

GREATER NORWICH LOCAL PLAN REGULATION 18 (C) (GNLP0125) REPRESENTATIONS ON BEHALF OF ABEL HOMES



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1.0 Introduction

- 1.1 On behalf of Abel Homes, we are instructed to submit representations to the draft Greater Norwich Local Plan Regulation 18 (c) consultation. The representations are split into two, reflecting the two parts of the Greater Norwich Local Plan; the Strategy Document and the Sites Plan.

PART 1

2.0 Response to the Draft Greater Norwich Local Plan – Strategy Document

GNLP REGULATION 18(C) QUESTIONS	RESPONSES
2. Is the overall purpose of this draft plan clear?	Yes.
6. Do you support or object to the vision and objectives for Greater Norwich?	<p>Support, with comments.</p> <p>The objective of delivering high quality homes that contribute to the delivery of mixed, inclusive, resilient and sustainable communities that are supported by appropriate economic and social infrastructure is fully supported. The approach is fully consistent with the National Planning Policy Framework.</p>
9. Do you support, object, or have any comments relating to the approach to Housing set out in the Delivery Statement?	<p>Support, with comments</p> <p>The requirement that sites should only be allocated for housing where, having regard to policy requirements, there is a reasonable prospect that housing can be delivered, fully accords with paragraph 67 of the NPPF.</p> <p>Whilst the submission of Delivery Plans as part of a planning application is supported the documents need to recognise that there may be unforeseen material changes in circumstances, which could impact the delivery of an allocation.</p> <p>However, to guard against non-delivery, particularly in relation to the potential failure of larger strategic sites in the Norwich urban area to come forward, a minimum buffer of 10% should be identified. Indeed, the draft GNLP states on page 45 that the Regulation 19 version of the Plan will aim to provide a minimum buffer of 10% (at least 250 further homes), which is likely to be provided through a combination of additional sites proposed through the consultation, and the contingency sites.</p> <p>The identified buffer will help maintain the supply and delivery of housing, in accordance with the NPPF and specifically the Government's objective of encouraging authorities to consider more growth than required to meet local housing need, particularly in locations where there is potential for significant economic growth, such as the Cambridge Norwich Tech Corridor.</p>
11. Do you support, object, or have any comments relating to the approach to Infrastructure set out in the Delivery Statement?	<p>Support, with comments</p> <p>Whilst there is support, in principle, for the proposed approach to infrastructure, particularly the need for key stakeholders to work collaboratively, the Delivery Statement should make it clear that infrastructure requirements will be proportionate to each development and based on clear assessments of need. Failure to do this will result in certain developments being financially unviable and, therefore, undeliverable.</p>

12. Do you support, object, or have any comments relating to the Climate Change Statement?	<p>Support, with comments</p> <p>The strategic policy is considered to provide a framework to ensure communities developed and infrastructure delivered under the plan will be resilient to the impacts of climate change.</p> <p>The principles of the policy are, where relevant, all capable of being delivered / supported by the proposed development.</p>
13. Do you agree with the proposed Settlement Hierarchy and the proposed distribution of housing within the hierarchy?	<p>Support, with comments</p> <p>We strongly support the principle of the Settlement Hierarchy and the identification of Horsham St Faith and Newton St Faith as a village cluster in the draft GNLP. The cluster benefits from a Post Office and Store, pre-school, primary school, doctor's surgery, public house, alongside a range of other services and amenities.</p> <p>Accordingly, the identification of Horsham St Faith and Newton St Faith, which is in close proximity of Norwich and the NDR, as a village cluster supports the aspirations of directing growth to locations with good access to services and employment, alongside urban and rural regeneration.</p>
14. Do you support, object or wish to comment on the approach for housing numbers and delivery?	<p>Support, with comments</p> <p>For reasons outlined in relation to Question 13, we support the identification of 480 new allocations in village clusters in Broadland to accommodate additional growth</p>
16. Do you support, object or wish to comment on the approach to Review and Five-Year Land Supply?	<p>Support.</p> <p>The proposed review of the plan 5 years after adoption is fully consistent with paragraph 33 of the NPPF. In addition, we agree that, given the joint approach to the preparation of the draft GNLP, the assessment of 5 year land supply should continue to cover all 3 administrative areas.</p>
17. Do you support, object or wish to comment on the approach to Infrastructure?	<p>Support, with comments.</p> <p>The need to support sustainable growth through the provision of infrastructure improvements is, such as schools and health centres, in principle, supported. However, the policy should recognise that infrastructure provision must be proportionate to each development, based on local needs, alongside not undermining the viability of housing delivery.</p>
18. Do you support, object or have any comments relating to the preferred approach to sustainable communities including the requirement for a sustainability statement?	<p>Support, with comments.</p> <p>The principle of ensuring that developments are high quality and contribute to delivering inclusive growth in mixed, resilient and sustainable communities, whilst assisting in mitigating and adapting to climate change is supported. To demonstrate the ability to secure these objectives, the preparation of a Sustainability Statement as part of an application for a major development is supported.</p> <p>Whilst the requirement to ensure the efficient use of land by, amongst other things, providing an indicative minimum density of 25 dwellings per hectare, is supported, the policy, or supporting</p>

	<p>text, should make it clear that, as well as giving consideration to on site characteristics, consideration will be given to a range of other site / scheme specific issues, such as housing mix, design considerations and the densities of the surrounding area.</p>
<p>19. Do you support, object or have any comments relating to the specific requirements of the policy.</p>	<p>Support, with comments.</p> <p>As detailed in relation to Question 18, whilst the requirement to ensure the efficient use of land by, amongst other things, providing an indicative minimum density of 25 dwellings per hectare, is supported, the policy, or supporting text should make it clear that, as well as giving consideration to on site characteristics, consideration will be given to a range of other site / scheme specific issues, such as housing mix, design considerations and the densities of the surrounding area.</p>
<p>24. Do you support, object or have any comments relating to the approach to other strategic infrastructure (energy, water, health care, schools and green infrastructure)?</p>	<p>No comments.</p> <p>Comments</p> <p>The approach adopted by Anglian Water (zonal charging) in relation to infrastructure provision should be explored to see if it can be applied to other types of strategic infrastructure, such as electricity. Anglian Water provide a set fee per plot in relation to infrastructure costs, with costs being equally applied across a range of developments. This, in the same way as the Community Infrastructure Levy, would provide certainty for developers, particularly in relation to viability.</p>
<p>25. Do you support, object or have any comments relating to the approach to on-site and local infrastructure, services and facilities?</p>	<p>Support, with comments.</p> <p>The need to support sustainable growth through the provision of infrastructure improvements, such as schools and health centres, is in principle, supported. However, the policy should recognise that infrastructure provision must be proportionate to each development, based on a local need and not undermine delivery.</p>
<p>27. Do you support, object or have any comments relating to approach to affordable homes?</p>	<p>Support, with comments.</p> <p>Support principle, but notwithstanding Government guidance regarding the need for allocations to demonstrate there is a realistic prospect of being delivered, the policy should, as per the existing policy within the Joint Core Strategy, recognise that there may be a material change in circumstance, that may warrant the submission of a viability assessment.</p>
<p>28. Do you support, object or have any comments relating to the approach to space standards?</p>	<p>Support, with comments.</p> <p>Whilst the general principle of providing development that adheres to space standards is supported, the policy should incorporate a degree of flexibility to ensure that consideration is given to site specific issues, as well as need and financial considerations. For example, there may be circumstances where there is a clear need for homes which fall below the space standards. The lack of flexibility within the policy would prevent this need from being satisfied.</p>

	<p>In addition, whilst the provision of space standards in relation to internal room size is supported, the Council should not place undue restrictions on developer by enforcing requirements in relation to storage space. Developers ultimately need to have flexibility to react to buyer / market demands whilst operating within an overall minimum space standard regime.</p>
<p>32. Do you support, object or have any comments relating to the approach to Self/Custom-Build?</p>	<p>Comments.</p> <p>The objective of providing self and custom build is generally supported. However, the proposed threshold (5% of plots on residential proposals of 40 dwellings or more) is questioned, given that it would result in the delivery of substantially more self build and custom build units than for which there is an identified need.</p> <p>The majority of sites that are identified to meet the housing growth targets are likely to be in excess of 40 dwellings. If, as a very broad calculation, the threshold is applied to only the new allocations identified in the draft GNLP (7,840 homes), this would result in the provision of approximately 392 units self and custom build units. This is substantially more than the 113 people on the self and custom build register in the Greater Norwich Area (2018/19). The figure would substantially increase were the threshold applied to existing commitments which are yet to granted planning permission.</p> <p>Therefore, the inclusion within the policy that the requirement for self and custom build units will be subject to evidence of need is supported. The policy should, in accordance with the PPG, recognises that as well as the self build / custom build register, additional data from secondary sources should be considered to better understand the demand for self and custom build plots. For example, the demand for self / custom build units may be for stand alone or small development opportunities, not the large estate style developments that would be required to deliver self / custom build units under the policy.</p>
<p>45. Do you support or object or wish to comment on the overall approach for the village clusters?</p>	<p>Support, with comments.</p> <p>We strongly support the identification of Horsham St Faith and Newton St Faith as a village cluster in the GNLP. The cluster benefits from a Post Office and Store, pre-school, primary school, doctor's surgery, public house, alongside a range of other services and amenities. In addition, the site is within close proximity of Norwich and the range of services and amenities it provides, as well as the Broadland Northway. Accordingly, the identification of Horsham St Faith and Newton St Faith as a village cluster supports the aspirations of directing growth to locations with good access to services and employment, alongside urban and rural regeneration. In addition, the identification of the village cluster helps to support the GNLP's aspirations of providing a variety of housing types and tenures.</p>
<p>46. Do you support or object or wish to comment on the approach for specific village clusters?</p>	

<p>48. Do you support or object or wish to comment on any other aspect of the draft plan not covered in other questions?</p>	<p>The following comments relate to the Greater Norwich Local Plan, Interim Viability Study, prepared by NPS Group (November, 19).</p> <p>Whilst there is general support for the approach adopted and the collaborative approach that the GNLP Team are seeking to adopt, there is concern that the assumptions made within the Viability Study in relation to, amongst other things, sales values, build costs and benchmark land values are too generic and not backed up by comparable evidence. Further evidence on this is provided below.</p> <ul style="list-style-type: none"> • The assumed land values are too low and not representative of market values. Comparable evidence needs to be provided to justify the figures used. • The assumption that 54% of dwellings are 3 bedroom is considered high. In addition, the number of 1 bedroom units will vary Norwich and the market towns, with the latter being lower. • There appears to be no consideration of demographics. In our view, the identified housing mix should include a significant number of bungalows as the greatest rise within the age groups occurs in the 65 plus band. This will influence build cost, densities and sales values and is fundamental on any strategic site. • Garages should be added into the build cost calculation. • No allowance has been made for Abnormals. This should be included or, alternatively, the contingency should be increased accordingly. • No allowance is made for planning or promotion costs. • An allowance should be made for Services. These are becoming increasingly expensive particularly given the increased requirements anticipated through the Future Homes Standards Consultation. • There is a concern that the £5,000 allowance for energy efficiency measures is too low.
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PART 2

3.0 Responses to Draft Greater Norwich Local Plan – Sites Plan

- 3.1 On behalf of Abel Homes, we strongly support the preferred allocation of GNLP0125, Land West of West Lane, Horsham St Faith. The site is entirely deliverable, and capable of making a valuable contribution towards satisfying the Councils' housing needs during the period to 2038.
- 3.2 GNLP0125 has been identified as a preferred allocation for 20-30 dwellings, of which 33% will be affordable. It is recognised in the draft policy that more homes may be accommodated on the site, subject to an acceptable design and layout, as well as infrastructure constraints. The preferred allocation recognises that development is expected to provide frontage footways and carriageway widening, and a design and layout which minimises adverse impacts on nearby heritage assets.
- 3.3 In accordance with the National Planning Policy Framework's (NPPF) definition of 'deliverable', the site represents a suitable location for development now, is available immediately, is achievable with a realistic prospect of housing being delivered on the site, and is viable. This is considered in further detail below.

Assessment of Delivery

Suitable

- 3.4 Horsham St Faith is identified as a Service Village in the Joint Core Strategy for Broadland, Norwich and South Norfolk, recognising its suitability as a location for small scale residential development. Horsham St Faith and Newton St Faith are designated as a village cluster in the draft GNLP, due to being within the catchment of St Faiths Primary School, alongside having a village hall, local shop and public transport provision. As a result, growth of 20-50 dwellings is allocated to Horsham and Newton St Faith in the draft GNLP there are no other Preferred Sites or Reasonable Alternative sites identified; only site GNLP0125. Accordingly, sufficient land is not identified to accommodate the total growth directed to Horsham and Newton St Faith.
- 3.5 Given the suitability of Horsham and Newton St Faith, the identification of the site will help achieve the GNLP's aspirations of focusing growth in village locations to promote social sustainability by supporting rural life and services. Therefore, the site will help support achieving 9% of total housing growth in the GNLP in Village Clusters (480 dwellings in Broadland).
- 3.6 The following commentary demonstrates the suitability of the site having regard to key technical matters, whilst responding to the points raised in the preferred allocation's wording.

