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TECHNICAL NOTE 012 – FLOOD RISK & DRAINAGE SUMMARY FOR A POTENTIAL FUTURE DEVELOPMENT SITE

Beverley South-East

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Date: 05/03/2025

1.0 INTRODUCTION

1.1 Planning permission for the construction of circa 1000 dwellings and a Park and Ride development on land to the south-east of Beverley was granted under hybrid planning application 16/02784/STPLF. The site location is shown in Figure 1 below and approximately half of the site has now been constructed and occupied.

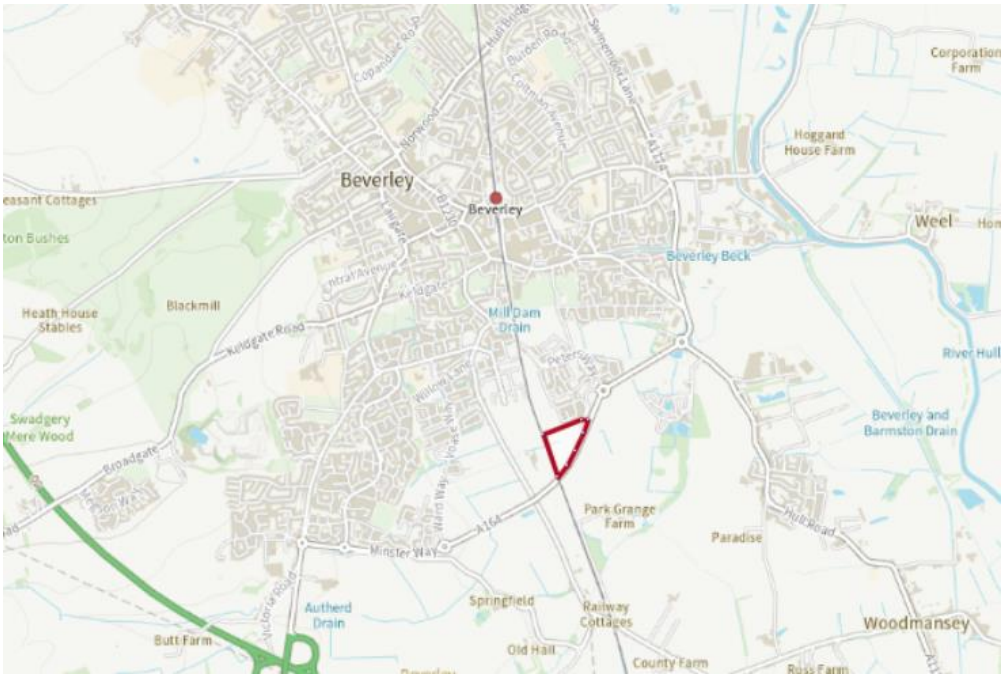


Figure 1 – Site Location Plan (Obtained February 2025)

1.2 Options for the development of the Park & Ride site are being considered in the event that it is not brought forward for delivery. This Technical Note summarises the potential flood risk and drainage constraints and opportunities for future development that may come forward to replace it.

2.0 GENERAL

2.1 A historic topographic survey exists, but the site should be re-surveyed to confirm the levels and features and development that has taken place since.

2.2 The site is bound to the west by a bridleway and beyond, a railway. Appropriate consultation should take place in relation to stand-off distances and connections (indirectly or directly) to infrastructure below, over or adjacent to the railway. Similarly, impacts on or to the bridleway should be confirmed and agreed with the Consultees.

2.3 The site is bound to the north by residential development, developed by Vistry Homes and Strata Homes, which is served by private and adoptable sewerage and highways. Appropriate consultation will be required with Vistry, Strata and the Consultees to ensure there is no impact on existing and proposed residents and infrastructure.

2.4 The site is bound to its south and eastern side by the existing Beverley bypass and road embankment. Appropriate consultation should take place in relation to stand-off distances to the bypass and the highway authority requirements for its ongoing access, as well as any impact on existing or proposed civil and drainage infrastructure.

