

Ref: 6064/R3

**Land to the East of The Balk
Pocklington
York**

Flood Risk Assessment

December 2018



REPORT DETAILS

Site Name: Land to the East of The Balk, Pocklington, York

Report Title: Flood Risk Assessment

Report Number: 6064/R3

Revision	Date	Status
-	December 2018	For Planning Approval

Client: Gladman Developments

Client Contact: Tim Poupard

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		Lees Roxburgh Drg. No. 6064/01-01 Rev B

EXECUTIVE SUMMARY

<p>Site</p>	<ul style="list-style-type: none"> - Single large very flat field divided into two sections by a dog-leg drainage ditch running down to the south east corner. - Small copse area, Duck Belt, close to the northern corner. - Rapeseed crop over a large area with the remaining area prepared and seeded. - Overhead electricity cables cut across the southern area. - Overall fall from north to south about 1 in 120. - Substantial ponds within the adjacent Willow Waters/Lakeside Lodge development with levels beyond falling away from the site.
<p>Flood Zoning</p>	<ul style="list-style-type: none"> - Site lies within an area of Zone 1 Flood Risk. - Sequential and Exception Tests do therefore not apply.
<p>Surface Water Flooding</p>	<ul style="list-style-type: none"> - Very localised areas of risk identified within the site entirely consistent with its greenfield nature.
<p>Existing Watercourse Systems and Water Bodies</p>	<ul style="list-style-type: none"> - Cocoa Beck flows north east to south west, 150m to the south at its closest. - Drainage ditch across the site emerges from beneath Burnby Lane to the north east in brick culvert before entering the site. It exits to the south via a concrete culvert and outfalls into Cocoa Beck. - Minor ditch system to south east boundary. - No water bodies identified which present a source of risk.
<p>Existing Sewers</p>	<ul style="list-style-type: none"> - No recorded foul or surface water systems in the area but development in progress, or planned, to the north west. - No systems recorded within the site.
<p>Existing Surface Water Runoff</p>	<ul style="list-style-type: none"> - Existing greenfield rates have been assessed as; <ul style="list-style-type: none"> • Q_{bar} ... 21.9 litres/sec • Q_1 ... 18.9 litres/sec • Q_{30} ... 38.6 litres/sec • Q_{100} ... 45.6 litres/sec
<p>Ground Conditions</p>	<ul style="list-style-type: none"> - Recorded as being underlain by gravelly, sandy, clayey deposits and alluvium. - Potential for infiltration based drainage solution to be investigated at a more detailed stage.
<p>Surface Water Outfall</p>	<ul style="list-style-type: none"> - To the ditch system within the site in the area of the south boundary.

Mitigation Measures	<ul style="list-style-type: none">- Development levels to be set to safely convey flows within the ditch down to the south boundary.- Flows to be limited to existing run off rates.- Attenuation basins to be provided either side of the ditch with flows overall to be contained on site up to the 1 in 100 year plus 30% climate change event.- Development pipe systems to be put forward for adoption by Yorkshire Water under an S104 Agreement.- Attenuation basins and connections to ditch to become the responsibility of the development management company.- Potential for infiltration to be investigated at a more detailed stage.
Conclusion	<ul style="list-style-type: none">- This FRA has demonstrated in accordance with the NPPF that the development can be delivered so as not to be at risk of flooding from external sources or from within the development, and so as not to increase flood risk to the surrounding area.

1.0 INTRODUCTION

- 1.1 Lees Roxburgh have been instructed by Gladman Developments to carry out a Flood Risk Assessment (FRA) for proposed development of land to the east of The Balk, Pocklington.
- 1.2 This report has been prepared to accompany an outline planning application for up to 380 No. dwellings, a local centre with children's day nursery, a convenience store and a 60 bed care home.
- 1.3 The site lies within an area designated on EA Flood mapping as Flood Risk Zone 1 and therefore comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (< 0.1%).
- 1.4 *The National Planning Policy Framework (NPPF)* and the accompanying *National Planning Policy Guidance* sets out the requirements for addressing flood risk with respect to potential development site.

In accordance with the NPPF at over 1 hectare in area the site is required to be the subject of an FRA.

- 1.5 The purpose of an FRA is to address the following;
- The potential for the proposed development to be affected by flooding either from the development proposal or external sources.
 - The potential for the proposed development to increase the flood risk elsewhere.
 - That mitigation measures introduced to deal with any risks identified can be successfully managed.
 - That the site can be developed and occupied safely.

The NPPF indicates that an assessment of flood risk should be proportionate to the risk and appropriate to the scale, nature and location of the development. This report reflects the requirements of the NPPF in this regard.

- 1.6 This report has been prepared specifically for Gladman Developments for the sole purposes of the planning application and any reliance on its contents must be read in conjunction with the requirements of any subsequent planning conditions.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Location

- 2.1.1 The site is centred on National Grid references 481050, 447860 and is 18.12ha in area (**Appendix 1**).
- 2.1.2 The site lies on the south east outskirts of Pocklington, some 20km east of York city centre and was inspected in 2016 in advance of the original application.

2.2 Surrounding Land Use and Access

- 2.2.1 The proposed development area is bordered to the north east by Burnby Lane from which it may be accessed as the boundary is unfenced. On the opposite side of Burnby Lane there is the line of a dismantled railway, beyond which there is extensive arable farmland with isolated farmsteads.
- 2.2.2 The north west boundary is delineated by an access track leading from the B1247 'The Balk' road to Burnby Lane. The track is unfenced, allowing straightforward access onto the site and also onto the adjacent field to the north west.

Further north west there are playing fields, Primrose Wood, a cricket ground and Burnby Hall Gardens with lakes, and then the main conurbation of Pocklington which extends either side of both the B1247 and Burnby Lane.

- 2.2.3 Close to the north west corner of the site and on the opposite side of The Balk Linden Homes are already well advanced with a housing development that is accessed from a new roundabout constructed on The Balk road and located just 60m from the site boundary.
- 2.2.4 The western edge of the site is formed by the B1247 The Balk road, on the opposite side of which are a small number of residences/farmsteads with arable farmland extending to Pocklington Brook, some 700m away, and beyond.

Although the western site boundary is unfenced, access other than by foot is inhibited by the raised verge to The Balk road.