Density and Quantum of Development

- 3.7 The preferred allocation identifies the site as being suitable to accommodate 20-30 homes. However, the preferred allocation also suggests that more homes may be accommodated, subject to an acceptable design and layout, as well as infrastructure constraints being addressed.
- 3.8 Based on the upper limit of the preferred site allocation (30 dwellings) and the identified site area of 1.44 ha, the density of development equates to 21 dwellings per hectare. However, this density is lower than the indicative minimum densities set out in Policy 2 of the draft GNLP, which seeks a

minimum of 25 dwellings per hectare to make efficient use of land (subject to site specific constraints).

- 3.9 The commentary for the village cluster of Horsham and Newton St Faith confirms that approximately 20-50 homes are appropriate for the cluster. On this basis, it is suggested that, if required, the site and immediately adjacent land could accommodate some or all of the additional growth allocated to the cluster (i.e. 50 dwellings). As has been demonstrated in previous Representations relating to the site, additional land to the south and west of GNLP0125, which is within the control of Abel Homes, is available for development. Therefore, the site could be expanded if it becomes evident that other sites across the GNLP area are undeliverable. Additional land, outside of the wider field (but within the same land ownership) which the preferred allocation falls within, is also available for development and a larger scale scheme providing additional community benefits (e.g. land for a new school) could be feasible should an increased quantum of growth be required within the village cluster.
- 3.10 The following commentary demonstrates the suitability of the site having regard to technical matters, whilst responding to the points raised in the preferred allocation's wording. This Representation demonstrates the suitability of the site, if required, in accommodating all of the growth afforded to the cluster on the site.

Layout and Design

- 3.11 An Indicative Masterplan has been prepared for the site, by Feilden and Mawson and is submitted in support of this representation (see Appendix 1) The Indicative Masterplan demonstrates how frontage development can be successfully achieved looking onto Church Street, through the provision of an adoptable road parallel to Church Street and public open space to the north of the site. This means that the existing trees along Church Street can be preserved, whilst allowing views into the development, from Church Street.
- 3.12 Furthermore, the development has been designed around an internal loop road system, with areas of public open space to the north and east of the site. A large area of public open space is proposed to the north east of the site, in order to mitigate any visual impact on the nearby heritage assets. Views into the site, from the north-eastern corner, will be of the proposed area of public open space.
- 3.13 It is also proposed to utilise the north-eastern corner as the point of pedestrian and cycle access to and from the site. This will connect into the existing pedestrian and cycle provision along Church Street, providing access into the centre of the village. As a result of this it is not necessary to provide frontage footways which, as detailed above, enables trees to be retained.
- 3.14 Overall, the Indicative Masterplan demonstrates how a high-quality layout and design can be comfortably achieved on the site, based on the site area and provision of 50 dwellings, whilst considering the sites constraints.

Access, Transport and Roads

- 3.15 An Access Note has been prepared by Richard Jackson Engineering Consultants and is submitted in support of this Representation (see Appendix 2). With regards to access, it is recognised how a simple priority junction is proposed from Church Street, which provides for adequate visibility splays, and pedestrian/cycle connections. The access has been designed to serve 50 dwellings, via a Type 3 road (in accordance with the Norfolk Residential Design Guide), and is proposed to be widened to 5.5m at the site's entrance.

- 3.16 In order to accommodate the proposed access to the site, it is necessary to revise the western boundary of the site as shown in draft Policy GNLP0125; relocating it further west. The revision to the western boundary emerges through the positioning of the proposed access to the site. The location of the access has been informed by the existing point of access to Abbey Farm Commercial Park, which is situated to the north of Church Street, in order to ensure that there is sufficient separation between the two points of access, whilst achieving the necessary visibility splays.
- 3.17 Accordingly, the revised site area totals 2.26 ha. The revised red line boundary is depicted on plan reference: 8881-SK01, which is submitted in support of this representation (See Appendix 1)
- 3.18 In order to allow for the site access, it is proposed to reduce the speed limit of Church Street, from 60mph to 40mph, from the A140, alongside the extent of the 30mph speed limit being extended further west. Adequate visibility splays of up to 120m to the west and 70m to the east, from a 2.4 setback can be achieved, in accordance with the Design Manual for Roads and Bridges.
- 3.19 Due to drainage and topographical constraints, a frontage footway on Church Street is determined to be unfeasible for the site. Accordingly, minor amendments to the draft allocation are outlined at the end of this Representation. However, as detailed on the Indicative Masterplan, it is proposed to provide a new footway and cycle way through the development, to the north-eastern corner of the site, providing adequate links to the village, ensuring that the objectives of the policy are adhered to.
- 3.20 Notwithstanding the above, as outlined earlier in this Representation, the Indicative Masterplan demonstrates how frontage development overlooking Church Lane can be achieved, without the need for individual points of access from Church Street (through a private drive arrangement). This will help to provide views into the site, helping to encourage a reduction in vehicle speeds along Church Street.
- 3.21 The Access Note confirms that the bus services within Horsham St Faith meet Norfolk County Council's requirements in terms of public transport availability and frequency.
- 3.22 In terms of trip generation, the work undertaken by Richard Jackson assumes that the majority of employment exists in Norwich and the surrounding towns of Wymondham & Dereham. As a result 75% of traffic will travel west, away from the centre of the village. Utilising the TRICS data base, it is concluded that based on 50 dwellings, there will be 6 arrivals and 19 departures in the AM peak, alongside 18 arrivals and 9 departures in the PM peak.
- 3.23 The Access Note concludes that in terms of vehicular access, accessibility to services and other modes of transport, the site meets all the necessary criteria. Whilst the development will create an additional quantum of vehicle trips on the local highway network, this is compensated for by proximity to the Broadland Northway, during the peak hour. Through the provision of satisfactory pedestrian facilities to the village, traffic generation will be mitigated further.
- Carriageway Widening**
- 3.24 Draft Policy GNLP0125 outlines the requirement for carriageway widening as part of development on the site. However, in developing an access strategy for the site, Richard Jackson have confirmed that Church Street is of an adequate width to accommodate a junction serving up to 50 dwellings (between 6m and 6.3m along the site frontage). Accordingly, Church Street does not

require any carriageway widening to facilitate development on the site. On this basis, it is requested that carriageway widening is omitted from GNLPO125.

Flood Risk Assessment and Surface Water Drainage Strategy

- 3.25 A Flood Risk Assessment and preliminary Surface Water Drainage Strategy has been prepared by Richard Jackson. The Assessment confirms that the site falls within Flood Zone 1, and is, therefore, at low risk of flooding from fluvial sources.
- 3.26 The Strategy confirms that the soil at the site should be suitable for the use of soakaways, based on borehole records, which indicate permeability rates conducive to the use of infiltration. The permeability rates are also ratified by the rates used for the Broadland Northway, which provides a good indication of the likely results to be expected on the development site.
- 3.27 A Surface Water Strategy is proposed to utilise permeable paving and soakaways for drives and private roof areas, alongside swales and infiltration basin / crates for the highway water for the events up to the 1 in 100 year storm event (plus climate change at 40%).
- 3.28 In summary, it is concluded that infiltration is likely to be suitable, and that the Drainage Strategy would be in accordance with National and Local planning policy.

Other Matters

- 3.29 The Note to Policy GNLPO125 states that the site is proposed for allocation but for a smaller area than submitted to reflect the fact that there is limited capacity at St Faiths Primary School. However, from discussions with Norfolk County Council (Education) we understand that, notwithstanding existing allocations in the adopted Development Plan / planning permissions granted, capacity at the school would only become an issue if more than 100 homes were proposed.
- 3.30 On this basis, it is evident that the site has the potential, if required, to accommodate all the growth directed to Horsham St Faith.

Deliverability and Proposed Housing Trajectory

- 3.31 Abel Homes are committed to providing contemporary, award winning homes across the region. Abel Homes have demonstrated this dedication, and their commitment to bringing new homes to the district, through a range of recently completed developments, such as the Hops in Hingham (88 dwellings), Swan's Nest, Swaffham (152 dwellings), and The Limes, Little Melton (28 dwellings). The Hops development was submitted to South Norfolk's planning department in November 2014, approved in May 2015, and has successfully been completed. The rate of delivery, therefore, for the Hops was three and a half years. A similar delivery rate would be assumed for this site.
- 3.32 The following Housing Trajectory relating to the site has been informed by robust local evidence, including the completion of a range of developments across the GNLPO area by Abel Homes (such as The Hops, Hingham).
- 3.33 Abel Homes are currently seeking to submit an application in 2022 to tie in with adoption of the Local Plan. Assuming 6-9 months for the determination of the planning application, alongside a further 6 months for construction to commence on site, housing could start to be delivered on site in 2024, with the development completed by 2025; well within the first five years of the Local Plan

period. The Housing Trajectory has been based on the site accommodating the maximum growth identified within Policy GNLP0125

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Units	0	0	15	15	0	0	0	0	0	0	0	0	0	0	0
Cumulative Total	0	0	15	30	0	0	0	0	0	0	0	0	0	0	0

Available

- 3.34 Abel Homes have an option agreement on the land. The land is leased to a local farmer on a temporary basis, and can be terminated with the agreed notice period at any time.

Achievable

- 3.35 Based on the suitability assessment above, there are no site-specific constraints which could threaten the delivery of residential development on the site. Through the provision of new homes at Hingham, Swaffham, Mattishall, Watton and Little Melton, Abel Homes have demonstrated that they are committed and able to achieve the delivery of housing of large-scale housing developments, within 5 years. Therefore, residential development on the site is deemed to be entirely achievable.

Viable

- 3.36 We are confident that the delivery of the site is viable having regard to the policy requirements of the draft GNLP and there are no factors that we are aware of, at this moment in time, that could prevent the delivery of the site. This statement is, however, made in the context of the questions that have been raised in relation to Greater Norwich Local Plan Interim Viability Study (2019) (Question 48). Further discussions are required with the GNLP Team on these matters in order to confirm that the various policy objectives, such as affordable housing and community infrastructure, can be delivered on site without prejudicing the viability of the site. Abel Homes are keen to continue discussions with the GNLP Team on this matter as soon as possible.

Summary

- 3.37 The cluster of Horsham and Newton St Faith is a sustainable location for growth, benefitting from a range of services and amenities, including a primary school, village hall, local shop and public transport provision.
- 3.38 As has been demonstrated, the site is suitable, available, achievable and viable, and is deliverable within the first five years of the plan period. As previously recognised, there are no constraints which would affect the suitability of the site for residential development. In addition, this Representation has demonstrated the suitability of the site to accommodate all of the growth allocated to the cluster of Horsham and Newton St Faith (i.e. 50 dwellings), if required, and is capable of meeting the requirements of Policy GNLP0125. This is particularly relevant given that no alternative sites are identified in Horsham and Newton St Faith as being suitable for development. Accordingly, the foregoing text demonstrates that this specific site is a suitable location for further development, and Abel Homes supports the GNLP's proposals to allocate the site under Policy GNLP0125 for residential development.

Revised Policy Wording

Policy GNL0125 – Land west of West Lane, Horsham St Faith (approx. 1.44 ~~2.26~~ ha) is allocated for residential development. The site is likely to accommodate ~~20-30~~ at least 30 homes, 33% of which will be affordable.

More homes may be accommodated, subject to an acceptable design and layout being achieved, and any infrastructure issues addressed.

The development will be expected to address the following specific matters:

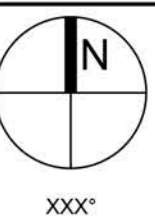
- Provision of frontage footways ~~and carriageway widening~~, **unless it can be demonstrated that the provision of footpaths along the entire frontage is neither required, practical or feasible.**
- A design and layout that minimises adverse impact on nearby heritage assets, especially the Grade I listed Church of Saint Mary and Saint Andrew.

