

Appendix F

Pre-Planning Correspondence With ADC



Anthony McNevin

From:
Sent:
To:
Cc:
Subject:
Attachments:

Anthony,

Thank you for the meeting this morning.

As discussed the comments below are initial, and we will likely provide more extensive comments when we better understand infiltration potential.

1. Infiltration testing was completed in August and at considerable depths. Infiltration testing must be completed between October and March. It may be possible for the applicant to complete this before the end of March. However, any later than this and they will have to wait until next winter. The outline planning process could progress in the meantime as long as a suitable drainage strategy is included which clearly documents your intentions to follow the hierarchy for sustainable drainage. If this step was taken we would like as much flexibility regarding attenuation locations etc. to be retained should infiltration potential not be established before determination of outline planning.
 2. Infiltration testing should be completed above maximum recorded winter groundwater levels and at depths of proposed infiltrating structures. Therefore, I would like to see some shallow infiltration testing at circa 0.5mbgl or appropriate depths for permeable paving. And at potential depths for soakaways, circa 1m. I do not think that soakaways will be sited to depths of over 2m given the geological conditions.
 3. Infiltration testing and groundwater monitoring locations are not appropriate to date. Both must be completed at the proposed locations for surface water drainage, yet there is a significant lack of these investigations in the proposed locations of ponds.
 4. The locations of monitoring and testing are also very sparse, we would expect far more monitoring and testing to be completed for a site of this size. We would anticipate one shallow infiltration test and one deep infiltration test per small housing parcel. We would also expect a ground water monitoring location within each small parcel.
 5. I would expect infiltration to be utilised where infiltration rates are found to be greater than $\times 10^{-6} \text{ms}^{-1}$. If half drain times exceed 24 hours for the 1 in 10 year plus climate change event we would permit high level overflows to be utilised which permit the discharge of water to watercourse at QBar.
 6. Pumping stations will not be accepted. The fact that these are proposed to me is a demonstration that master planning has not considered surface water drainage properly and that solutions beyond a pipe network have not been considered properly and that attenuation features have been shoe horned into inappropriate areas.
 7. Discharge rates do not need to be 5l/s, the minimum discharge rate we allow is 2l/s. But again, you must demonstrate that infiltration doesn't work first.
 8. A more detailed catchment analysis must be completed if it is proved that discharge to watercourse is required. I.e. flow rates to each outlet must be an appropriate reflection of the natural catchments.
 9. Ground raising is mentioned, we will need full details of this and I will expect this will be conditioned.
- I have attached our checklist which goes into the level of detail we expect to see if pre commencement conditions are to be avoided.

Thanks,

Laura Gibbons, MEng, GMICE
Engineer (Drainage & Coastal)