- 2.2.5 An unfenced tarmac track forms the southern boundary and provides vehicle access to an isolated property, Willow Rise, which projects into, but is not part of the proposed development area. To the south, arable fields border The Balk road until it joins the A1079 road some 800m away.
- 2.2.6 Coco Beck flows in a north east to south westerly direction passing within 150m of the south east corner of the site at its closest.
- 2.2.7 The tarmac track continues eastwards before turning to form the site's south east boundary (in part) providing access to some old farm buildings, two large barns or warehouses, as well as Willow Waters and the Lakeside Lodge development, before the track eventually joins Burnby Lane, close to the north east corner of the site.

Within the area alongside the site, there are a number of ponds of varying size.

- 2.2.8 The remainder (northern part) of the proposed south east site boundary is in part unmarked around the rear of the two barns/warehouses, before running along the

edge of a small copse area, which is referred to as 'Duck Belt' on mapping. The mapping indicates a 'drain' along the Duck Belt boundary, but nothing is evident on site.

- 2.2.9 Further east and south east, beyond the Willow Waters and Lakeside Lodge development, there is again arable farmland extending 3km or more towards the small villages of Nunburnholme and Burnby.

2.3 Site Description

- 2.3.1 The site is a pentagon in shape, and comprises almost entirely one large and very flat field that is divided into two sections by a dog-legged drainage ditch that enters from beneath Burnby Lane on the north east boundary and exits the site at its south east corner outfalling at Coco Beck just to the south.
- 2.3.2 There is a small copse area bordering Burnby Lane and close to the northern corner of the site, which mapping again refers to as 'Duck Belt'
- 2.3.3 At the time of the site inspection rapeseed crop was already evident over a large area and the remaining field area appeared prepared and seeded.
- 2.3.4 All external field boundaries are unfenced, except for the Duck Belt boundary at the eastern corner of the site where there is post and wire fencing.
- 2.3.5 Overhead electricity cables cut across the southern part of the site in a west to east direction, roughly 80m from the southern boundary. There is an indication that a buried 50mm water pipe may run parallel with the overhead cables as the pipe is evident where it crosses the central drainage ditch.

2.4 Topography

- 2.4.1 The site in general is very flat with a fall from north to south of the order of 1 in 120.
- 2.4.2 Reference should be made to the topographical survey but boundary levels can be summarised as follows;

- | | |
|--|-----------|
| • North corner (Burnby Lane)... | 29.0m AOD |
| • North east corner (Burnby Lane)... | 28.0m AOD |
| • South east corner (tarmac track)... | 24.2m AOD |
| • South west corner (tarmac track / The Balk)... | 24.5m AOD |
| • North west corner (The Balk)... | 27.5m AOD |

2.5 Existing Drainage

- 2.5.1 Watercourse systems in the area are identified in **Appendix 1B**.
- 2.5.2 As notes, a main drainage ditch cuts across the site. Where it enters the site it emerges from beneath Burnby Lane in an oval shaped brick culvert of approximate size 1000mm high x 750mm wide.
- 2.5.3 This drainage ditch collects water from a number of ditches located either side of the dismantled railway line close to the site's north east border and from mapped 'drains' further to the north east.
- 2.5.4 Mapping indicates a 'drain' beside the 'Duck Belt' copse at the site's eastern corner, but nothing is evident on site until mid-way along the south east boundary where another mapped 'drain' appears beside the farm buildings that lie just beyond the site's boundary. This drainage ditch disappears into culvert at the point where it runs alongside the tarmac access track to the farm buildings. There is evidence on site to suggest that the culvert joins the major drainage system just before the latter leaves the site in the south east corner.
- 2.5.5 The main drainage ditch exits the proposed development area via a 900mm dia. concrete pipe culvert beneath the tarmac access track. On the opposite side of the access track another 225mm dia. pipe joins the flow, collecting water from a ditch system at the southern edge of the Willow Waters / Lakeside Lodge development.
- 2.5.6 The Willow Waters / Lakeside Lodge development contains a number of substantial ponds.

3.0 FLOOD RISK

3.1 Flood Mapping

3.1.1 Gov.UK Flood Map for Planning

3.1.1.1 Reference to the Gov.UK Flood Map for Planning (**Figure. 1**) indicates that the existing site is situated within a Flood Zone 1 Area of flood risk. This is land defined within the NPPF as land assessed as having a less than 1 in 1000 annual probability of flooding (<0.1% in any year). All uses of land are appropriate in this zone.

