

Technical Note: Planning Review of Oldlands Farm, Bognor Regis



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Approved: ADC

Project: 3213 – Oldlands Farm, Bognor Regis

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1. Background Information

- 1.1. Herrington Consulting has been commissioned by Arun District Council (ADC) to undertake an initial review of the proposed drainage strategy and flood risk assessment for the proposed development at Oldlands Farm, Bognor Regis, PO22 9NN (planning reference: AL/87/21/PL).
- 1.2. In addition to the aforementioned full planning application this response has taken into consideration the work undertaken previously as part of an outline planning application for the site reference: AL/58/15/OUT.

2. Information Provided

- 2.1. The Applicant's documentation submitted with the planning application included a Surface and Foul Water Drainage Strategy (prepared by Eireng Consulting Engineers) and Flood Risk Assessment (prepared by Deltasimons), which together contain the following information;
 - Description of the drainage strategy (once in the FRA and separately in the drainage report).
 - Description of the proposed maintenance and management plan.
 - Drainage Layout Plan.
 - A list of the potential SuDS options and justification for SuDS which are not incorporated into the scheme.
 - Calculations of greenfield runoff rates using the IH124 methodology.
 - Hydraulic model results for each of the proposed drainage networks, using the FSR methodology.
 - Description of the risk of flooding from all sources.
 - Details of areas used in flood displacement calculations.
 - Topographic Survey (relative to metres Above Ordnance Datum Newlyn).

All of the above information has been reviewed as part of this technical appraisal.

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3. Summary of Detailed Comments

- 3.1. It is acknowledged that the Oldlands Farm Ditch (watercourse) crossing the site is intended to be culverted. However, details of the impact of these works does not appear to have been provided. It is therefore unclear what impact diverting this watercourse would have on both the site and to the wider area. Land Drainage Consent will be required separately from planning consent and whilst noted in the FRA, should be noted in the response to the Applicant.
- 3.2. The drainage strategy proposes to infill a number of existing ditches crossing the site (namely Drains A, B, C and D, as delineated on the image below), and the construction of a new watercourse running parallel to the existing railway line connected to the Oldland Farm Ditch.

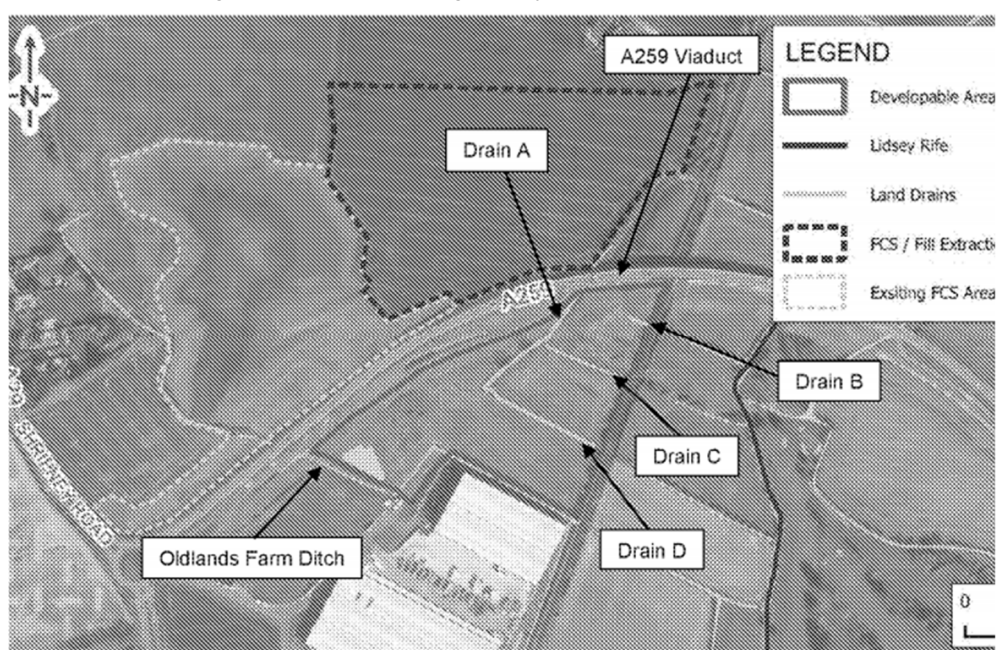


Figure 1: Extract from FRA showing watercourse onsite.