Key



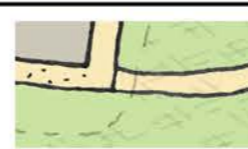
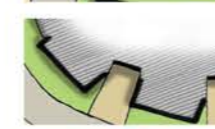




Red text – Proposed Amendments

~~Strikethrough~~ – Proposed Text to be Removed

APPENDIX 1
INDICATIVE MASTERPLAN
PREPARED BY FIELDEN + MAWSON



REV	DATE	CHK	AMENDMENTS
A00	XX.02.2020	-	Issued for comment
A01	27.02.2020	-	Graphical Updated
A02	11.03.2020	EG	Scheme Updated

	Type 3 Road		Public Open Space		Foot Path
	Proposed Building Parcel		Front Gardens		Driveway
	Indicative Below Ground Attenuation Crates		Forebay		

Feilden+Mawson

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CLIENT
 Abel Homes
 JOB
 Land to the East of the A140
 Horsham St. Faith

DRAWING
 Sketch development layout

WORKSTAGE			
SCALE	PAPER	DATE	REV
1:500/1000	A1/A3	Feb 20	
JOB	DWG	REV	
8881			A02

APPENDIX 2
HIGHWAYS & ACCESS NOTE
PREPARED BY RICHARD JACKSON

Our Ref: 49455/GH/MJD

Your Ref:

11 March 2020

Dear Mr Piper

RE: Land West of West Lane, Horsham St Faith – Highways & Access – GNLPO125

We refer to our instructions to consider the transport aspects for a potential residential development in Horsham St Faith. The site comprises of greenfield land. Vehicular access will be taken from the road to the north of the site, hereby named throughout as Church Street, with pedestrian and cycle links to the east into the local community. Our assessment for an access and the transportation elements for the land at Horsham St Faith has been made on the potential for up to 50 dwellings.

This assessment considers current policy with regards to access for the development and accessibility, which are addressed in following matters and we present our views for proposed mitigation for the offsite infrastructure.

1. Access and off-site assessment of highways.
2. Location and accessibility to services.
3. Transportation links including pedestrian, cycle and public transport modes.
4. Development trip generation.
5. Preliminary Local Accident Analysis.

The site is located in Horsham St Faith with a grid reference of 621398, 315072 and an approximate postcode of NR10 3JU. The site is bound by Church Street to the north and opposite the Abbey Farm Commercial Park, with West Lane to the east and farmland to the west. The centre of Horsham St Faith is located to the east of the site, including additional dwellings and a cycle route which is located on West Lane, see **Figure 1** attached. To the south, the site is bound by further agricultural land, the cycle route and fields beyond.

The civil parish of Horsham St Faith resides in rural Norfolk, within the Broadland District. Officially, the civil parish is known as Horsham St Faith and Newton St Faith, connecting the two villages within the Broadland District. Horsham St Faith and Newton St Faith have approximately 797 households and a population of 1724 (taken from the 2011 Census data for the parish). The

Cont'd.../

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

Telephone: 01603 230240
www.rj.uk.com



village is situated to the east of A140 along Church Street which stretches to Newton St Faith in the north via Manor Road. Horsham St Faith is approximately 6.4km north of Norwich city centre, 22.9km east of Dereham and 27.2km south of Cromer.

Access and off-site assessment of highways

A simple priority junction access is proposed from Church Street, which provides for adequate visibility splays, pedestrian and cycle connections from the site into the village centre, as demonstrated on **Drawing 49455-PP-004**.

The access parameters for the site have been considered for a development of approximately 50 dwellings. The type of access road required to serve the development is dictated by the Norfolk Residential Design Guide and is to be taken as a Type 3 road, which is to be widened to 5.5m wide at the entrance and would be taken from Church Street. The initial straight length of the road should be a minimum of 15m in length. However, there is a level difference of 2m from the road to the site. As such, the straight length of road has been extended to 25m to account for the necessary tie into the ground, using a 1 in 12.5 slope. The embankment to tie into the road design is also indicated. This is shown in **Drawing 49455-PP-004**.

To allow for the site access, the speed limit of Church Street, which is currently restricted to 60mph, is proposed to be amended. It is proposed that the 40mph speed limit is introduced from the A140 and the 30mph speed limited extended to the west. An initial design of the potential access location on to Church Street indicates that adequate visibility splays of up to 120m (for a 40mph design speed) should be available to the west and 70m to the east (for a 30mph design speed) from a 2.4m setback. This will comply with the Design Manual for Roads and Bridges, document CD 123.

There are currently no footways on Church Street within the proximity of the site. Further, it is not proposed, as part of the development, to provide a footway/cycleway along the site frontage as indicated as a requirement within the draft allocation. A site frontage footway is unlikely to be feasible at this proposed site due to drainage and topography constraints. It is therefore proposed that a new footway runs through the development, taking access from north eastern corner of the site. All proposed cycleways and footways will be designed to allow links from the site to the amenities in the village.

Location and Accessibility to Services

To assess the ability for potential residents to access services, research has been undertaken to locate the local services and facilities, which are tabulated below. Distances have been measured from the proposed site access.

Facility/Services Table

Facility	Location	Km	Miles
School - Primary	Manor Road	1.1	0.7
School - Secondary	Hellesdon High School, Middletons Lane	4.4	2.7
Post Office	Back Street	0.4	0.2
Local Shop	Back Street	0.4	0.2
Doctors	Norwich Road	0.8	0.5
Public House	Norwich Road	0.8	0.5
Place of Worship	Church Street	0.3	0.2
Bus Stops	Church, Church Street	0.3	0.2
Children's Centre	St Faiths Pre-School, Church Street	0.2	0.1
Employment Zone	Abbey Farm Commercial Park	0.07	0.04
Airport	Norwich International Airport	3.4	2.1

The conclusions that can be drawn from the table are that most of the facilities and services are available in the local area. A key aim of the National Planning Policy Framework (NPPF) is to promote sustainable travel choices and accessibility to shops, jobs and other facilities whilst reducing the need to travel, especially by car.

Walking offers the greatest potential to replace the car for journeys of less than 2.0km. Cycling also has the potential to replace many car trips of less than 5.0km, which may also form part of longer journeys supported by public transport.

The following list indicates the acceptability of the site in terms of distance, frequency of use and acceptability of need to travel.

Acceptability of Travel/Use Table

Facility	Location	Km	Likely Frequency of Use						
			Daily		Weekly		Greater than Weekly		
			<5.0 Km	>5.0 Km	<5.0 Km	>5.0 Km	<5.0 Km	>5.0 Km	
School - Primary	Manor Road	1.29	✓						
School - Secondary	Hellesdon High School	4.35	✓						
Post Office	Back Street	0.48						✓	
Local Shop	Back Street	0.48			✓				
Doctors	Norwich Road	0.80						✓	
Public House	Norwich Road	0.97						✓	
Place of Worship	Church Street	0.32			✓				
Bus Stops	Church Street	0.32	✓						
	Norwich Road	0.80	✓						
Children's Centre	St Faiths Pre-School	0.32	✓						
Employment Zone	Abbey Farm Commercial Park	0.32	✓						
Airport	Norwich International	3.38						✓	

The conclusions of the acceptability table for distance and frequency travelled indicates that most daily activities are within 2.0km of the development.

Whilst other activities and frequency usage of facilities are likely to be weekly or greater than weekly, the table shows that most are within 5.0km of the site and also less than 2km, indicating that there is a likelihood that walking and cycling could be used to travel to and from the majority of these locations.

Although the local nearest high school (Hellesdon High school) is inside of the walking and cycling boundaries, due to a lack of a continuous appropriate route (no footways or cycleways) from the site to the school, Norfolk County Council operate a free school bus linking Horsham St Faith to Hellesdon High School.

Transportation Links including Pedestrian, Cycle and Public Transport

As stated previously local, regional and national guidance for transportation and residential dwellings advises that proposed development should be readily accessed by all sustainable modes of transport.

Considering the different modes an assessment can be made in respect of the suitability of existing infrastructure.

Pedestrians

The routes for pedestrians are currently deficient directly from the proposed site due to the lack of footway on the southern side of Church Street, limiting pedestrian movement to facilities recorded. However, all routes to the east of West Lane consist of a road with a footway on at least one side of the carriageway.

The new development will include the provision for a footway/cycleway running through the site, which will connect onto West lane in the north east corner of the site. This should encourage individuals from the new development to walk to access the local facilities.

An initial assessment of the routes to school (Primary School only), shows the pedestrian access route to the school could be deemed as a safe route, assuming West Lane can be accessed from the site. However, this is subject to further investigation with use of traffic flow data at the planning application stage.

Cyclists

The assessment of local facilities found that many of them are well within the 5.0km cycle distance parameters that are recognised in the industry.

The majority of the roads in Horsham St Faith are within a 30mph speed limit and provide an appropriate network for cycle use in the village to access local facilities. Further, the cycleways implemented as part of the Northern Distributor Road to the south of the site are also accessible from the proposed site via the road to the south of the site, onto cycleways on the eastern side of the A140. From this point, the Northern Distributor Road cycleways can be reached, or Norwich City Centre can be accessed by cycling on the road of the A140. Continuing towards the City Centre will provide links to cycleways in North Norwich at Hellesdon. Alternatively, these routes can be accessed by cycling to Spixworth, situated to the east of Horsham St Faith.

There are no national cycle routes within the vicinity of Horsham St Faith, according to the Sustrans website. Therefore, cycling outside of the village is likely to be for keen cyclists only.

Public Transport

To establish criteria for public transport provision, guidance was sought from Norfolk County Council on the necessary bus service frequency. A benchmark guide to bus services can be found in the Norfolk Bus Strategy 2003/4 to 2008/9. Whilst this document is a few years old and has not been updated but does give criteria for 'Target level of service in rural areas (all offering a return journey)'.

For a parish population of between 1500 and 3000 the target service level should provide the following:

- Shopping service, five days a week;
- journey to work service;
- a Saturday service and;
- an evening service;

The closest bus stop is located along Church Street, approximately 300m from the proposed access. A breakdown of the services operated from this stop is shown in the table below.

Operator	Service	Frequency
Sanders Coaches	43 Norwich – Hellesdon – Newton St Faith – Aylsham – Reepham	Mon - Fri: 0937, 1101, 1301, 1411, 1551, 1744 Sat: 1130, 1415, 1530, 1744
	43 Reepham – Aylsham – Newton St Faith – Hellesdon – Norwich	Mon - Fri: 1000, 1115, 1315, 1515, 1624, 1659 Sat: 0815, 1015, 1215, 1315, 1615
Sanders Coaches	44A Norwich - Aylsham – Cromer - Sheringham	Mon - Fri: 0747, 1644, 1847, 1940, 2303 Sat: 0746, 0928, 1842, 1938, 2301
	44A Sheringham – Cromer – Aylsham – Norwich	Mon - Fri: 0727, 1605, 1839, 2209 Sat: 0656, 0736, 1638, 1839, 2209

Note: All times are correct as of 12 February 2020

The bus company Sanders Coaches use bus stops on Church Street and Norwich Road for all services listed above. The stops include the Church and the Black Swan. Services are frequent and offer good commuting and social facilities. The accessibility of the buses may also encourage more individuals to use public transport, rather than using their cars. The proposed footway/cycleway connection from the development onto West Lane should provide ease of access to the existing bus stop.

Overall, the bus timetables meet the Norfolk County Council village requirements for Horsham St Faith in terms of public transport availability and frequency.

Development trip generation

If it is assumed the key areas of employment are Dereham, Wymondham and Norwich, 75% of the development traffic would travel towards the west and south via the A140. Therefore, it is assumed that 75% of the traffic would travel away from the village centre.

The TRICS database has been used to estimate the likely trip generation of the development proposal. The selection was made for houses privately owned for sites in England excluding Greater London. The trip rates for vehicular trips, including forecast vehicular trip generation, are shown in the table below.

Vehicular Trip Rates & Trips	AM Peak		PM Peak		12 Hour	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
Private Dwellings Trip Rate (1 Dwelling)	0.124	0.387	0.355	0.170	2.311	2.332
Total Trips (50 Dwellings)	6	19	18	9	116	117

Preliminary Local Accident Analysis

Five-year highway injury accident records have been reviewed from www.crashmap.co.uk, for the period 2014-2018. Church Street in the vicinity of the site has been assessed. One 'slight' accident occurred in close proximity to the proposed site access, in February 2015. Two other 'slight' accidents occurred at the junction with the A140. None of the identified accidents involved pedestrians or cyclists. The available highway injury accident data indicates that there are no recurring accident locations in the vicinity of the site that would be disproportionately affected by the proposals.

Cont'd.../

Conclusions

To collate the issues and highlight the matters that are relevant to transportation for the proposed development at Church Street, Horsham St Faith, the following table shows the summary of benefits that this scheme includes:

Summary Table

Matters	Comment	Satisfactory	Needs some Upgrade	Not Satisfactory
Site Access	A satisfactory access with necessary visibility can be achieved subject to speed limit reduction.			
Accessibility to Services	A high proportion of daily and weekly services can be accessed by pedestrian, cyclists or public transport routes at less than 2.0km with proposed footways / cycleways.			
Pedestrian Links	Good site routes to schools and facilities (upon an additional footway being implemented within the development)			
Cycle Facilities	There is no specific route in the village however there is a 30mph speed limit proposed between the site and local facilities, including cycleways to connect to existing infrastructure.			
Public Transport	The current public transport provision does meet the NCC targets.			