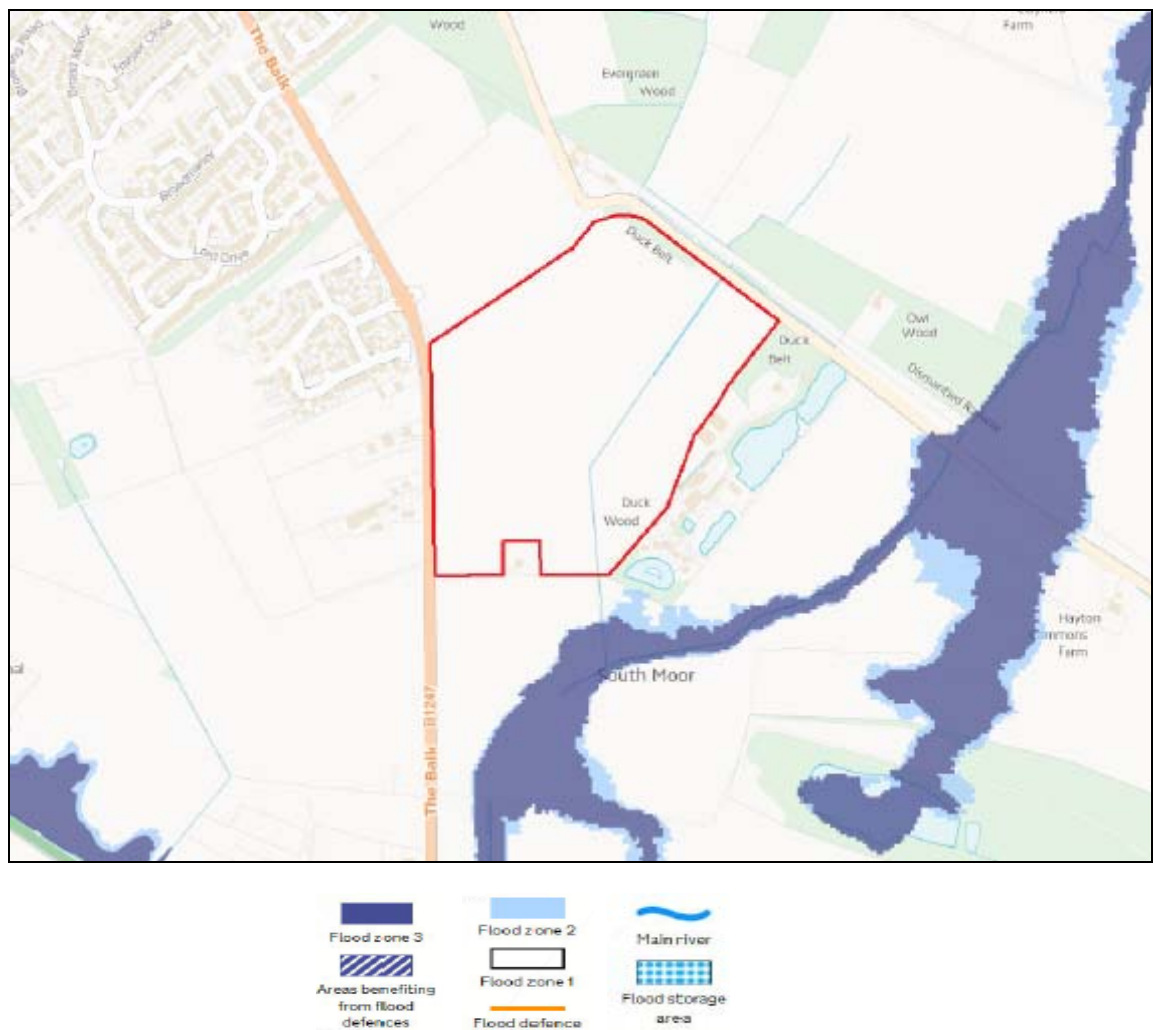


Figure 1: Gov.UK Flood Map for Planning

3.1.2 Gov.UK Surface Water Flood Risk

3.1.2.1 Reference to the Gov.UK Surface Water Flood Risk Map (**Figure 2**) identifies areas of flood risk associated with the surrounding watercourse systems and sporadically in the area but with only very isolated and localised areas of risk along the site boundary.

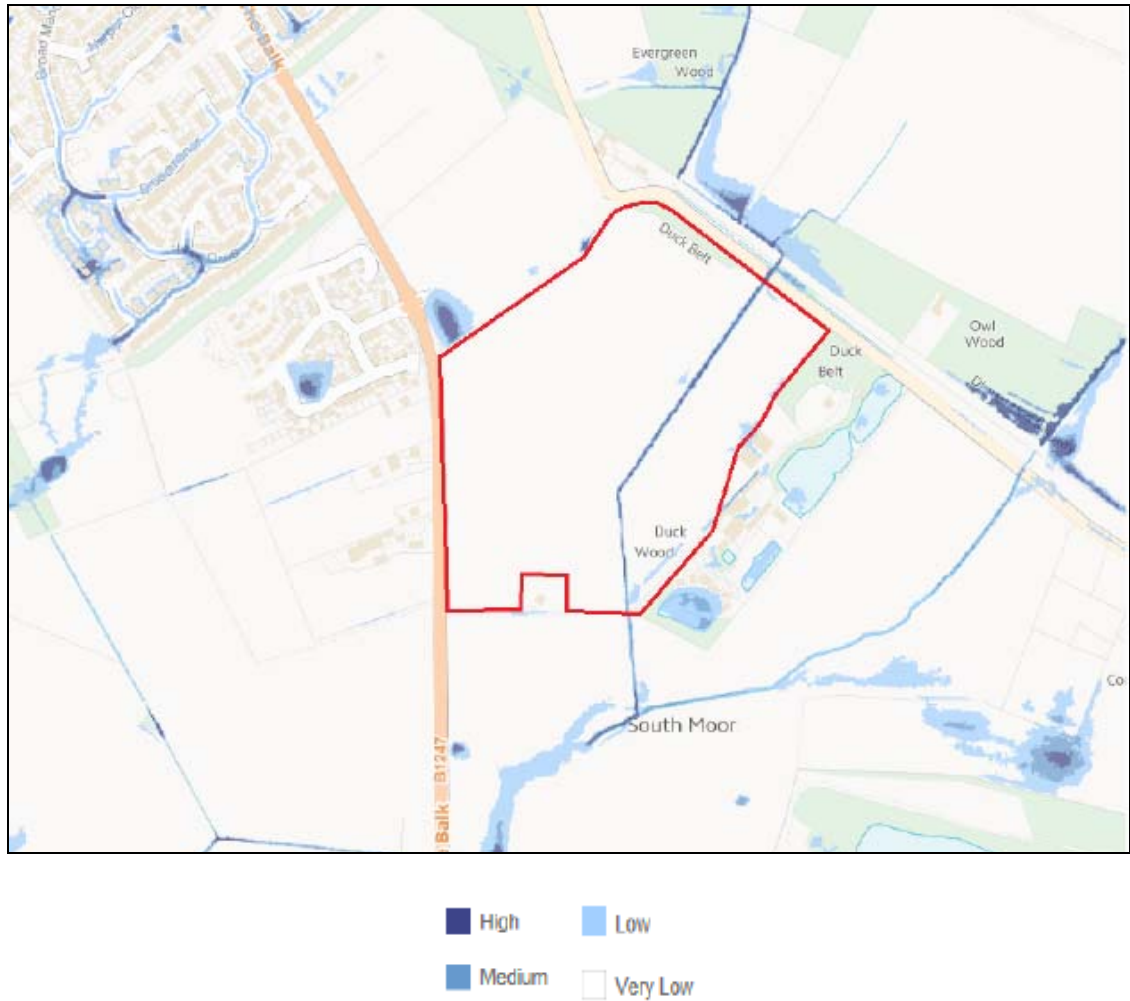


Figure 2: Gov.UK Risk of Flooding from Surface Water

3.2 Sequential and Exception Tests

- 3.2.1 The proposed development is situated within a Flood Zone 1 Risk Area. On this basis, the Sequential and Exception Tests as set out in NPPF are not applicable.