2.5 The site currently can currently be accessed from a dedicated arm off the roundabout constructed on the bypass (Minster Way) and this is assumed to be the point of access for future development. The access is approved for adoption, therefore any changes to it should be approved in advance.

2.6 There is an existing watercourse that appears to originate from the site, towards its upper central, western boundary, which heads under the existing railway line, to the west, as shown in Figure 2. Further surveys are recommended to prove its extents, the extents of any land drainage connections, the railway culvert and the condition of the downstream system to confirm if the ditch is draining the site freely.

Figure 2 – Existing Drainage Ditch (February 2025)

2.7 Existing development levels (design and as-built) relative to houses, roads, embankments, bridleways and the like should be confirmed and new development tied into the levels so as not to impact others, unless agreed with Strata, Vistry and the consultees.

2.8 The proposed development will not be permitted to impact on existing and proposed development surrounding the site without the express permission of Strata, Vistry and the Consultees.

3.0 FLOOD RISK

3.1 The site was previously identified within the Alan Wood & Partners flood risk assessment (37393-RP001 FRA) as lying in an area which is considered to be at low risk of flooding from the potential sources examined.

3.2 At this stage, based on freely available mapping, the site is shown to be in Flood Zone 1 (low risk), but is at risk from surface water flooding. This is not dissimilar to the original Flood Risk Assessment that accompanied the original application, and appropriate mitigation should be possible.

3.3 However, the site should be re-assessed in flood risk terms to confirm the flood risk from all sources and the impact of climate change. Flood risk mitigation should be agreed with the Consultees.

4.0 SURFACE WATER

4.1 Historical ground investigations during the original planning application identified that surface water disposal via infiltration methods was unfeasible and instead discharge to watercourse was the preferred method. However, before surface water discharges from any future development are permitted, it is expected that the new development will be accompanied by a formal Flood Risk and Drainage Assessment, and the site will be viewed as a stand-alone scheme and therefore be measured against current policy and Lead Local Flood Authority and Internal Drainage Board requirements. It is therefore recommended that further testing and/or discussions with the Consultees are held to rule out infiltration as a means of surface water disposal, in accordance with local and national guidance and the discharge hierarchy.

4.2 Historical agreements with East Riding of Yorkshire Council and the Internal Drainage Board were achieved on surface water discharging from the main development site to a watercourse at an agreed agricultural rate of 1.4 litres per second per hectare. As above, and once infiltration is ruled out, the discharge rate and location should be agreed with the consultees, which should include the railway operator. It is likely that the drainage ditch within the future development site will be a sensible location for surface water discharge, but this will need to be agreed.

4.3 Assuming a discharge to the drainage ditch is agreed, but as no details for the proposed use for the site's future development are available, it is impossible to confirm how much attenuation storage will be required. On the assumption that the impermeable area of the development will be around 65% and allowing for an additional 10% allowance for urban creep, this equals 2.55ha. Assuming the flow rate is restricted to 1.4 litres per second per hectare with a vortex flow control device restricting flow to a rate of 3.57l/s, then the 100-year storm + 40% climate change storage volume could be in the order of 3,000m^3.

4.4 Should flows be required to pump, there could be a need to reduce the flow control rate by a further 10%, which would, in turn, increase the required attenuation volume. Current local and national flood risk and drainage policy will guide the amount of storage required and this should be co-ordinated with the wider drainage strategy. Suitable space should be provided in the event that a pump is required to discharge surface water.

4.5 In accordance with the local and national planning policy, it is likely that Sustainable Drainage Systems will be required to provide water quantity, water quality, biodiversity and amenity benefits, as has been achieved in the main development site. Again, the SuDS should be co-ordinated with the proposed attenuation requirements and suitable space provided where necessary.