- 3.3. No evidence has been included within the drainage strategy or FRA to indicate that recent discussions have been had with Network Rail (i.e. correspondence post-2016) regarding the acceptance of the drainage proposals (regardless of whether these are acceptable from a technical/hydrological perspective). It is recommended that the Applicant provides confirmation from Network Rail (or any adjacent landowners) that the proposals to alter both the hydrology of the area and to construct SuDS/drainage infrastructure (including a new ditch), in close proximity to the railway line are still acceptable. The previous Network Rail response stated the following:

The developer/Applicant must ensure that their proposal, both during construction and after completion of works on site, does not:

- *encroach onto Network Rail land*
- *affect the safety, operation or integrity of the company's railway and its infrastructure*
- *undermine its support zone*
- *damage the company's infrastructure*
- *place additional load on cuttings*
- *adversely affect any railway land or structure*
- *over-sail or encroach upon the air-space of any Network Rail land*
- *cause to obstruct or interfere with any works or proposed works or Network Rail development both now and in the future*

*No Storm/surface water or effluent should be discharged from the site or operations on the site into Network Rail's property or into Network Rail's culverts or drains except by agreement with Network Rail. Suitable drainage or other works must be provided and maintained by the Developer to prevent surface water flows or run-off onto Network Rail's property. **Proper provision must be made to accept and continue drainage discharging from Network Rail's property;** full details to be submitted for approval to the Network Rail Asset Protection Engineer. Suitable foul drainage must be provided separate from Network Rail's existing drainage. Soakaways, as a means of storm/surface water disposal must not be constructed near/within 10- 20 metres of Network Rail's boundary or at any point which could adversely affect the stability of Network Rail's property. After the completion and occupation of the development, any new or exacerbated problems attributable to the new development shall be investigated and remedied at the Applicants' expense.¹*

Reason/importance: If Network Rail refuse consent for the construction of a new ditch or SuDS within close proximity of the railway line, or object to culverts/ditches beneath the railway line being infilled, it will result in the requirement for significant alterations to be made to the current drainage strategy. It is therefore recommended that the ADC consult with Network Rail to confirm their position based on the information available at this time. The drainage information provided does not appear to consider any drainage from the railway line.

¹ Network Rail response, AL/58/15/OUT, email dated 7th January 2016.

- 3.4. The Applicant has confirmed that an 'Ordinary Watercourse Land Drainage' consent form has been submitted to the ADC in March 2021. ADC has confirmed that a response was provided in May 2021 suggested a site visit to determine the way forward on some aspects. WSCC LLFA will also need to confirm acceptance that the existing ditches can be infilled. It is recommended that further consideration is given to any existing drainage infrastructure and the potential impacts that the proposed infill works could have (both on flood volume and habitat alike). One example of the exiting/relic drainage on site is a corrugated drainage pipe (see image below) crossing the site – it is unknown what exact function this drainage serves.



Figure 2: Photograph of site showing existing corrugated pipe – assumed land drain.

- 3.5. Whilst the FRA acknowledges evidence of 'Flood Tunnels' beneath the railway lines and A259, no further consideration has been given to the influence of these structures. The FRA states *"In the unlikely event, tidal locking at the Lidsey Rife outfall causes fluvial flows to back up along the land drains, flows entering the Site in the east will be limited to size of the pipes which convey the water underneath the railway lines. As such, tidal flood waters are largely expected to impact land to the east of the Site boundary and railway lines, as indicated on the EA Flood Maps."*² This does not account for any fluvial impact on the surrounding land, as required by the NPPF, instead the FRA simply states that there will be no impact without supporting evidence.
- 3.6. The FRA also states; *"Delta-Simons consulted the LLFA in October 2020, the Site was confirmed to have been flooded in 2019/2020 following heavy rainfall throughout the winter. The source of the flooding was indicated to be tidal locking associated with Lidsey Rife, the*