3.3 Sources of Flood Risk

3.3.1 Watercourse Systems and Water Bodies

- 3.3.1.1 As described under 2.5, the main drainage cuts across the site from Burnby Lane outfalling into Cocoa Beck, a none main river, to the south. An area of Zone 2/3 flood risk is associated with Cocoa Beck and extends towards but falls short of the site boundary. On this basis, and with ground levels falling away from the boundary towards the beck, and confirmed by EA flood mapping, it is viewed that Cocoa Beck does not present a source of risk to the development.

The ditch system within the site does however need to be addressed.

- 3.3.1.2 As noted, there are a number of ponds within the area immediately alongside the south eastern site boundary. With ground levels falling away from this area towards Cocoa Beck, it is not viewed that these features present a source of risk to the development.

A large pond is also located within Balk Belt just over 400m to the south east but again, due to the topography, does not present a source of risk.

- 3.3.1.3 On this basis, the risk from water bodies can be discounted but that associated with the ditch which bisects the site does need to be considered.

3.3.2 Existing Sewers and Drainage

- 3.3.2.1 Copies of Yorkshire Water public sewer records have been obtained. These records have been incorporated in **Appendix 3**.

- 3.3.2.2 Reference to these records indicates that there are no public surface water or foul sewers within the area of the site although it is noted that development is in progress, or is planned, to the north west and north within which it is anticipated sewer systems will become adopted at some time in the future.

3.3.3 Land Drainage and Groundwater

- 3.3.3.1 With the presence of a ditch system within the site, it is not anticipated that there will be any land drainage or groundwater issues which cannot be dealt with as part of the normal design and construction process.

3.3.4 Comment

- 3.3.4.1 On the basis of the assessment of the potential sources of flood risk described above, it is concluded that the risks associated with the following need to be addressed by this FRA;

- Central ditch system
- Development drainage proposals

4.0 SURFACE WATER RUNOFF

4.1 Requirements for Surface Water Drainage of the Site

- 4.1.1 The NPPF recommends that surface water generated by the development site should, as far as is practicable, be managed in a sustainable manner to mimic the surface water flows arising from the site prior to the proposed development.
- 4.1.2 Proposals should ensure that volumes and peak flow rates of surface water leaving the developed site are no greater than those prior to development, reducing surface water run off where possible and taking climate change into consideration.

4.2 Site Area

- 4.2.1 The overall site area comprises 18.12 hectares of which the area proposed for development is approx. 12.04 hectares.

4.3 Existing Site Run Off

- 4.3.1 The existing site is greenfield.
- 4.3.2 Existing greenfield run off rates have been calculated based on the ICP SUDS Mean Annual Flood Method for the developable area (**Appendix 5**) and these are as follows;

- $Q_{bar...}$ 21.9 litres/sec
- $Q_{1...}$ 18.9 litres/sec
- $Q_{30...}$ 38.6 litres/sec
- $Q_{100...}$ 45.6 litres/sec

4.4 Surface Water Run Off from the Developed Site

- 4.4.1 The development plan is incorporated in **Appendix 5**.
- 4.4.2 Uncontrolled flows from the development will exceed greenfield run off rates. For the purposes of this FRA, it is considered that development run off rates limited to the greenfield run off rates identified in 4.3.2 would be appropriate.

4.5 Potential for Ground Infiltration Based Drainage

- 4.5.1 A Phase 1 Geoenvironmental Assessment has been undertaken (ref. 6064/R1) and has identified that ground conditions are likely to comprise gravelly, sandy, clayey deposits with alluvium within the western area.
- 4.5.2 On this basis it is anticipated that it is unlikely that ground conditions will be suitable for a sitewide infiltration based drainage solution and at this stage a positive surface water outfall from the development is proposed.

4.6 **Comment**

- 4.6.1 Desk study work has established that the potential for ground infiltration based drainage is likely to be limited. Such potential will be investigated at a more detailed stage pending which a positive surface water outfall from the development will be required.

- 4.6.2 A surface water connection to the central ditch system is therefore proposed.

5.0 **FLOOD MITIGATION MEASURES**

5.1 **Central Ditch System**

5.1.1 Environment Agency flood zoning and surface water flood mapping do not identify the system as presenting a source of risk.

Nonetheless, development levels will be set to ensure that flows within this ditch system are safely conveyed through the site and down towards Cocoa Beck.

5.2 **Development Drainage Proposals**

5.2.1 The following measures have been considered;

- Infiltration techniques
- Piped system into attenuation basins

5.2.2 **Infiltration Techniques**

5.2.2.1 Desk study work has established that ground conditions are unlikely to be favourable for a sitewide based ground infiltration solution.

5.2.2.2 However at detailed design stage the potential to provide some infiltration based drainage will be investigated and assessed.

5.2.3 **Piped System into Attenuation Basins**

5.2.3.1 It is proposed to provide two attenuation basins located either side of the ditch within the south east area of the site.

Highways, houses and associated hard surfaces will be served by piped surface water systems designed to adoptable standards to ensure, at minimum, no flooding up to the 1 in 30 year event and discharging to the basins. Flows from the basins will be controlled to the existing runoff rates established under 4.3.2 via tiered hydrobrake systems prior to discharging into the ditch system.

5.2.3.2 It is proposed that the main piped systems be adopted under an S104 agreement by Yorkshire Water with the development management company to become responsible for the basins and outfalls.

5.2.3.3 Overall, flows up to the 1 in 100 year event plus 30% allowance for climate change will be contained on site within the basins and pipe systems supplemented by appropriate setting of levels. In this regard it is noted that any infiltration based drainage which can be introduced at a later stage will reduce attenuation requirements.

The drainage strategy for the development has been prepared accordingly and is incorporated in **Appendix 5**.

5.3 **Land Drainage**

5.5.1 Where required, land drainage systems will be introduced to pick up any residual land drainage and direct flows safely through the development.

6.0 CONCLUSIONS

6.1 The FRA has identified that the site lies in an area of Zone 1 Flood Risk.

A ditch system bisects the site. Development levels will be set to safely convey flows within this system through the site down towards Cocoa Beck.

6.2 Geoenvironmental assessment work has established that ground conditions may have some potential for infiltration based drainage solution but unlikely to be on a sitewide basis and this will be investigated at a detailed stage.

