) Do not scale from this drawing.
 - 2.) The photographs on this drawing are for reference only and are not shown to scale.

- KEY**
- Gog Brook
 - Grand Union Canal
 - Proposed Site



Rev.	Revision Details	Drawn	Checked	Approved	Date
	PRELIMINARY			PAB	18.06.13
	Issue Status			Approved	Date
	Drawn DW	Checked DW			Date JUNE 13

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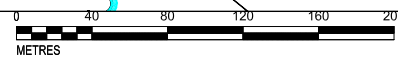
BLOOR HOMES

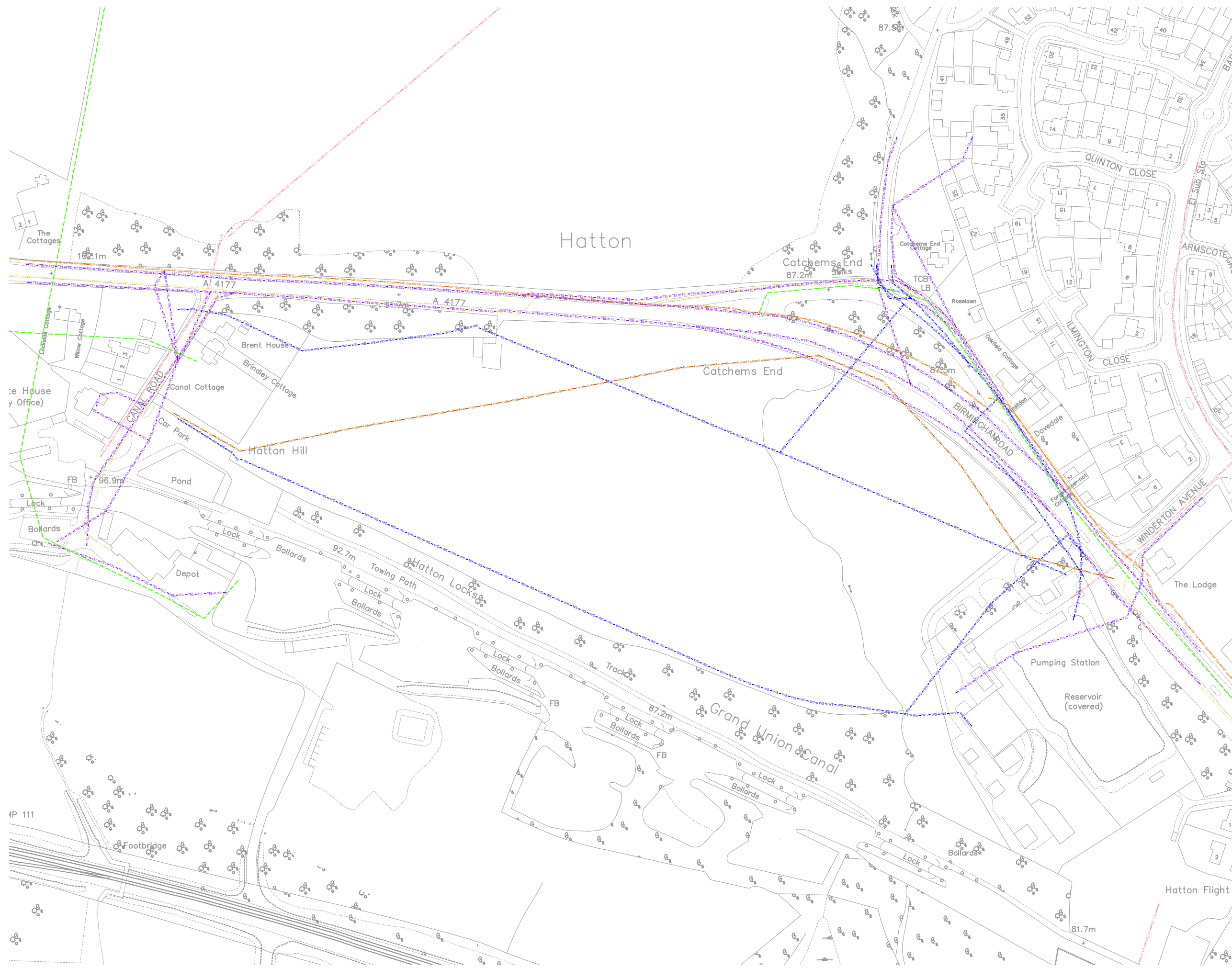
Proposed Development
Hatton, Warwick

Gog Brook & Grand Union Canal
Watercourse Schematic



Culvert Beneath Grand Union Canal





- NOTES:**
1. Do not scale from this drawing.
 2. All dimensions in metres unless otherwise stated.
 3. This drawing has been produced using survey data provided by a Third Party. Brookbanks Consulting Ltd cannot be held responsible for the accuracy of this data. All discrepancies are to be reported to the Engineer immediately, ahead of work commencing.
 4. The existing services shown are not necessarily complete nor is their location with regard to position and depth precise.

- KEY**
- Water Supply Mains
 - Foul Sewers
 - Electricity HV
 - Electricity LV
 - Gas Main LP
 - Gas Main MP
 - Telecoms



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Proposed Development
 Hatton, Warwick

Existing Services
 Location Plan