It is therefore concluded that in terms of vehicular access, accessibility to services, other modes of transport, the site meets all the necessary criteria.

In summary, the development will create a higher level of vehicle trips on the local highway network, however this is compensated for by the proximity of the Northern Distributor Road in the peak hour. Providing sufficient pedestrian facilities to the local area will mitigate the generated traffic further.

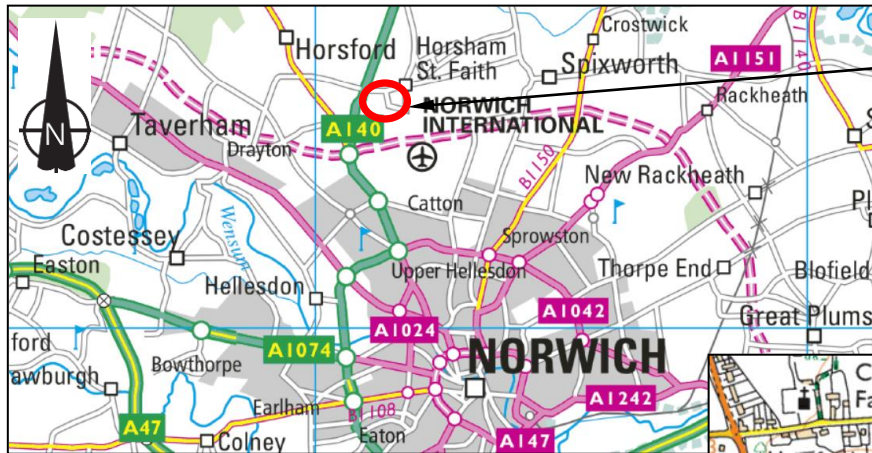
I trust the foregoing is satisfactory, but if we can be of further assistance, please do not hesitate to contact us.

Yours sincerely,

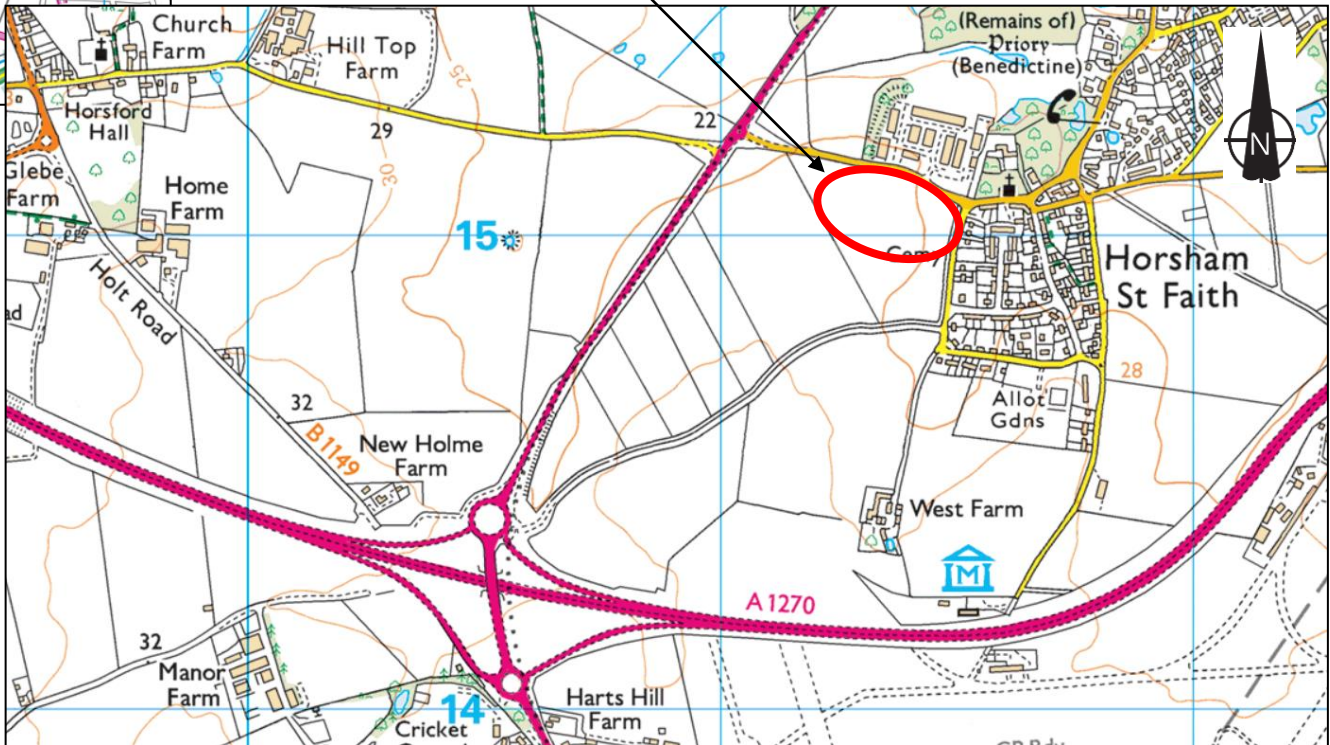
Prepared by George Hood
on behalf of Richard Jackson Ltd

Checked by Martin Doughty (Director) – BEng (Hons), CEng, FICE, FCIHT, MAPM
on behalf of Richard Jackson Limited

Encs – Figure 1
Drawing 49455-PP-004



THE SITE



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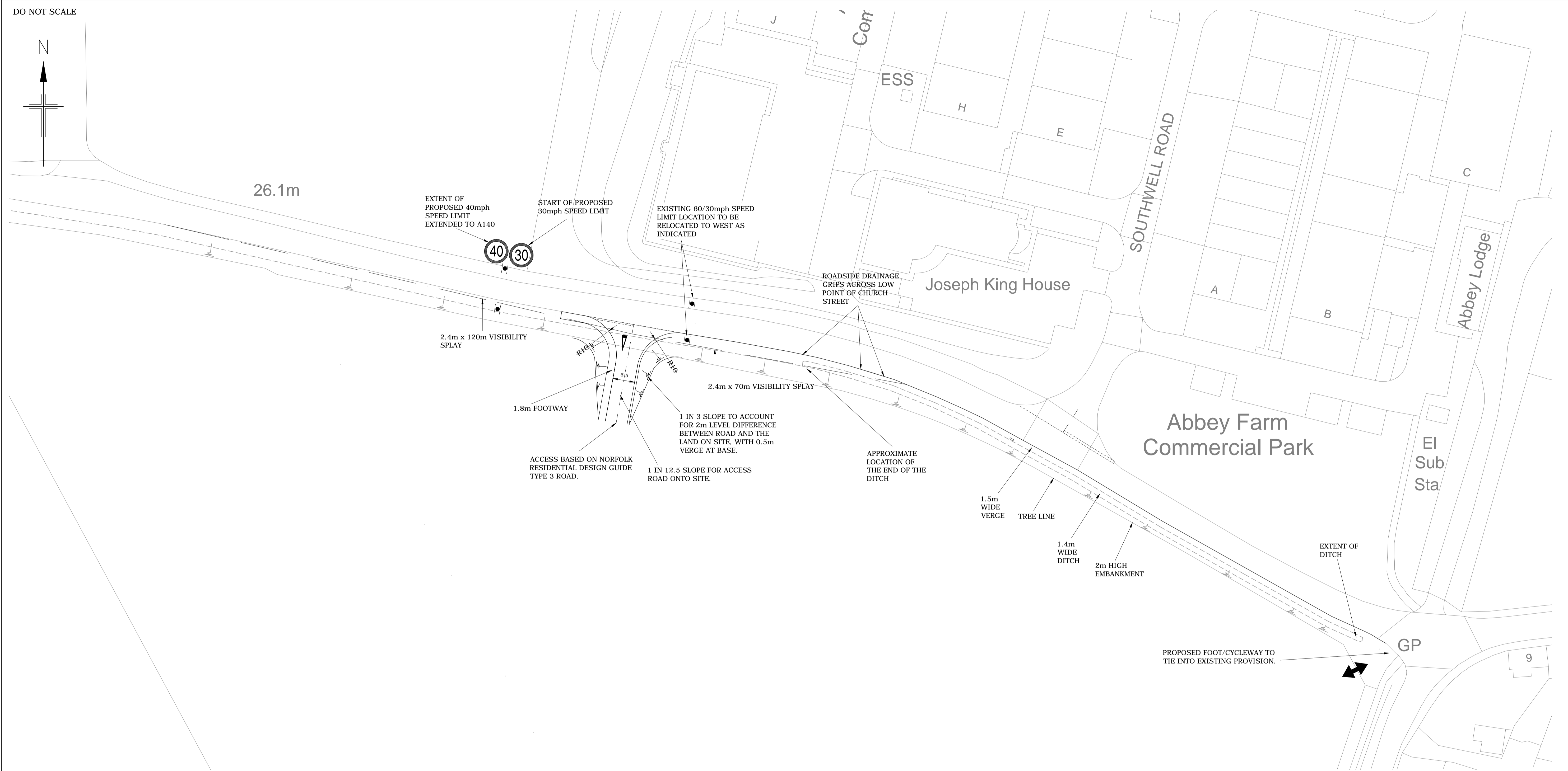
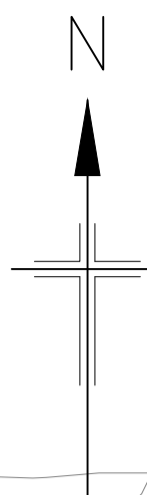
Site location grid reference 621398, 315072 and postcode NR10 3JU

Client: Abel Homes Ltd		Drawing Title: Site Location Plan	
Job Title: Land in Horsham St Faith	Date: 12/02/2020	Job No: 49455	Dwg No: Fig. 1 (NTS)



4 The Old Church, St Matthews Road, Norwich, NR1 1SP
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DO NOT SCALE



NOTES:

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
2. LEVELS ARE IN METRES ABOVE ORDNANCE SURVEY DATUM.
3. SELECTED ROAD MARKINGS SHOWN INDICATIVELY.
4. DESIGN BASED ON ORDNANCE SURVEY MAPPING AND SUBJECT TO DETAILED DESIGN AND SUBJECT TO ROAD SAFETY AUDIT.
5. LOCATIONS OF EMBANKMENT, DITCH, VERGE AND TREE LINE OBTAINED FROM SURVEY ON 05/02/2020.

REPRODUCED FROM ORDNANCE SURVEY MAP WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE. © CROWN COPYRIGHT RICHARD JACKSON LTD - ACC No. 100022432.

REV	DATE	DESCRIPTION	DRAWN	CHKD
REVISIONS				

Project LAND AT HORSHAM ST FAITH	Title PROPOSED SITE ACCESS	Client ABEL HOMES LTD	Drawn GH	Date 12/02/2020	This drawing is to be read in conjunction with all other Engineer's drawings and all other project information. Any discrepancy between the Engineer's drawings and other project information is to be reported to the Engineer immediately.	<p>Richard Jackson Engineering Consultants</p> <p>847 The Cornhill, Colchester, Essex, CO1 1JQ Unit 6040, 6th Floor, Algate Tower, 2 Leaman Street, London E1 8FA 3 Queens House, Mill Court, Great Shelford, Cambs CB22 3LD 4 The Old Church, St. Matthews Road, Norwich, Norfolk NR1 1SP The Woodhouse, Road Mill, Sporehouse, Gloucestershire GL10 3BP Email Address: mail@rj.co.uk</p> <p>Tel: 01206 228600 Tel: 020 7448 9910 Tel: 01223 314794 Tel: 01603 230040 Tel: 01172 500070 Website: http://www.rj.co.uk</p>	Drawing No. 49455/PP/004	Revision											
<table border="1" style="width: 100%;"> <tr> <td>Job Manager MD</td> <td>Checked LG</td> </tr> <tr> <td>Approved MD</td> <td>Scale 1:500@A1</td> </tr> </table>						Job Manager MD	Checked LG	Approved MD	Scale 1:500@A1	<table border="1" style="width: 100%;"> <tr> <td colspan="2">Drawing Status</td> </tr> <tr> <td><input checked="" type="checkbox"/> INFORMATION</td> <td><input type="checkbox"/> APPROVAL</td> </tr> <tr> <td><input type="checkbox"/> TENDER</td> <td><input type="checkbox"/> COSTING</td> </tr> <tr> <td><input type="checkbox"/> CONSTRUCTION</td> <td><input type="checkbox"/> AS CONSTRUCTED</td> </tr> </table>		Drawing Status		<input checked="" type="checkbox"/> INFORMATION	<input type="checkbox"/> APPROVAL	<input type="checkbox"/> TENDER	<input type="checkbox"/> COSTING	<input type="checkbox"/> CONSTRUCTION	<input type="checkbox"/> AS CONSTRUCTED
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APPENDIX 3
FLOOD RISK ASSESSMENT & PRELIMINARY
SURFACE WATER DRAINAGE
PREPARED BY RICHARD JACKSON

Our Ref: 49455/MJD/JF
Your Ref:

11 March 2020

Dear Mr Piper,

**Re: Land West of West Lane, Horsham St Faith
- Site Allocation – GNLP0125
– Assessment of Flood Risk and Drainage**

I refer to our instructions to assess the preliminary surface water drainage strategy for the above site as indicated on **Figure 1**.