It is therefore proposed to connect surface water drainage into the existing ditch system within the site with flows limited to greenfield run off rates, thus mimicking existing run off in accordance with the NPPF.

6.3 The proposed piped drainage systems will be designed to contain flows from, at minimum, a 1 in 30 year event and will discharge into attenuation basins either side of the ditch located within the south east area of the development. The piped systems will be put forward for adoption by Yorkshire Water under a Section 104 agreement and Yorkshire Water will therefore become responsible for their long term maintenance.

Overall flows will be contained on site up to the 1 in 100 year plus 30% climate change event within the basins, piped systems and by appropriate setting of levels prior to discharge to the ditch system.

The attenuation basins and outfalls will become the responsibility of the management company set up for the development.

6.4 Where required, land drainage systems will be introduced to pick up any residual land drainage and direct flows safely through the development.

6.5 It is therefore concluded that this FRA has demonstrated in accordance with the NPPF and that the development is not at risk of flooding from external sources, will not increase flood risk associated with the development and its environment and is therefore appropriate.

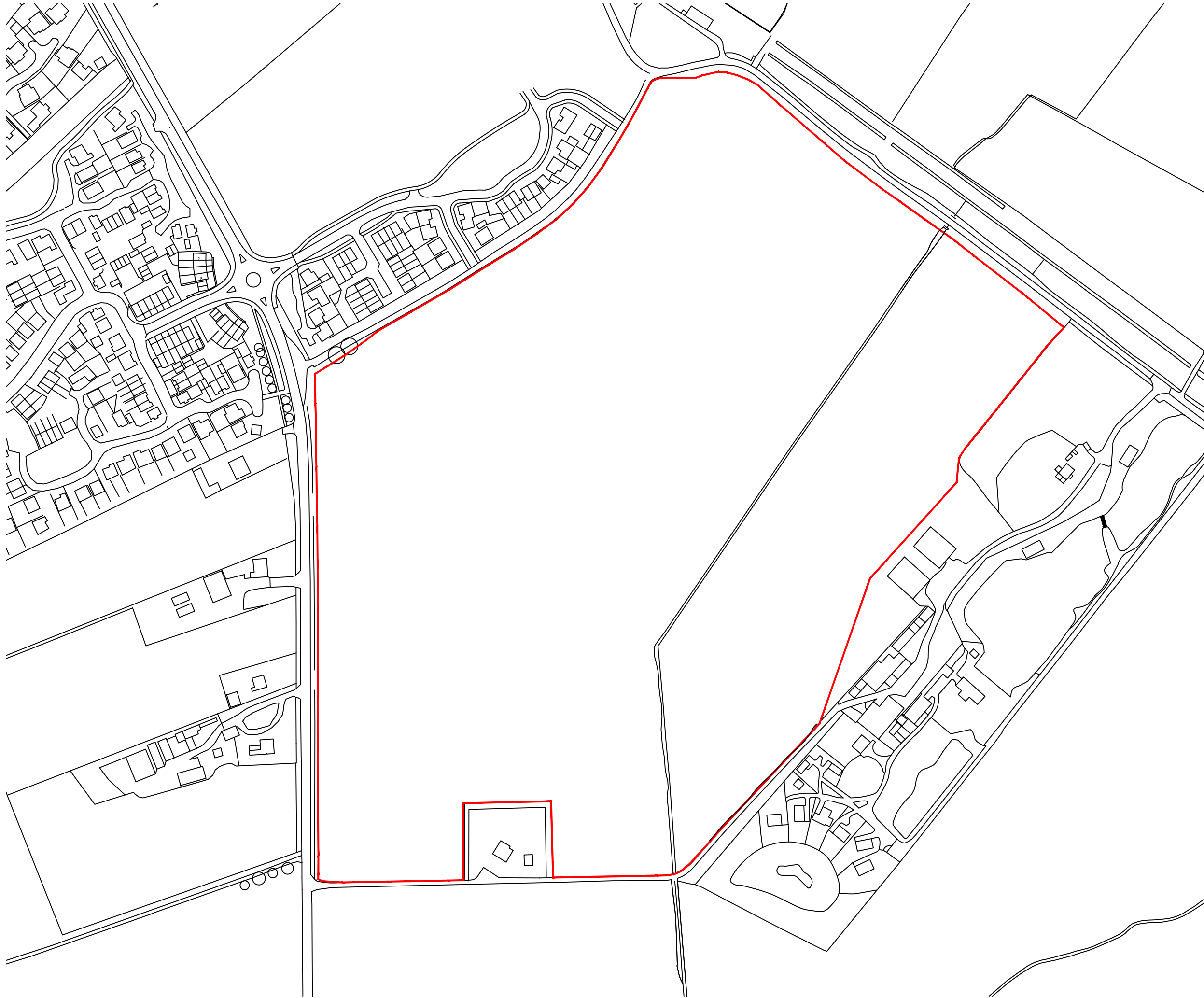
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Appendix 1: Site Details

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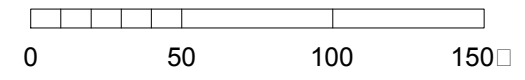
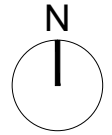
Appendix 1A: Location Plan

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NOTES

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KEY

— Site Boundary 18.12.18

FINAL

-	21.11.18	First issue.	PF	CEP
rev	date	description	dm	chkd



- masterplanning
- environmental assessment
- landscape design
- urban design
- ecology
- architecture
- arboriculture

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project
**The Bal
 Pocin**

drawing title
SITE LOCATION PLAN

scale 1/2500 A3 drawn / checked PF / KMN revision date 21st November 2018

drawing number **7216-L-05** rev -

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Appendix 1B: Watercourse Systems

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Appendix 2: Topographical Survey

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Appendix 3: Yorkshire Water Public Sewer Records