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DX 57406 Littlehampton

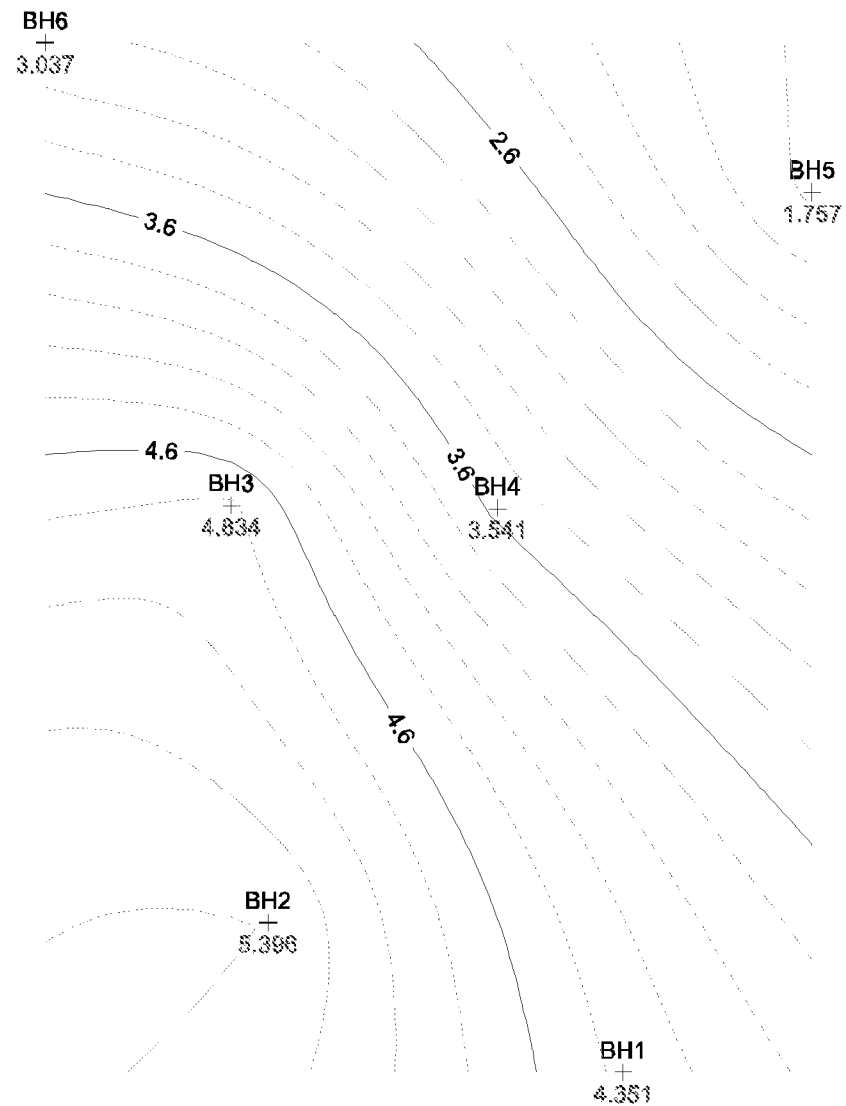
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Appendix G