The site comprises of greenfield land and is approximately 2.26 Ha in size. The main access is likely to be located off the road to the north of the site, hereby named throughout as Church Street. Our assessment for a surface water strategy on the land at Horsham St Faith, has been made on the basis of up to approximately 50 proposed dwellings.

The Flood Risk and Drainage Strategy has been carried out in accordance with the National Planning Policy Framework (NPPF) – Planning Practice Guidance on Flood Risk and Coastal Change, published by the Department for Communities and Local Government (DCLG). Reference is also made to the Norfolk County Council, Lead Local Flood Authority (LLFA) Guidance, dated March 2019.

From the OS contours the topography of the site falls north east, with an approximate range in elevations from 28m AOD along the southern boundary to 24m AOD along the eastern boundary adjacent to West Lane.

Proposed Development

The site is proposed for residential development and the total site area is approximately 2.26 Ha. There are currently no public rights of way across the site that we are aware of.

For the purposes of establishing the likely drainage parameters for the site, the site area of 2.26 Ha, with a density of impermeable area at 40% to 50%, will be used to provide a range of necessary water attenuation and/or storage. An area of 15% of the overall site area will be assumed to be highways, where an assessment for highway drainage is to be made as a standalone parameter.

Cont'd.../



Existing Flood Sources

When assessing any development site, there are four potential sources of flooding which need to be considered both in terms of their effect on the development itself and its end users and that caused to others. The main sources of flooding that need to be considered are as follows:

- Fluvial and/or tidal flooding;
- Ground water;
- Overloading of the existing drainage network;
- Surface water flooding.

Fluvial and Tidal Sources of Flooding

From investigation of the existing watercourses and the Environment Agency (EA) floodplain maps, there are no identified influences of fluvial or tidal flooding at the site and the site is in Flood Risk Zone 1, see the Environment Agency – ‘Flood Map for Planning’. Therefore this has not been investigated further. An indication of the associated Government Flood Maps are shown on **Figure 2**.

Groundwater Vulnerability

The British Geological Survey (BGS) mapping was used to provide an indicative assessment for the proposed development. The BGS records contain a borehole record located at the low point of the proposed site dated 23/09/1983 and was undertaken by T. W. Page & Son Ltd. This record states that the soil conditions are predominantly sand and stone to a depth of 8.8m, then a section of marl for 4.9m and finally chalk. Chalk was encountered at a depth of 13.7m and groundwater was encountered at a depth of 20’ (6m). Note, all depths are approximate.

The mapping indicates that the groundwater will be at approximately 17 metres above ordnance survey datum. Therefore, it is believed that the groundwater will be approximately 6m – 11m below ground level across the site.

Groundwater Source Protection Zone around all major groundwater abstraction points are identified on magic.defra.gov.uk mapping. Source Protection Zones (SPZ) are defined to protect areas of groundwater that are used for potable supply, (including mineral and bottled water) or for use in the production of commercial food and drinks. The proposed site is within groundwater source protection zone 3 (Total catchment). This zone is defined as the total area needed to support the abstraction or discharge from the protected groundwater source. For the groundwater source protection zones of the site, see **Figure 3**.

In addition, the Groundwater Vulnerability Zone Maps see **Figure 4** show that the site is in the medium-high/medium-low risk for groundwater vulnerability as the site is located above a Principal, Secondary B, aquifer.

If soluble rocks, such as chalk, are present within the site (as indicated by the BGS borehole record) then further consideration will be required for distances of any infiltration methods and their proximity to permanent buildings. This does not preclude the use of soakaways, however, further precautions may need to be made during design and construction.

Existing Surface Water System and Ground Conditions

The borehole record from the BGS discussed above provided data indicating a ground water depth of approximately 6m, thus, soakaways or other infiltration devices could be utilised on the site.

As discussed, the soil at the site should be suitable for the use of soakaways, however as no ground investigations have taken place yet, the permeability rate of 5.5×10^{-6} m/s will be adopted for the purpose of this study. The rate of 5.5×10^{-6} m/s or 0.0198 m/hr is based on a rate likely to be consistent with the soil types identified within the borehole log mentioned earlier. This is also ratified by the rates used in the 'Norwich Northern Distributor Road (NNDR) Application for Development Consent Order, Document Reference 5.2 Flood Risk Assessment'. In table 4.1 of this document rates for the infiltration basins for the NNDR are stated at 0.028, 0.028 and 0.021 m/hr for the nearby lagoons, thus, this provides a good indication of the likely results to be expected on the development site.

The existing surface water flooding for the 1 in 1,000 year event (Low Risk) has been investigated and is shown on **Figure 5**. The mapping for this risk scenario indicates no risk of surface water flooding within the proposed site.

Any new systems of drainage should consider the flow from the site and suitable SuDS to accommodate storage before discharging into the ground.

Flood Risk Impact

It has been determined using the Ordnance Survey level information available, that surface water runoff from the site will potentially occur in a north easterly direction.

A proportion of rainfall falling across the existing site will also infiltrate into the soils of the site given the current ground conditions. A proportion of this infiltrating surface water will also contribute to any groundwater recharge.

To determine the rainfall data for the site when undertaking the detail design, the Flood Estimation Handbook (FEH) data would be used for establishing the critical rainfall scenario, as indicated in LLFA guidance.

Soil Types and SuDS Suitability

The NPPF and appropriate guidance indicates that the FRA should identify the risks of flooding and manage those risks to ensure the site remains safe. One way to manage the flood risk is to incorporate Sustainable Drainage Systems (SuDS) within proposals for new sites. There is a general requirement that SuDS be installed where appropriate, in order to limit the amount of surface water runoff entering drainage systems and to return surface water into the ground to follow its natural drainage path. This advice is also replicated in the SuDS Manual C753 (2015).

The details of the ground conditions have yet to be determined through a full ground investigation but advice on the use of SuDS/soakaways is such that they could be used. The permeability of the site for the purpose of this report is 5.5×10^{-6} m/s as discussed previously, in absence of any data from within the site.

SuDS Assessment

The suitability of the use of SuDS on the site is based on the criteria as set out in the Ciria document C753 dated November 2015, where in Chapter 26 the appropriateness of SuDS can be established. The table below suggests the potential SuDS selection for Highways and Private Drives and also for Private Roofs.

Table A – SuDS Selection

Type of SuDS	Highways & Private Drives TSS=0.5 Metal=0.4 Hydrocarbons=0.4	Private Roofs TSS=0.2 Metals=0.2 Hydrocarbons=0.05
Filter Strip		✓
Filter Drain		✓
Swale	✓	✓
Permeable Paving	✓	✓
Detention Basin	✓	✓
Pond	✓	✓
Wetland	✓	✓
Soakaway (surrounded with infiltration materials)		✓
Infiltration Trench		✓

Using the **Table A** above which is derived from **Table 26.3** and **26.4** of Ciria C753 then it can be concluded that the better SuDS' choices for the site are as set out below;

Private Drives – Permeable paving or soakaway
Residential Roofs – To soakaway or permeable paving
Highways – To Swales or Infiltration Crates

It is noted that large areas of open water, such as infiltration basins have not been utilised due to the proximity of Norwich Airport.

A surface water strategy is therefore proposed to utilise the permeable paving and soakaways for the drives and private roof areas and swales and/or infiltration crates for the highway water for events up to the 1 in 100 year storm event, plus climate change at 40%. This strategy is based on the SuDS management train assuming favourable soakage rates as previously indicated.

Flood Risk Management

Having determined that the soils across the site possess sufficient infiltration capacity for the use of infiltration devices, the methods of surface water disposal have been investigated, to determine the feasibility of discharging and treating the water prior to it entering the ground.

To determine the appropriate use of the SuDS features, the pollution indices were used to determine the type of SuDS to be used. For the purposes of the design for the site, which has yet to be detailed and is only at masterplan stage, a selection of likely solutions have been prepared for different house types, drive areas and widths of highway.

The private drives will provide permeable paving to act as a pollution treatment and then the water can be collected and drain towards the soakaway proposed for the private dwelling. The permeability rate of 5.5×10^{-6} m/s or 0.0198 m/hr as indicated previously for a robust assessment. Suggested sizes for the private dwelling drainage are indicated on **Table B** below:

Table B – Indicative Crated Soakaway Storage Sizes

Dwelling Type	Dwelling Area (m ²)	Garage Area (m ²)	Private Drive Area (m ²)	Total Area (m ²)	1 in 100 year plus 40% CC Storage (LxWxH)m
A	48	N/A	42	90	2.5 x 2.0 x 1.6 Vol = 6.8m ³
B	56	23	29	106	3.0 x 3.0 x 1.2 Vol = 8.3m ³
C	65	45	19	129	4.0 x 3.0 x 1.2 Vol = 9.7m ³
D	116	45	98	259	6.0 x 5.0 x 0.8 Vol = 19.4m ³

The dwelling, garage and drive areas have been based on a previous development parameters for similar sites.

If dwelling soakaways or permeable paving is used then, the highway water will be directed towards the swales or infiltration crates which are to be positioned in the Public Open Space in the north east area of the site, or adjacent to the road. The size will be determined by the exact dimensions of the roads and footways going to the swales/infiltration crates but an indication of the sizes are given in this Chapter. For purposes of being robust, a permeability rate of 5.5×10^{-6} m/s or 0.0198m/hr will be used. For an estimated Highways SuDS sizing see **Table C** below:

Table C – Highway Swale for smaller areas

Overall Highway Width (m)	Length of Highway (m)	Swale Profile*	1 in100 year storm plus 40% CC	
			Depth (m)	Volume (m ³)
5.5 + 1.8 = 7.3m	10m	Side Slope = 1 in 4 Base Width = 1.0m	0.550	5.2

*The width of swale is required due to the lower rate of permeability. The parameters could be reduced if a greater permeability rate is found though on site ground investigations.

Alternatively, drainage for whole highway drainage or for all the areas of development draining to one location have been addressed as indicated in **Table D** below, where;

Table D – Development Infiltration Crates

Development Area Options	Imp. Area	Area of Crates	1 in 100 year storm plus 40% CC	
			Depth (m)	Volume (m ³)
All development 2.26 Ha.	1.13 Ha	1360m ² Crates x 1.2m deep	1.2m to allow for an additional 1in10 year event	1162m ³ , water depth 0.899m.
Highway only @ 15% of site area	0.34 Ha	600m ² Crates x 0.8m deep	0.8m to allow for an additional 1 in 10 year event	320m ³ , water depth 0.561m

Please note that all calculations are indicative and subject to a layout and detailed drainage design.

For the scenarios of drainage and areas required for the SuDs as outlined in **Tables C & D**, an indicative strategy is shown on Drawing **49455-PP-006**. The drawing provides options for the highway only drainage and soakaways/permeable paving and also for a solution where all the water is stored in crates. Either option is suitable for this site.

Summary

It can be seen from the indicative ground conditions taken from the historic BGS borehole record for the site that infiltration is likely to be suitable. Further intrusive investigations are required in order to determine infiltration rates for the proposed, and confirm the underlying geology within the site boundary. If chalk is present within the site then, an easement distance from soakaways to buildings will have to be agreed with the LLFA.

An infiltration strategy, with crates and pollution control using forebays and permeable paving or similar, would be in accordance with National and Local planning policy, by treating the water for quality and quantity on site, thus not creating a detrimental effect downstream of the site. An alternative storage system with soakaways for private dwellings and crates for highway only could also be implemented.

The sizes of the soakaways for the houses might be a little large to fit into back gardens, so if this is the case, then alternative arrangements for the water in line with the areas and volumes indicated in **Table D** could be used. Sufficient land must be set aside for accommodating the swales / infiltration facilities and maintenance service strip of 3.0m around the crates.

An indicative area of drainage needed for the SuDS is shown on drawing **49455-PP-006** showing the infiltration crate locations, subject to further masterplanning processes.