4.6 Given it is likely that surface water will drain either via infiltration or to a watercourse/drainage ditch, there should be no impact on the current residential development's public surface water sewerage and capacity. However, if infiltration or a watercourse/drainage ditch connection is not viable and a connection to the public sewerage is required, the impact of additional flows on the network, storage and the like should be confirmed and agreed with Strata, Vistry and the Consultees.

5.0 FOUL WATER

5.1 Historical agreements have been reached with Yorkshire Water in relation to the discharge of foul water from the currently permitted residential development and this was to discharge into to the pre-existing 1650mm diameter public foul sewer, which is recorded north of the wider development site, adjacent to Mill Dam Drain. Sepearate foul water S104 adoptable sewerage has been designed and has been built, and is being built, to suit the residential development. Foul flows are pumped to the 1650mm Yorkshire Water sewer via an adoptable foul water terminal pumping station located on the residential development.

5.2 As noted, there is drainage infrastructure in the residential development parcel immediately to the north of this future development site. However, there was no allowance for foul flows from the Park & Ride site to discharge into the residential development.

5.3 Therefore, foul flow rates and volumes will need to be confirmed from the proposed future development site. It is likely that a connection can be made into an existing sewer within the residential parcel to the north, but a capacity assessment will be required, on both the downstream pipework and pumping station, and mitigation provided if required. This will need to be agreed with Strata, Vistry and the Consultees, and may need to take into account the impact on the adoptable pumping station within the residential development.

5.4 The route of the proposed foul sewerage to the potential point of connection will need to be agreed with Strata, Vistry and the Consultees.

5.5 Given the development proposals are unknown, foul flows may need to be pumped, and again, the impact on the downstream system should be confirmed and mitigated where required. Suitable space should also be provided for a suitable pump station/compound.