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YORKSHIRE WATER PROTECTION OF MAINS AND SERVICES







1. The position of Yorkshire Water Services Ltd (YWS) apparatus shown on the existing mains record drawing(s) indicates the **general** position and nature of our apparatus and the accuracy of this information cannot be guaranteed. Any damage to YWS apparatus as a result of your works may have serious consequences and you will be held responsible for all costs incurred. Prior to commencing major works, the exact location of apparatus must be determined on site, if necessary by excavating trial holes. The actual position of such apparatus and that of service pipes which have not been indicated must be established on site by contacting the Customer Helpline on 0845 124 24 24 for both water and sewerage.
2. The public sewer and water network is lawfully retained in its existing position and the sewerage and water undertaker is entitled to have it remain so without any disturbance. The provisions of section 159 of the Water Industry Act 1991 provides that the undertaker may "inspect, maintain, adjust, repair or alter" the network. Those rights are given to enable the undertaker to perform its statutory duties. Any development of the land or any other action that unacceptably hindered the exercise of those rights would be unlawful. The provisions contained in Section 185 of the Water Industry Act 1991 state that where it is reasonable to do so, a person may require the water supply undertaker to alter or remove a pipe where it is necessary to enable that person to carry out a proposed change of use of the land. The provisions contained in Section 185 also require the person making the request to pay the full cost of carrying out the necessary works.
3. Ground levels over existing YWS apparatus are to be maintained. Sewers in highways will **generally** be laid to give 1200mm of cover from finished ground level working to kerb races, other permanent identification of the limits of the road or to an agreed line and level. Substantial increases or decreases to this 1200mm depth of cover will result in the sewer being re-laid at your expense. Water mains and services will **generally** be laid with a minimum of 750mm depth of cover however some mains and services usually those installed over 50 years ago may have less ground cover.
4. If surface levels are to be decreased / increased significantly the effects on existing water supply apparatus will be carefully considered and if any alterations are necessary, the costs of the alterations will be recharged to you in full. Outlets on fire hydrants must be no more than 300mm below the new levels and all surface boxes must be adjusted as part of the scheme.
5. To enable future repair works to be carried out without hindrance; any pipe, cable, duct, etc. installed parallel to a water main or service pipe should not be installed directly over or within 300mm of a water main or service pipe or 1000mm of a waste water asset. Where a pipe, cable, duct, etc. crosses a main or service it should preferably cross perpendicular or at an angle of no less than 45° and with a minimum clearance of 150mm. These requirements apply to activities within an existing highway and are relevant to the installation of pipes, cables, ducts, etc. up to and including 250mm in diameter (*see illustration below*). Necessary protection measures for installations greater than 250mm in diameter and/or in private land will need to be agreed on an individual basis. Installations within a new development site must comply with the National Joint Utilities Group publication Volume 2: NJUG Guidelines On The Positioning Of Underground Utilities Apparatus For New Development Sites.
6. All excavation works near to YW apparatus should be by hand digging only.
7. Backfilling with a suitable material to a minimum 300mm above YW apparatus is required.
8. Adequate support must be provided where any works pass under YW apparatus.
9. Jointing chambers, lighting columns and other structures must be installed in such a way that future repair or maintenance works to YW apparatus will not be hindered.
10. Apparatus such as; railings, sign posts, etc. must not be placed in such a way that they prevent access to or full operation of controlling valves, hydrants or similar apparatus. YWS surface boxes must not be covered or buried. Any adjustment, alteration or replacement of manhole covers must be agreed on site prior to the commencement of the works with a YWS Inspector who may be contacted via our Call Centre on 0845 124 24 24.
11. Explosives shall not be used within 100 metres of any Yorkshire Water Services apparatus or installations.
12. Vibrating plant should not be used directly over any apparatus. Movement or operation by vehicles or heavy plant is not to be permitted in the immediate vicinity of YWS plant or apparatus unless there has been prior consultation and, if necessary, adequate protection provided without cost to YWS.
13. **Under no circumstances** should thrust boring or similar trenchless techniques commence until the actual position of the Company's mains/services along the proposed route have been confirmed by trial holes.
14. Any alterations to the highway should be notified following the procedures outlined in the New Road and Street Works Act 1991 Code of Practice; Measures Necessary Where Apparatus Is Affected By Major Works (Diversionary Works).

15. You will be held responsible for any damage or loss to YWS apparatus during and after completion of work, caused by yourselves, your servant or agent. Any damage caused or observed to YWS plant or apparatus should be immediately reported to YWS. Should YW incur any costs as a result of non-compliance with the above, all costs will be rechargeable in full.
16. You should ensure that nothing is done on the site to prejudice the safety or operation of YWS employees, plant or apparatus.
17. In accordance with the New Roads and Street Works Act 1991, Chapter 22, Part 3, Section 80. The location of any identified YW asset "*which is not marked, or is wrongly marked, on the records made available*" should be communicated back to Yorkshire Water. The location of the apparatus should be identified on copies of the supplied plans which should be returned to Yorkshire Water (Asset Records Team) with photographic supporting evidence where possible.
18. The Government has decided that responsibility for private sewers serving two or more properties and lateral drains (the section of pipe beyond the boundary of a single property, connecting it to the public sewer) will be transferred to the water companies on Oct 1 2011. Private pumping stations will also transfer during the period 1 October 2011 – 1 Oct 2016. Records of these assets may not yet be shown on the existing mains record drawing(s). If you encounter any of these assets you must inform Yorkshire Water Services Ltd (YWS).
19. Please note that the information supplied on the enclosed plans is reproduced from Ordnance Survey material with the permission of the Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office, © Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Licence Number 1000019559.
20. This information is for guidance only and the position and depth of any YW apparatus is approximate only. Likewise, the nature and condition of any YW apparatus cannot be guaranteed. YW has no responsibility for recording the locations of privately owned apparatus. As of 1 October 2011, there may be some lateral drains and/or public sewers which are not documented on YW records but may still be present. For the avoidance of doubt, this information is not a substitute for appropriate professional and/or legal advice. YW accepts no responsibility for any inaccuracy or omissions in this information. The actual position of YW apparatus must be determined on site by excavating trial holes by hand. YW requires a minimum of two working days' written notice of the intention to excavate any trial holes before any excavation can be undertaken. If there are any queries in this respect please contact Yorkshire Water on 0845 124 24 24.