Matters	Comment	Satisfactory	Needs some Upgrade	Satisfactory Not
Flood Risk Zone	The site is in Flood Risk Zone 1. Suitable for residential development			
High Risk Surface Water Flooding	There are no existing surface water flooding issues of High Risk			
Medium Risk Surface Water Flooding	There are no existing surface water flooding issues of Medium Risk.			
Low Risk Surface Water Flooding	There are no existing surface water flooding issues of Low Risk.			
Proposed Surface Water Drainage	The proposals are likely to conform to the SuDS Manual and LLFA guidance for use of infiltration devices which are dependent upon a detailed site investigation to determine the permeability rate for the site			

I trust the foregoing is satisfactory but if we can be of any further assistance, please do not hesitate to contact us.

Yours sincerely

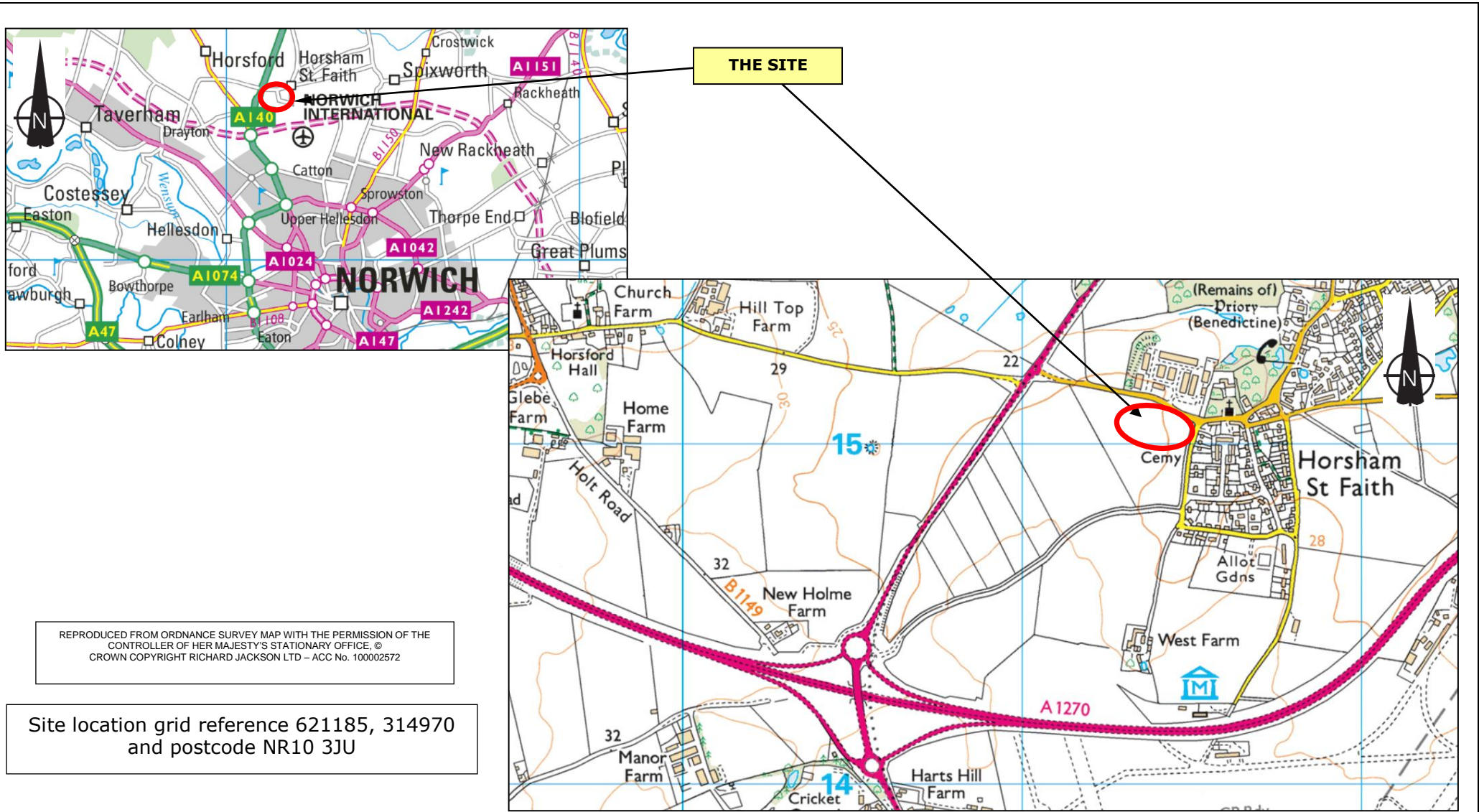
Martin Doughty BEng (Hons), CEng, FCIHT, FICE, MAPM
Director on behalf of Richard Jackson Limited

Enc

Figures 1, 2, 3, 4 & 5

'Flood Map for Planning'

49455-PP-006 – Preliminary Surface Water Drainage Design Options



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Site location grid reference 621185, 314970 and postcode NR10 3JU

Client: Abel Homes Ltd		Drawing Title: Site Location Plan	
Job Title: Land east of A140, Horsham St Faith	Date: 28.2.20	Job No: 49455	Dwg No: Fig. 1 (NTS)

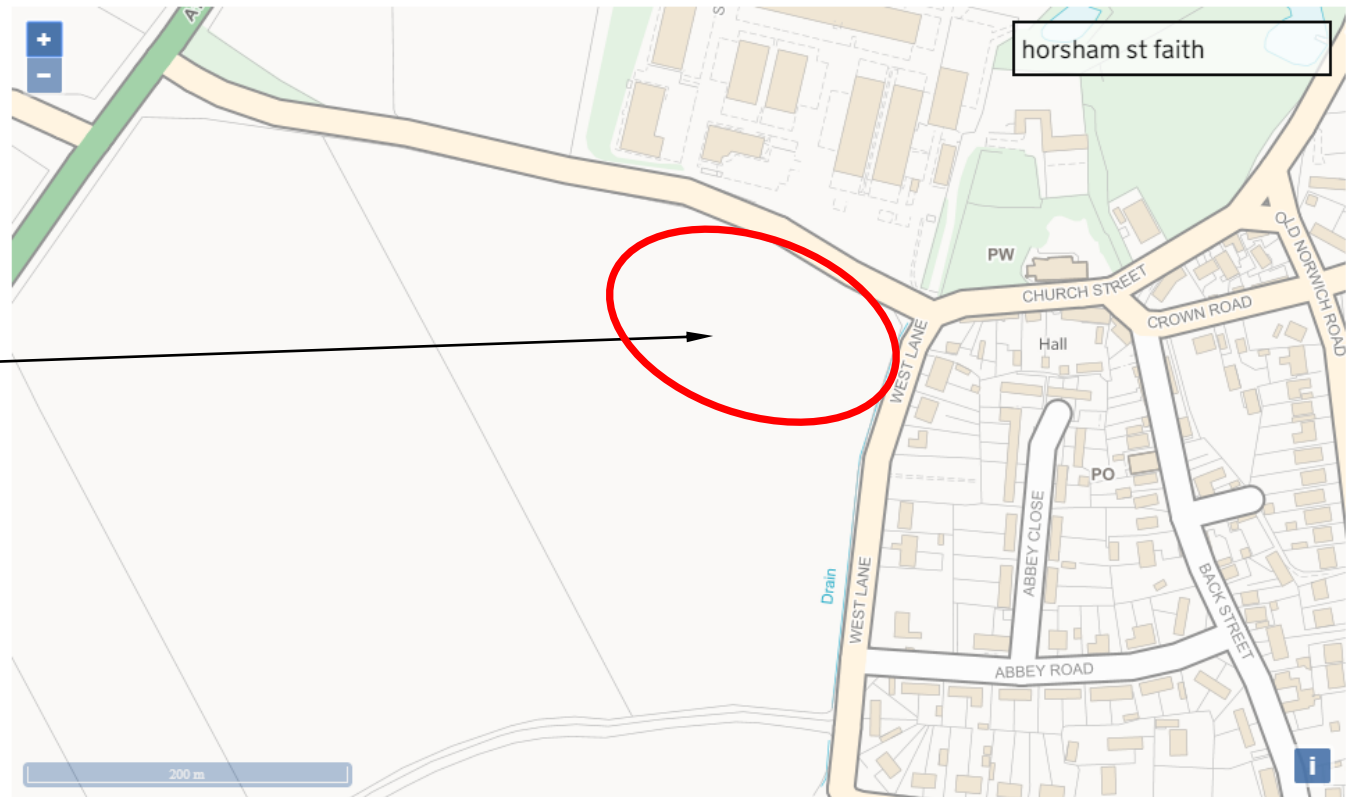


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Extent of flooding ▾

THE SITE



Extent of flooding from rivers or the sea
● High ● Medium ● Low ● Very low

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Client: Abel Homes Ltd		Drawing Title: Flood Plan (Rivers and Sea)		 4 The Old Church, St Matthews Road, Norwich, NR1 1SP Tel. 01603 230240 www.richardjackson.uk.com
Job Title: Land at Horsham St Faith, Norwich	Date: 27.2.20	Job No: 49455	Dwg No: Fig. 2 (NTS)	



THE SITE

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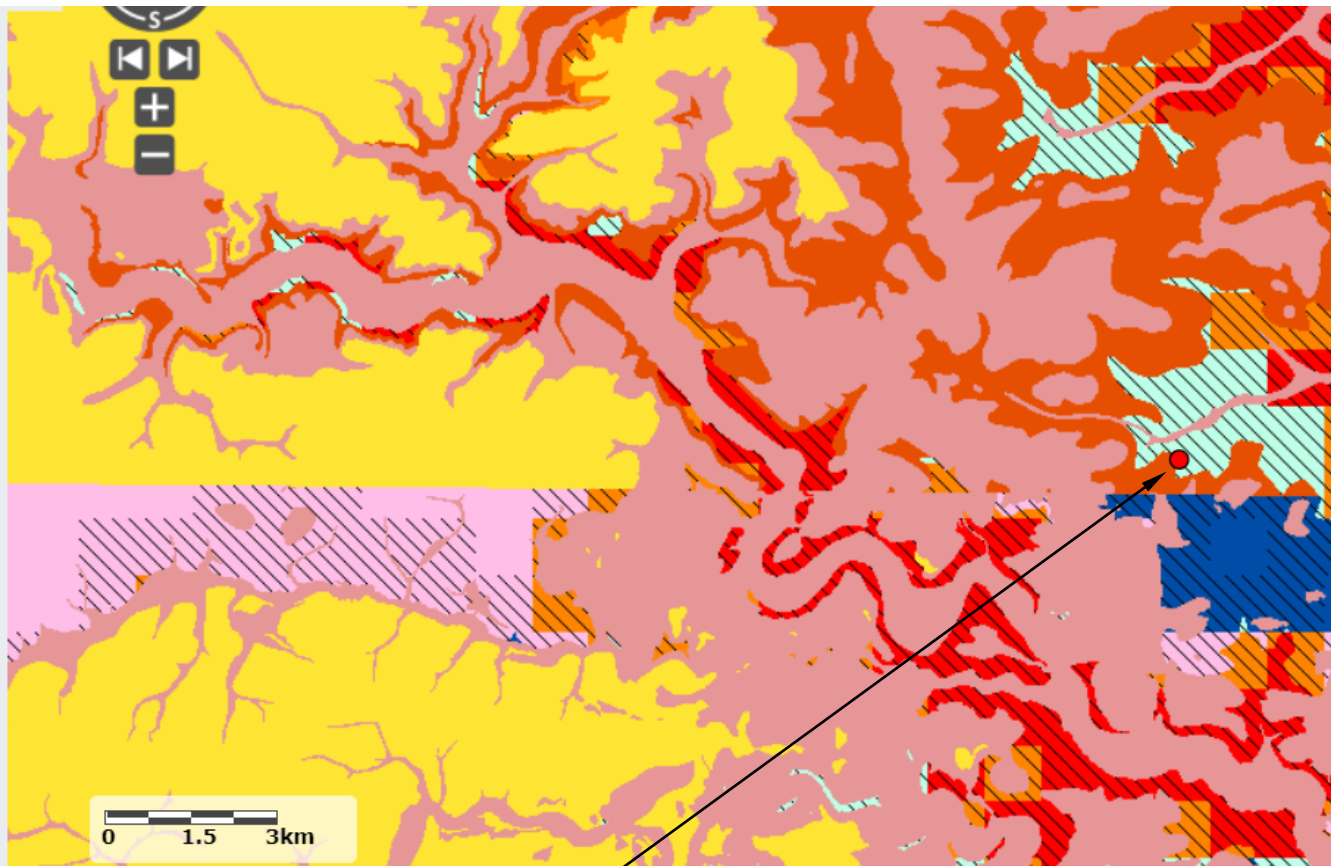
Client: Abel Homes Ltd		Drawing Title: Source Protection Zones (Groundwater)	
Job Title: Land at Horsham St Faith, Norwich	Date: 27.2.20	Job No: 49455	Dwg No: Fig. 3 (NTS)