Groundwater Contour Plan





Piezometric Contour Plot
19.12.2019

Client: Ford Airfield, Arundel

Figure No: 1

Site: Ford Airfield, Arundel

Job No: 29228

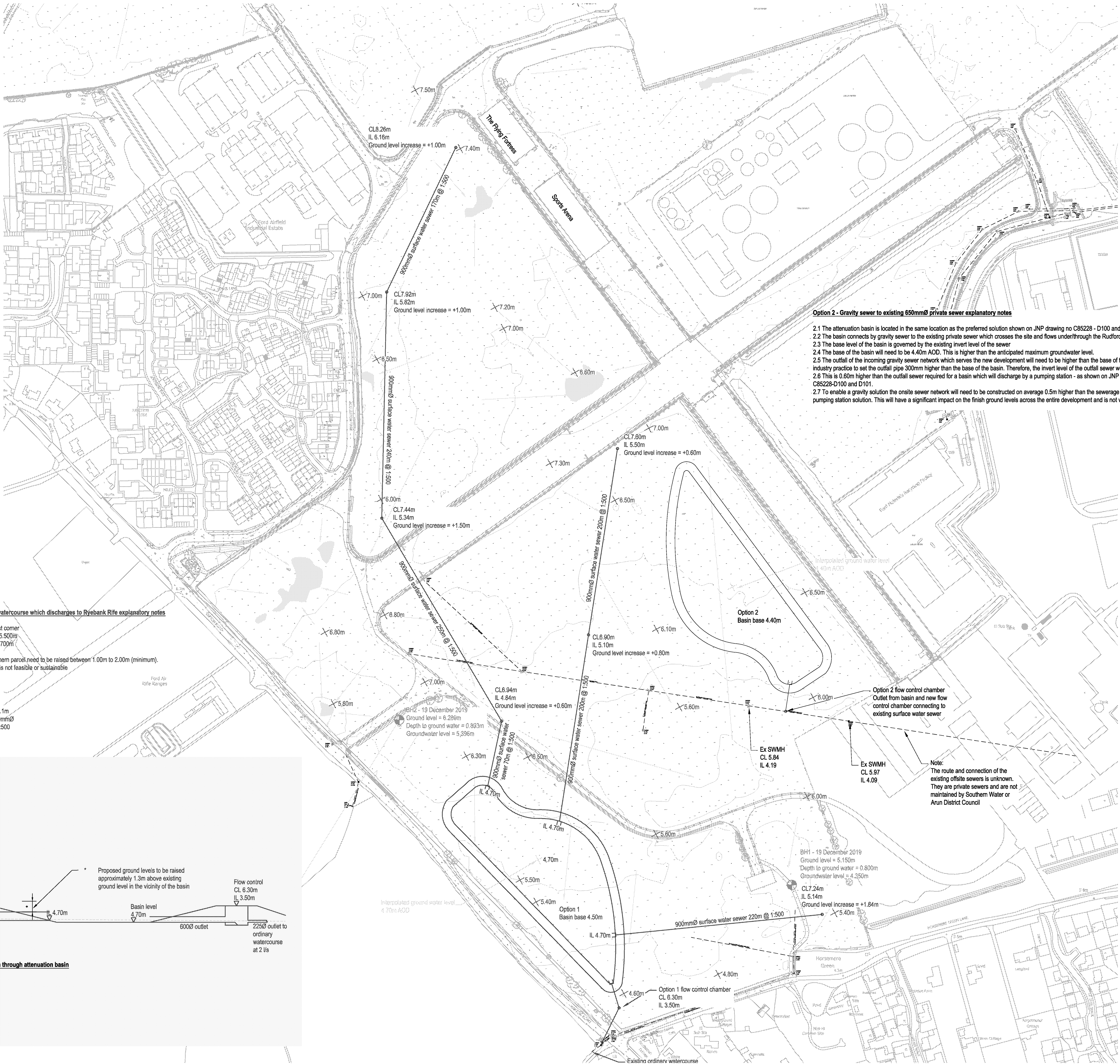
Scale: NTS

Source: RSK

Appendix H

Drainage Solution Optioneering



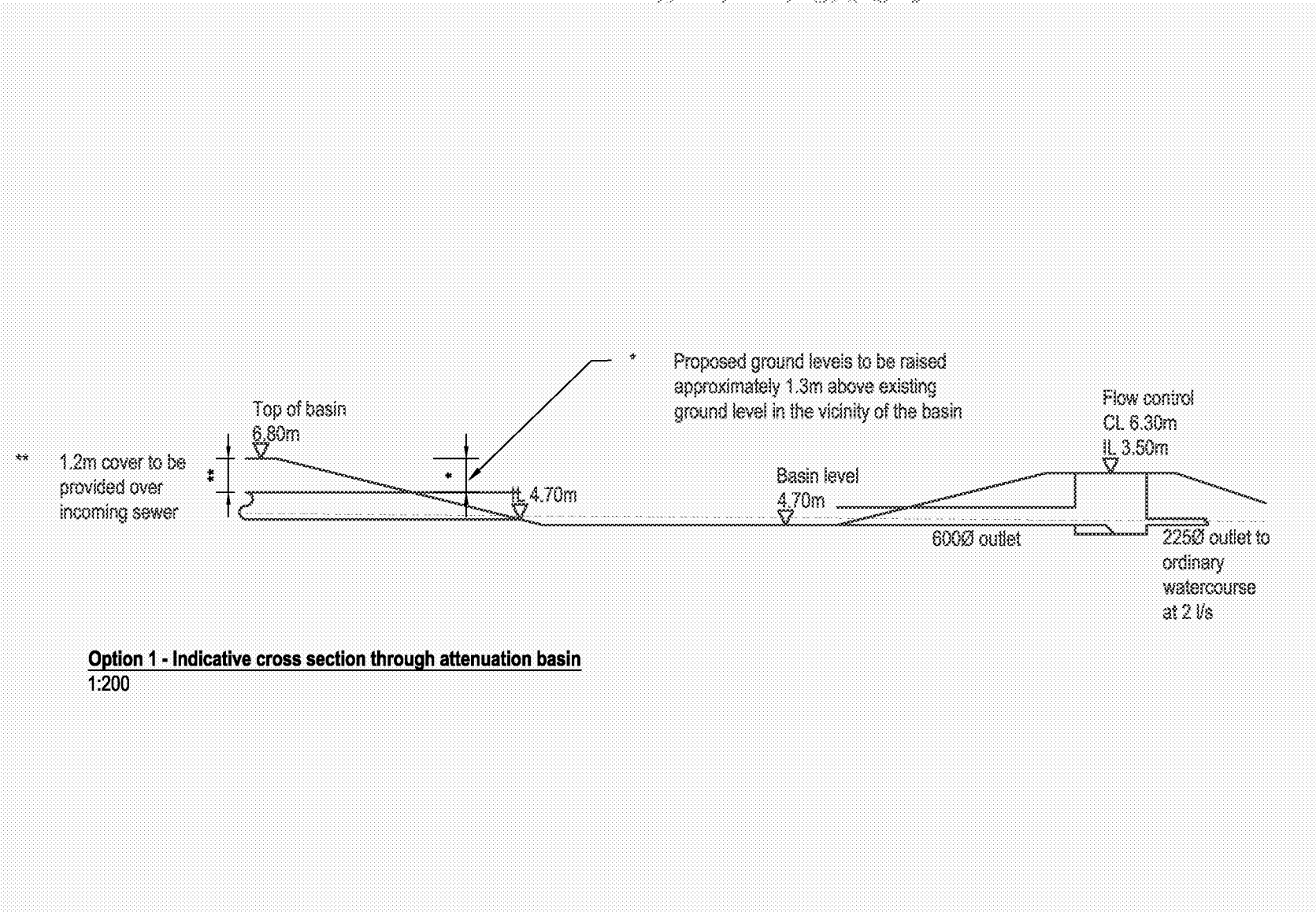


Option 1 - Gravity sewer to ordinary watercourse which discharges to Ryebank Rife explanatory notes

- 1.1 Locate attenuation basin in southwest corner
- 1.2 Approximate existing ground level = 5.500m
- 1.3 Interpolated design groundwater = 4.700m
- 1.4 Base of attenuation basin 4.700m
- 1.5 Ground levels across the entire southern parcel need to be raised between 1.00m to 2.00m (minimum). The earthworks required to achieve this is not feasible or sustainable

Option 1 - Assumptions

- Assumed depth of manholes are 2.1m
- Pipe diameters assumed to be 900mm
- Pipe gradients assumed to be 1:500
- 1.2m cover over sewers assumed



Option 2 - Gravity sewer to existing 650mm private sewer explanatory notes

- 2.1 The attenuation basin is located in the same location as the preferred solution shown on JNP drawing no C85228 - D100 and D101
- 2.2 The basin connects by gravity sewer to the existing private sewer which crosses the site and flows under/through the Rudford Industrial estate
- 2.3 The base level of the basin is governed by the existing invert level of the sewer
- 2.4 The base of the basin will need to be 4.40m AOD. This is higher than the anticipated maximum groundwater level.