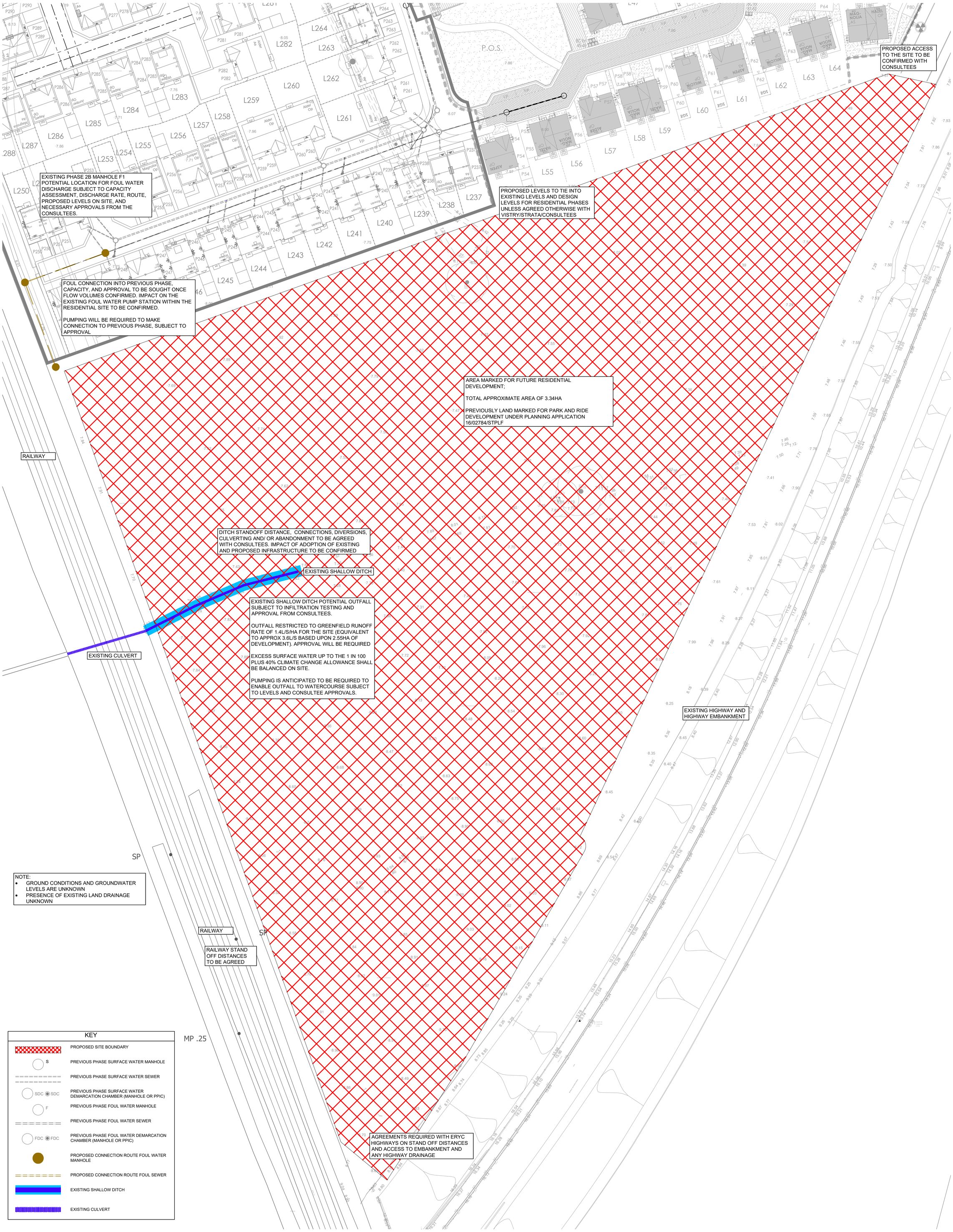
6.0 SUMMARY

6.1 This technical note outlines potential outfall locations for both surface water and foul water drainage, and proposes consultation, investigation and/or other work that may be required further to this technical note.

6.2 Salient notes from the above Technical Note are shown on the site plan in Appendix A.

APPENDIX A

Future Development Site Drainage Outfall Location and Summary



NOTES:

1. THESE NOTES ARE INTENDED TO AUGMENT DRAWINGS AND SPECIFICATIONS. WHERE CONFLICT OF REQUIREMENTS EXIST THE ORDER OF PRECEDENCE SHALL BE AS SHOWN IN THE SPECIFICATION. OTHERWISE THE STRICTEST PROVISION SHALL GOVERN.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ENGINEERS AND ARCHITECTS DRAWINGS.
3. DRAWINGS NOT TO BE SCALED. ALL DIMENSIONS TO BE CHECKED ON SITE BY THE CONTRACTOR. ANY DISCREPANCIES TO BE NOTIFIED TO THE ENGINEER AND FURTHER INSTRUCTIONS OBTAINED BEFORE WORK IS COMMENCED.
4. DRAWING REFERENCES TO BE USED IN CONJUNCTION WITH THIS DRAWING;
   - 4.1. DRAINAGE LAYOUT AND SCHEDULES 46774/BS2B-AWP-XX-DR-C-3500 AND 46774/BS2B-AWP-XX-DR-C-3501
   - 4.2. VISTRY PHASE 2B LAYOUT - BEVERLEY 2B TECHNICAL LAYOUT REV6
   - 4.3. TOPOGRAPHIC SURVEY 37393/3921B_10_2D AND 37393/3921B_10_3D

100mm at A1

Rev	Description	Date	By	Chk	App
P1	FIRST ISSUE	05.03.25	ERD	JP	JAG

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Project:	PROPOSED RESIDENTIAL DEVELOPMENT AT BEVERLEY SOUTH-EAST
Client:	LINDEN HOMES / VISTRY AND STRATA HOMES LTD
Drawing:	PROPOSED AREA FOR FUTURE DEVELOPMENT DRAINAGE SKETCH
Role:	CIVIL ENGINEER
Drawing Status:	FOR INFORMATION
Suitability Code:	S2
Job. no.	37393
Scale@ A1:	1:500
Rev.	P1

Project Originator Volume Level Type Role Number
BEVS - AWP - ZZ - XX - SK - C - 0012