² Delta-Simons FRA, June 2021, p.18, para 4.1.13

LLFA stated the area in question is linked to the Lidsey Rife (see attached plan) which outfalls into the sea at Felpham. This outfall, twice a day, becomes tide locked resulting in the local rife network backing up and flooding the flood plain during very wet periods.....The LLFA have provided images of the flooding on-site, these are made available in Appendix F along with the consultation response. The images show the eastern extent of the Site and areas adjacent to the on-site land drains was impacted during this event. In the wider area, the land to the east of the railway lines is also shown to be impacted.”³

- 3.7. Flood Zones – the FRA confirms that the development is partially located within the Functional Floodplain (1 in 20 year return period). Reference to Table 3: Flood risk vulnerability and flood zone ‘compatibility’⁴ states that only ‘essential infrastructure’ and ‘water compatible’ development should be located within this flood zone. The development falls in neither of these categories.
- 3.8. Appendix F onwards of the Deltasimons FRA is not uploaded to the planning portal, as such, we have been unable to verify the values used to determine the extreme flood level. Regardless, the proposed land raising is likely to be sufficient to prevent flooding on the site, although the volumes associated with compensatory flood storage cannot be checked in the absence of this dataset.
- 3.9. With respect to the Flood Compensation Scheme (FCS), it is evident that the values are based on a level per level, volume by volume basis. Whilst it is recognised that it is the EA’s responsibility to comment on the suitability of this system, we would expect to see further details provided, i.e. in the form of a hydrodynamic flood model, used to assess the pre- and post-development flood mitigation measures. This is recommended given the uncertainty regarding the hydraulic connectivity between all parts of the site and the FCS, (which are partially separated by the existing and proposed roads – linked by culverts in places beneath the service road). Any future hydrodynamic flood modelling should include the appropriate allowance for climate change.
- 3.10. Additional details of the flood storage area would be required to confirm that flows (in and out of the storage area) are comparable to the existing predeveloped situation and to confirm that infilling the ditches and rerouting the watercourse will not have a negative impact offsite. This is particularly important due to the position of the storage area, at distance from the source of flooding. The ecological impact of infilling these ditches should also be considered and evidence should be provided by the Applicant to demonstrate that any impact is acceptable.

³ Delta-Simons FRA, June 2021, p.19, para 4.1.15 & 4.1.16

⁴ <https://www.gov.uk/guidance/flood-risk-and-coastal-change#Table-3-Flood-risk-vulnerability>

- 3.11. The Applicant appears to have applied an M5-60 value of 17.00mm, which is lower than would typically be expected for this area. We would recommend that the Applicant confirms where this value has been obtained from and whether this is indeed the correct value for the site. If the M5-60 values differs from the value presented in this version of the drainage report, we would expect the hydraulic models to be re-run using the revised value and the associated documentation and strategy to be updated accordingly.
- 3.12. Whilst the results of the hydraulic model have been provided, a summary of the results has not. A summary of the runoff rates extracted from the hydraulic model results is presented below for ease of reference in Table 1. The final column delineates the greenfield runoff rates calculated for the total impermeable area (i.e. Catchment 1, 2 and 3 combined).

RP	l/s Catchment 1 1.826 ha	l/s Catchment 2 1.145 ha	l/s Catchment 3 1.597ha	Total Combined (1, 2 & 3)	GRR for 4.568ha
1	7.8	7	5.5	20.3	11.5
2	-	-	-	-	-
Qbar	-	-	-	-	13.5
30	8.7	7.1	5.5	21.3	32.4
100	-	-	-	-	43.1
100+40%	15.3	7.1	5.8	28.2	-

Table 1: Summary of EirEng Consulting Engineers modelled discharge rates and greenfield runoff rates.

- 3.13. The sum total of the post development discharge rates exceeds Qbar for all return period events, this is not in accordance with the ADC's Guidance.
- 3.14. Runoff rates for the 1:30 year return period and above, do follow a profile that ensures peak discharge rates do not exceed the pre-development greenfield rates for each respective return periods. This is not the case for the 1:1. No further return periods have been tested (e.g. 1:2 or 1:10).
- 3.15. The Deltasimons FRA at 4.8.19⁵ states that the discharges rates will be restricted to Qbar, the drainage strategy provided by EirEng consulting engineers contradicts this statement (as

⁵ Delta-Simons FRA, June 2021, p.28, para 4.8.19

shown by the figures above in Table 1). ADC has confirmed that Qbar must be based upon the positively drained area only.