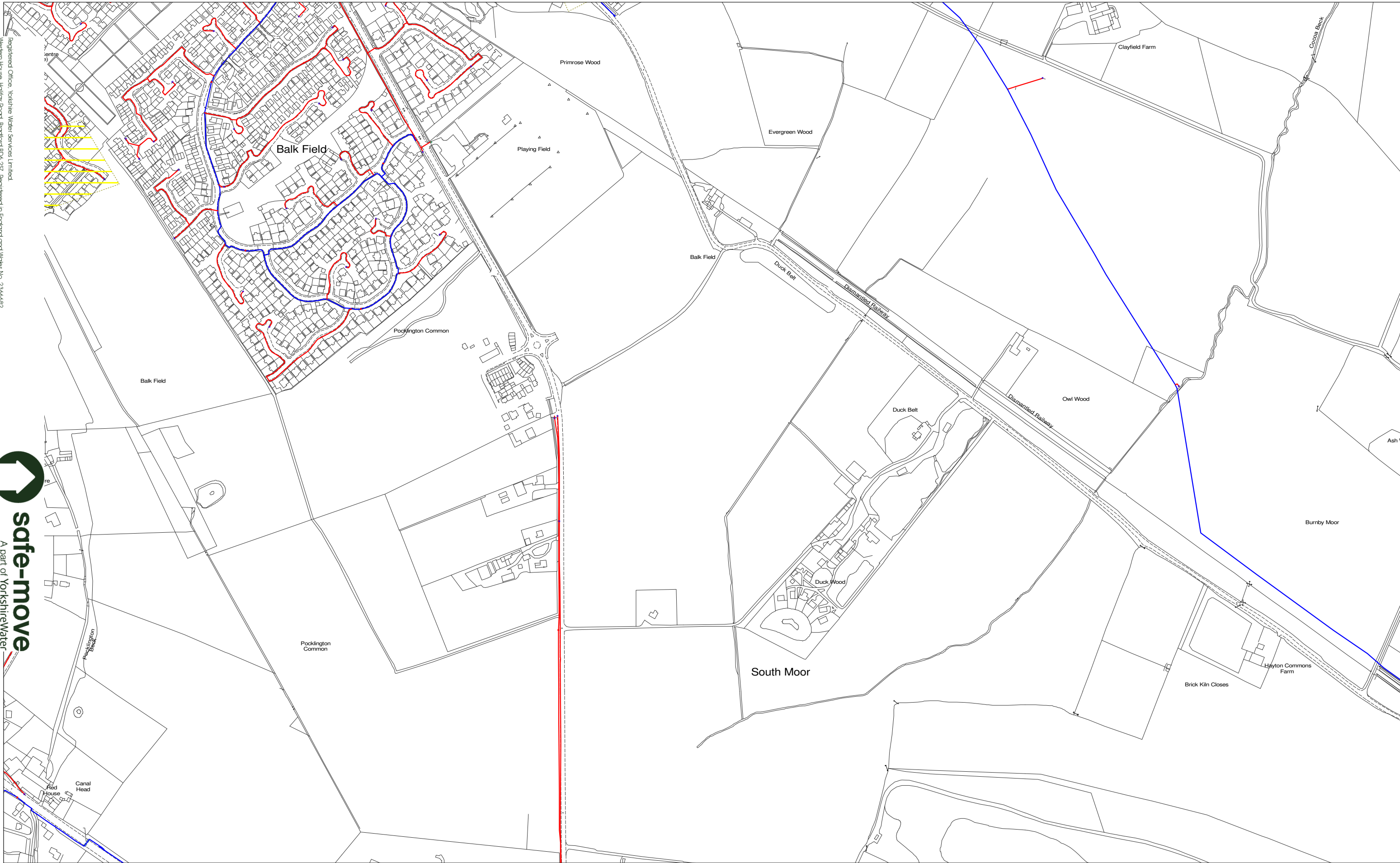
Sewer Legend

	Combined Sewer		S24 Combined Sewer
	Surface Water Sewer		S24 Surface Water Sewer
	Foul Sewer		S24 Foul Sewer
	Section 104 Sewer		Public Rising Main
	Pumping Station		Abandoned Sewer
	Public Sewage Treatment Works		Syphon Sewer & Vacuum Sewer
+			Property Identifier

Water Legend


	Water Main 4" and below
	Water Main 4" and above
	Raw Water Main
	Private Water Main
	Fire Hydrant
	Pumping Station