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- Geology and Soils**
- Aquifer Designation Map (Bedrock) (England)** ⓘ
- Aquifer Designation Map (Superficial Drift) (England)** ⓘ
- Principal**
- Secondary A**
- Secondary B**
- Secondary (undifferentiated)**
- Unknown (lakes+landslip)**
- Unproductive**
- Groundwater Vulnerability Map (England)** ⓘ
- Local Information**
- Soluble Rock Risk**
- High**
- Medium - High**
- Medium**
- Medium - Low**
- Low**
- Unproductive**
- Geological Places to Visit (England)** ⓘ



THE SITE

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Client:
Abel Homes Ltd

Drawing Title:
Flood Plan (Groundwater)

Job Title:
Land at Horsham St Faith, Norwich

Date:
27.2.20

Job No:
49455

Dwg No:
Fig. 4 (NTS)

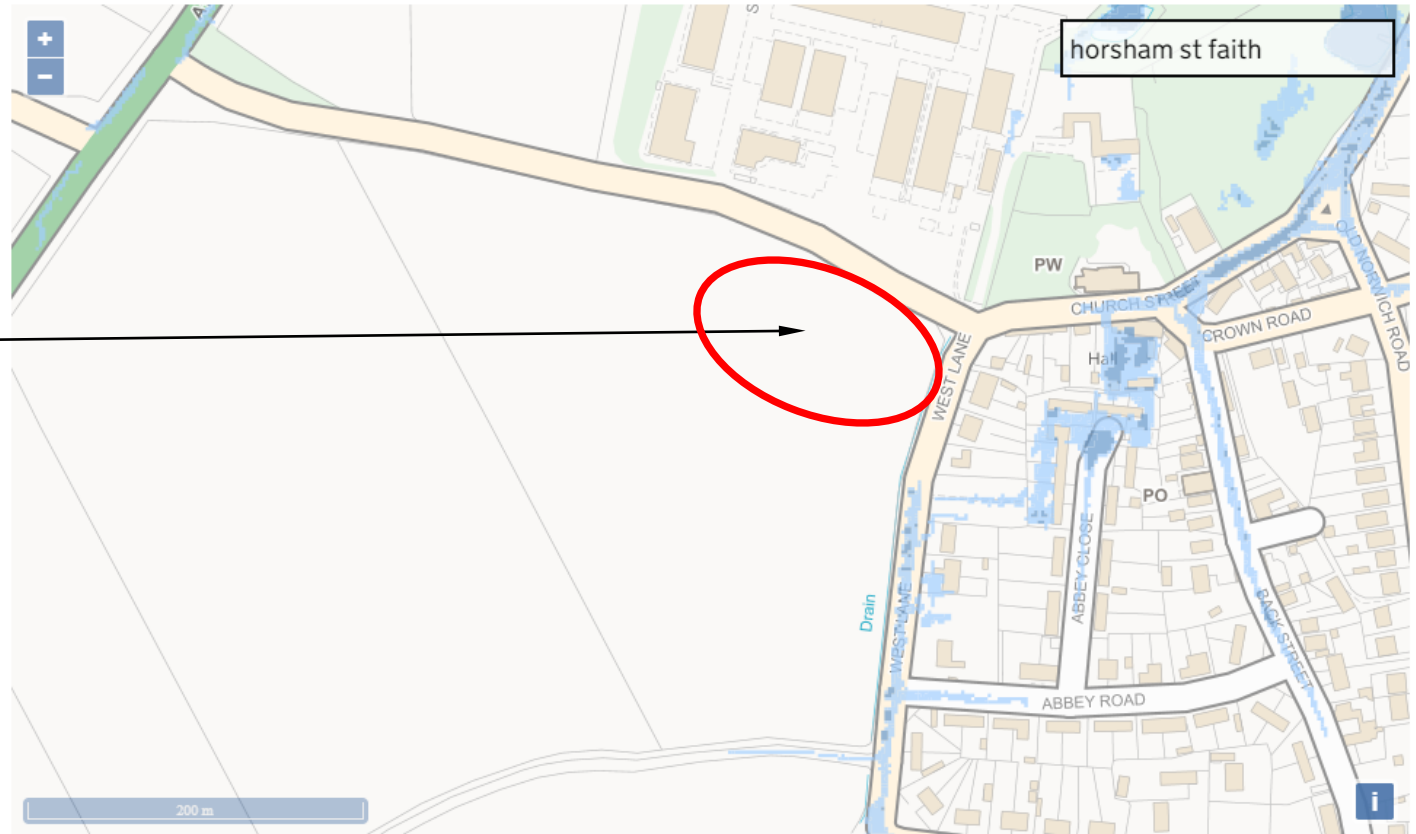


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Low risk: depth

THE SITE



Surface water flood risk: water depth in a low risk scenario

Flood depth (millimetres)

- Over 900mm
- 300 to 900mm
- Below 300mm

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Client:
Abel Homes Ltd

Drawing Title:
**Surface Water Flood Mapping
(Low Risk)**

Job Title:
**Land at Horsham St
Faith, Norwich**

Date:
27.2.20

Job No:
49455

Dwg No:
**Fig. 5
(NTS)**



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Flood map for planning

Your reference
49455

Location (easting/northing)
621398/315051

Created
27 Feb 2020 23:21

Your selected location is in flood zone 1, an area with a low probability of flooding.

This means:

- you don't need to do a flood risk assessment if your development is smaller than 1 hectare and not affected by other sources of flooding
- you may need to do a flood risk assessment if your development is larger than 1 hectare or affected by other sources of flooding or in an area with critical drainage problems

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

The Open Government Licence sets out the terms and conditions for using government data.
<https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>



Flood map for planning

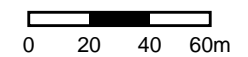
Your reference
49455

Location (easting/northing)
621398/315051

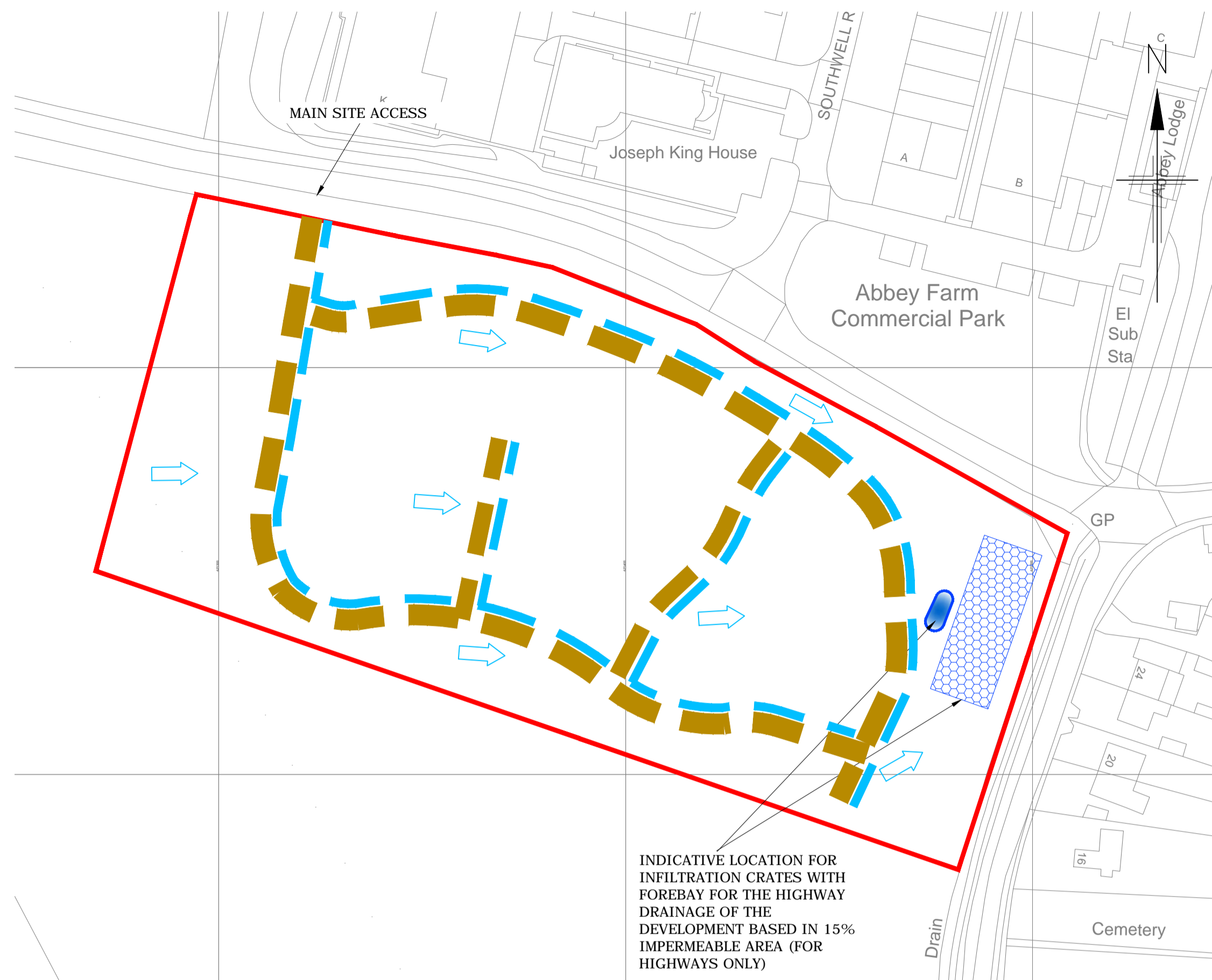
Scale
1:2500

Created
27 Feb 2020 23:21

- Selected point
- Flood zone 3
- Flood zone 3: areas benefitting from flood defences
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Flood storage area



DO NOT SCALE



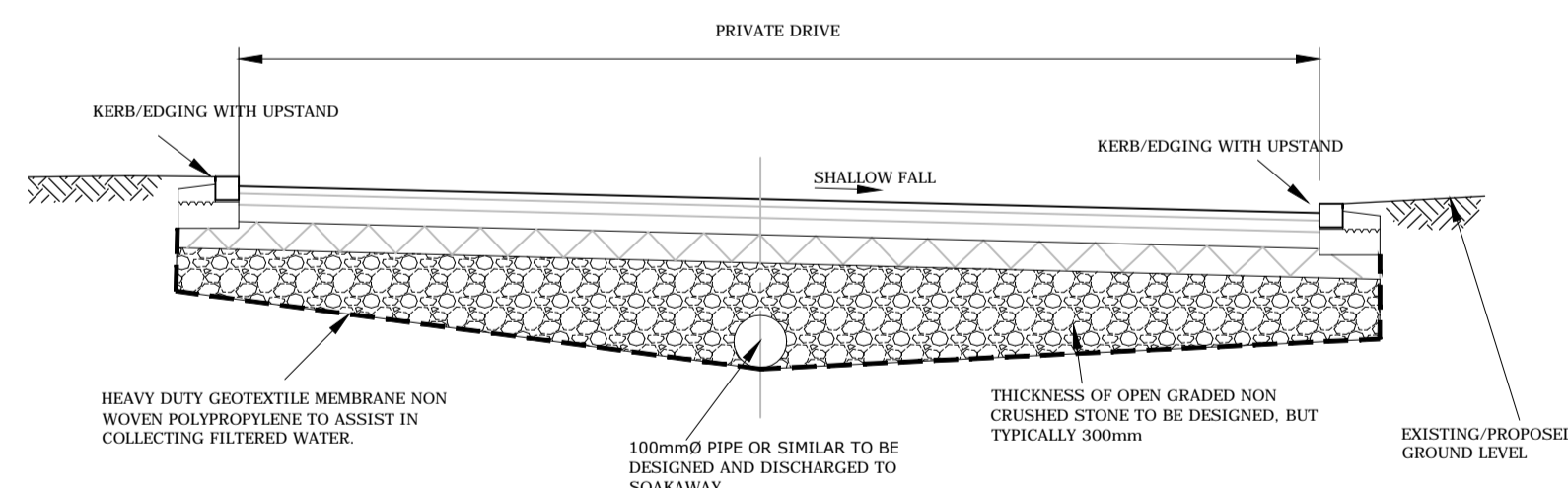
OPTION A - PROPOSED DRAINAGE STRATEGY FOR DEVELOPMENT USING SOAKAWAYS AND SEPARATE HIGHWAY DRAINAGE

HIGHWAY DRAINAGE KEY:

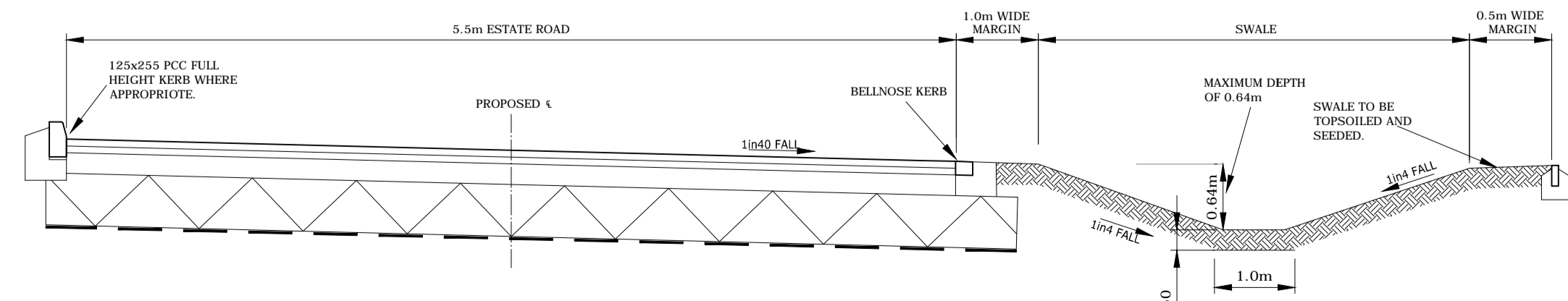
- SITE BOUNDARY
- - - INDICATIVE SPINE ROAD
- - - INDICATIVE SWALE POSITION
- EXCEEDENCE/TOPOGRAPHY FLOW DIRECTION

HIGHWAY DRAINAGE NOTES:

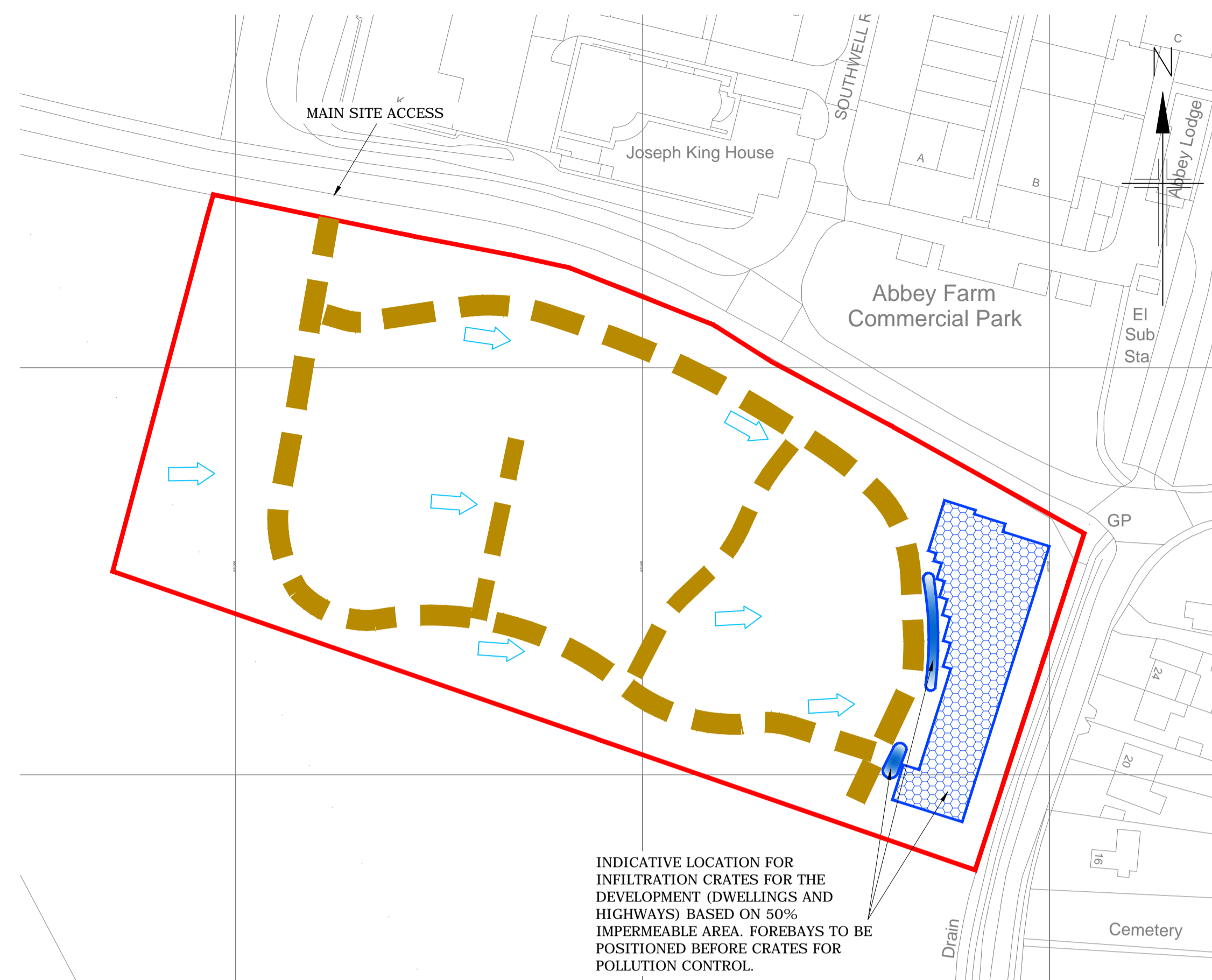
1. ALL LEVELS ARE IN METRES ABOVE ORDNANCE SURVEY DATUM.
2. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
3. NOT ALL UTILITIES ARE SHOWN FOR CLARITY.
4. INDICATIVE HIGHWAY DRAINAGE BASINS HAVE BEEN SIZED ON A SUGGESTED INFILTRATION RATE OF 0.0198 m/hr, FROM IMPERICAL DATA FROM LOCAL SOURCES.
5. THE INDICATION OF SWALES AND/OR INFILTRATION BASINS COULD BE USED. IF SWALES ARE USED FOR THE HIGHWAY DRAINAGE THEN THE INFILTRATION CRATES ARE NOT REQUIRED AND VICE VERSA, IF THE INFILTRATION CRATES ARE USED FRO HIGHWAY DRAINAGE THEN THE SWALES ARE NOT NEEDED.
6. THE ASSUMPTIONS ARE MADE ON THE BASIS THAT THE DRAINAGE IS FOR THE HIGHWAY ONLY AND THAT DWELLINGS WILL HAVE THEIR OWN INDIVIDUAL PERMEABLE PAVING OR SOAKAWAYS. THIS MEANS THE DWELLINGS ARE SELF CONTAINED AND DO NOT CONTRIBUTE TO THE SWALES OR INFILTRATION CRATES.



TYPICAL CROSS SECTION OF THE PRIVATE DRIVE AND PERMEABLE PAVING
SCALE NTS



TYPICAL ESTATE ROAD CROSS SECTION
SCALE NTS



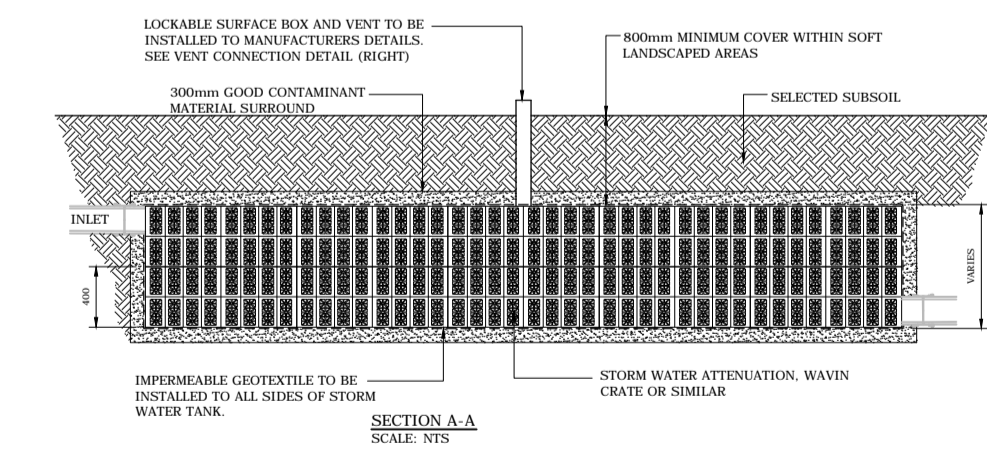
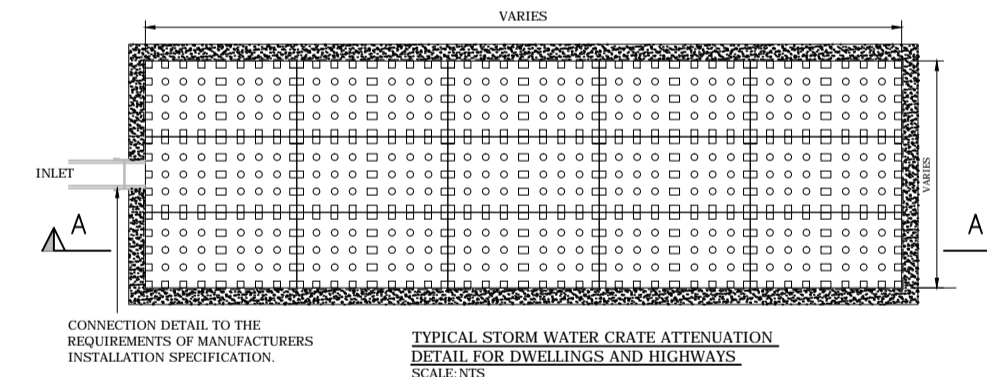
OPTION B - PROPOSED DRAINAGE STRATEGY FOR DEVELOPMENT ALL IMPERMEABLE AREAS UTILISING STORAGE CRATES

DRAINAGE KEY:

- SITE BOUNDARY
- - - INDICATIVE SPINE ROAD
- EXCEEDENCE/TOPOGRAPHY FLOW DIRECTION

NOTES:

1. ALL LEVELS ARE IN METRES ABOVE ORDNANCE SURVEY DATUM.
2. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
3. NOT ALL UTILITIES ARE SHOWN FOR CLARITY.
4. INDICATIVE CRATES STORAGE USING INFILTRATION HAS BEEN SIZED ON A SUGGESTED INFILTRATION RATE OF 0.0198 m/hr, FROM IMPERICAL DATA FROM LOCAL SOURCES.
5. THE ASSUMPTIONS ARE MADE ON THE BASIS THAT THE DRAINAGE IS FOR THE DEVELOPMENT (DWELLINGS) AND HIGHWAY AREAS. DWELLINGS COULD HAVE THEIR OWN INDIVIDUAL PERMEABLE PAVING FOR POLLUTION CONTROL, BUT ALL DISCHARGE IS COLLECTED IN THE INFILTRATION CRATES AND STORED IN THESE LOCATIONS UNTIL THE WATER DISCHARGES. A GREATER NUMBER OF SMALLER INFILTRATION CRATES COULD BE USED ACROSS THE DEVELOPMENT INSTEAD TO PROVIDE THE SAME VOLUME OF STORAGE AS AN ALTERNATIVE.



PRELIMINARY

REV	DATE	DESCRIPTION	DRAWN	CHKD

REVISIONS

This drawing is to be read in conjunction with all other Engineers' drawings and all other project information. Any discrepancy in the Engineer's drawings and other project information is to be reported to the Engineer immediately.



Project
**LAND EAST OF A140
HORSHAM ST FAITH
SITE ALLOCATION GNLPO125**

Title
**PRELIMINARY SURFACE WATER
DRAINAGE DESIGN OPTIONS**

Client
ABEL HOMES LTD

Scale	Drawn	Date
1:1,000 @ A1	MJD	11/03/20
Job Manager	Checked	Approved
M. DOUGHTY	M. DOUGHTY	M. DOUGHTY

Richard Jackson Engineering Consultants
847 The Crescent, Colchester, Essex CO3 9YQ Tel: 01206 228800
3rd Floor, Romsey House, 57-60 Abingdon High Street, London EC3N 1AL Tel: 020 7448 9910
3 Quern House, Mill Court, Great Shelford, Cambs CB22 3LD Tel: 01223 314794
4 The Old Church, St. Matthews Road, Norwich, Norfolk NR1 1SP Tel: 01603 230240
The Wheehouse, Bonds Mill, Stonehouse, Gloucestershire GL10 3RF Tel: 01172 020070
Email Address: mail@rj.co.uk Website: http://www.rj.co.uk

Drawing No.	Revision
49455/PP/006	

Drawing Status		
<input checked="" type="checkbox"/> INFORMATION	<input type="checkbox"/> APPROVAL	<input type="checkbox"/> COSTING
<input type="checkbox"/> TENDER	<input type="checkbox"/> CONSTRUCTION	<input type="checkbox"/> AS CONSTRUCTED

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BIDWELLS