- 3.16. We would recommend volume runoff calculations are provided, in accordance with S5 and S6 of the NTSS (i.e. consideration of Long-Term Storage or discharge at Qbar for volume control purposes). Alternatively, mitigation should be provided to confirm that the volume of water discharged overtime will not be increased by the proposals. There is an expectation that greenfield volume calculations should be provided by the Applicant.
- 3.17. We would recommend that the Applicant includes a drainage catchment plan, to confirm the positively drained areas that were used within the drainage model.
- 3.18. Although the Applicant has stated that calculations for a blockage scenario of the drainage network due to tide locking have been undertaken⁶, these calculations do not appear to have been provided. Justification for the use of a 6-hour duration storm when running these calculations should also be provided, as should details of the design tidal flood level.

4. Summary

- 4.1. The principle of the development at this location has broadly been accepted by the LPA as part of the outline approval in 2016 (AL/58/15/OUT). Notwithstanding this, there remains some uncertainty regarding the technical information provided, which could have an impact on the deliverability of the scheme presented. As such, it is recommended that further details from the Applicant are requested by the ADC.
- 4.2. The site lies partially within the functional floodplain and as such, consideration should be given to the suitability of development at this location and whether it is in accordance with the NPPF. The Applicant should provide evidence to support the appropriateness of this development within Flood Zone 3b.
- 4.3. Further site investigations into the existing drainage network and the function of this system should be considered to provide more certainty that the proposals to infill and bury these ditches will not have a long-term detrimental impact. Any loss of these ditches should be compensated for, not just in terms of volume, but taking into consideration the impacts on habitat too.
- 4.4. It is strongly recommended that hydrodynamic numerical flood modelling is undertaken to compare the existing (baseline) situation with the post-developed (with mitigation) site. The results of this model will allow the ADC to clearly establish whether flow paths will be retained and will ensure no increased risk of flooding offsite which can be attributed to the proposed works. This modelling should take into consideration the proposed culverting, the service road

⁶ EirEng Consulting Engineers Drainage Strategy, May 2021, p.7, para 4.2

levels and the culverts beneath the service road. The principles of these changes are required to be agreed with the LPA *before* the planning layout is agreed.

- 4.5. It is recommended that Network Rail are reconsulted, given the original consultation in 2016 was based on development proposals that did not incorporate a drainage ditch running parallel to the railway embankment. If Network Rail adopt a more precautionary approach to development in the locality of their infrastructure, this could result in a significant redesign of the drainage system.
- 4.6. ADC should request that the Applicant confirms the correct M5-60 value has been applied to the drainage calculations/model, as adjustments to this value can alter the volume of storage required onsite.
- 4.7. Greenfield runoff rates currently exceed the existing runoff rates for the 1 in 1 year return period.
- 4.8. The proposals do not provide evidence to demonstrate that volume control has been considered, e.g. restricting to Qbar, or alternatively providing long-term storage on site. In addition, ADC has confirmed that Qbar must be based upon the positively drained area only.
- 4.9. No hydraulic locking (tidal locked scenario) model results have been provided. These results should be provided by the applicant for ADC's review.
- 4.10. The Applicant has stated that Land Drainage consent was submitted in March 2021 and a response from ADC is outstanding. However, ADC confirm that a response to the Applicant was issued in May 2021, suggesting a site visit to determine the way forward on some aspects. The Applicant is therefore encouraged to re-engage with the Drainage Officers at ADC regarding the proposals.
- 4.11. The FRA incorrectly states that the LLFA are responsibility for maintain the ditches, this is incorrect and should be amended within the FRA.
- 4.12. In conclusion, we would recommend that the LPA / LLFA request additional information to confirm that the drainage and flood risk mitigation measures will be viable at the detailed design stage. ADC would encourage further discussion and engagement with the Applicant's consultants to address the outstanding points listed within this document and any issues arising.