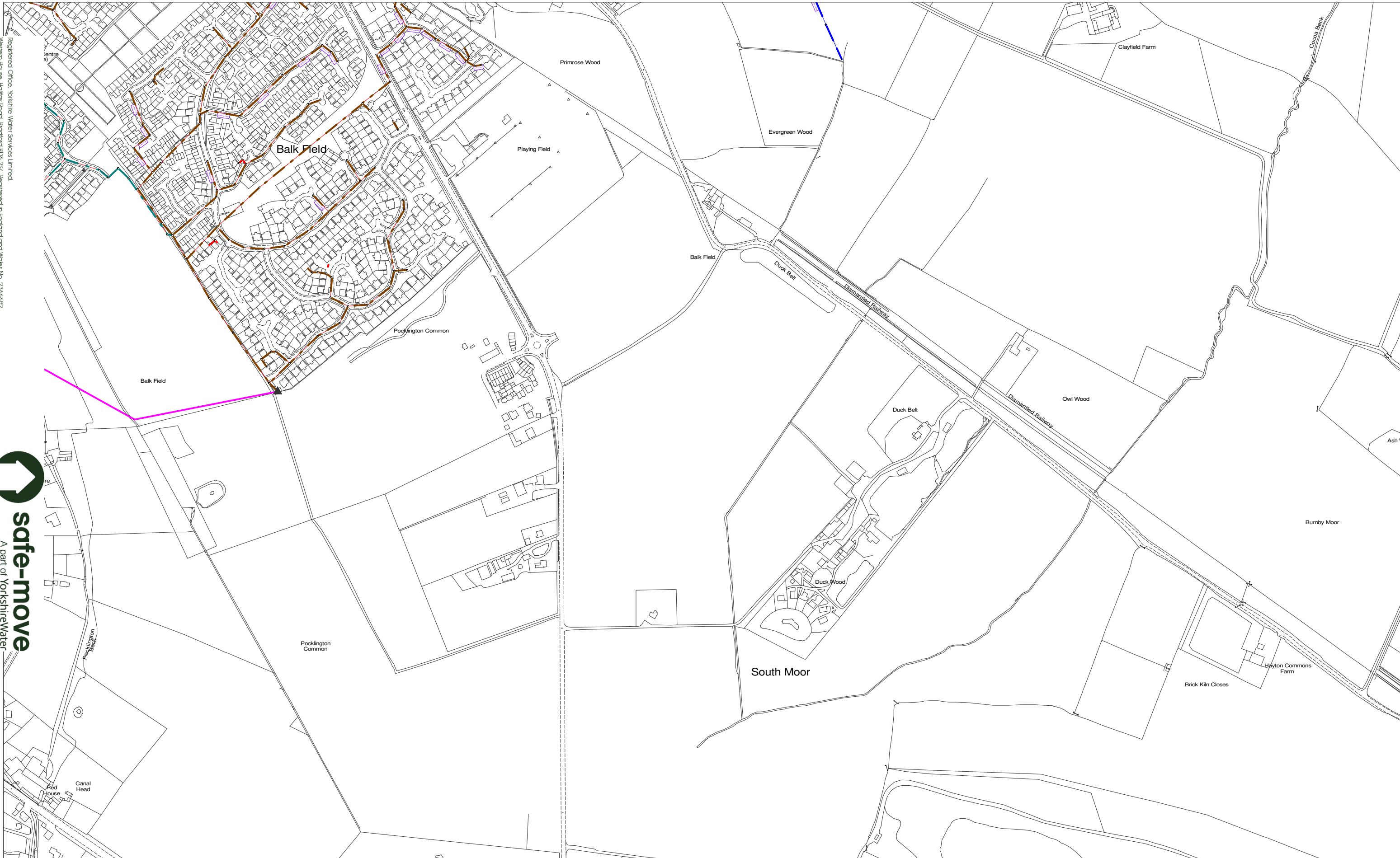
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480173 : 447352	Map Name : SE8047SW	Title	Partial Key	The position and depths of apparatus shown on this plan are approximate only. The exact positions and depths should be obtained by excavation trial holes.
	Yorkshire Water, PO Box 500, Halifax Road, Bradford BD6 2LZ Contact Name : jacklin Contact Tel :	Notes <small>(Ody) COPYRIGHT STATEMENTS: Reproduced by permission of Ordnance Survey on behalf of HMSO © Crown copyright and database 2014. All rights reserved Ordnance Survey Licence number 100022432</small>	Water mains up to 4" in diameter — Water mains over 4" in diameter — Raw water mains — Private water mains — Scale : 1:5000 Drg No : Date Req : 01/03/2016, 14:17:11 Source : Water Network Enquiry	Maris No : Date Gen : 01/03/2016, 14:17:12



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<p>UPN: Undefined</p> <p>Originator: jacklin, ,</p>	<p>480173 : 447352</p> 	<p>Map Name : SE8047SW</p> <p>Yorkshire Water, PO Box 500, Halifax Road, Bradford BD6 2LZ Contact Name : jacklin Contact Tel :</p>	<p>Title</p> <p>Notes</p> <p>(Ody) COPYRIGHT STATEMENTS: Reproduced by permission of Ordnance Survey on behalf of HMSO © Crown copyright and database 2014. All rights reserved Ordnance Survey Licence number 100022432</p>	<p>Partial Key</p> <p>Foul Sewer = F Combined Sewer = C Surface Water Sewer = SW Trade Sewer = TD Partially Separate = PS</p> <p>Date Req : 01/03/2016, 14:17:36</p> <p>Source : Sewer Network Enquiry</p>	<p>This plan is furnished as a general guide only and no warranty as to its correctness is given or implied. This plan must not be relied upon in the event of excavations or other works made in the vicinity of public sewers. No house or property connections are shown.</p> <p>Date Gen : 01/03/2016, 14:17:38</p>
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Appendix 4: Existing Run Off Rates

ICP SUDS Mean Annual Flood Method

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Lees Roxburgh Limited		Page 1
The Genesis Centre Science Park South Birchwood WA3 7BH	6064 The Balk Pocklington	
Date 22/11/2018 File	Designed by LR Checked by JEL	
Elstree Computing Ltd		Source Control 2017.1.2

ICP SUDS Mean Annual Flood

Input

Return Period (years)	100	Soil	0.300
Area (ha)	12.040	Urban	0.000
SAAR (mm)	700	Region Number	Region 3

Results l/s

QBAR Rural 21.9
QBAR Urban 21.9

Q100 years 45.6

Q1 year 18.9
Q30 years 38.6
Q100 years 45.6

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Appendix 5: Surface Water Drainage Strategy

Lees Roxburgh Drg. No. 6064/01-01 Rev B

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Notes

SITE DEVELOPABLE AREA 12.04HA.
 SURFACE WATER
 EXISTING GREENFIELD RUNOFF RATES
 Q_{5yr} ...21.9 l/s
 Q₁ ...18.9 l/s
 Q₁₀ ...38.6 l/s
 Q₁₀₀ ...45.6 l/s
 ATTENUATION BASIN
 BASINS DESIGNED TO ACCOMMODATE ALL STORM EVENTS UP TO AND INCLUDING 1:100yr + 30% ALLOWANCE FOR CLIMATE CHANGE.
 MAXIMUM DISCHARGE RATES FOR DEVELOPMENT NOTED ABOVE. EACH BASIN TO HAVE TIERED FLOW CONTROL PRIOR TO OUTFALL TO EXISTING DITCH.
 RATES TO BE SPLIT BETWEEN OUTFALLS ACCORDING TO CONTRIBUTING DEVELOPABLE AREA.
 SW DRAINAGE TO OUTFALL TO EXISTING DITCH WITHIN DEVELOPMENT BOUNDARY.
 FOUL WATER
 FOUL TO DRAIN TO PUMP STATION WITH RISING MAIN CONNECTION TO EXISTING YORKSHIRE WATER NETWORK.

- KEY
- DEVELOPMENT BOUNDARY
 - - - PROPOSED SURFACE WATER
 - - - SEWER
 - - - PROPOSED FOUL
 - - - FOUL RISING MAIN
 - EXISTING DITCH

B	AMENDED TO FRAMEWORK PLAN 7216-L-01	DM	22.11.18
A	AMENDED TO FRAMEWORK PLAN REV G	CB	20.09.18

Rev	Revision	By	Date
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Gladman Developments

Land to the east of Balk Pocklington

Drainage Strategy

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Job No.	Drawing No.	Revision.
6064	01-01	B
Scale 1:1000@A1	Date November 2018	
Drawn By	Designed By	Checked By
CB	CB	JEL

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