- 2.5 The outfall of the incoming gravity sewer network which serves the new development will need to be higher than the base of the basin. It is standard industry practice to set the outfall pipe 300mm higher than the base of the basin. Therefore, the invert level of the outfall sewer would be 4.70m AOD.
- 2.6 This is 0.60m higher than the outfall sewer required for a basin which will discharge by a pumping station - as shown on JNP drawing No. C85228-D100 and D101.
- 2.7 To enable a gravity solution the onsite sewer network will need to be constructed on average 0.5m higher than the sewerage system required for the pumping station solution. This will have a significant impact on the finish ground levels across the entire development and is not viable.

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Legend

- Site Boundary
- Existing ground levels (m AOD)
- Indicative overland flow direction
- Indicative existing overland flow low lying areas onsite
- Indicative gravity sewer network for option 1 to illustrate required ground level increase in order to achieve gravity sewer network

Rev.	Date	Amendment	By	Chk.
D	13.02.20	Drawing updated with latest groundwater monitoring information	MF	AM
C	19.12.19	Site boundary revised	IS	AM
B	24.10.19	Site boundary updated	IS	AM
A	09.07.19	Site boundary updated	IS	AM
Status				
Indicative				



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Job	Ford Airfield
Title	Drainage Solution Options Southern Parcels
Scale	1:2000 @ A1 Date March 2019
Drawn by	IS
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BMTRADA UKAS HAS Constructionline Accredited Contractor Supplier No. 000004	
Drawing No.	C85228-SK120
Rev.	D