

Title of theme that you are commenting on

Crouchlands Farm Regeneration – Water Neutrality/Mains Sewage

Brief summary of areas of concern/challenge

Water Neutrality: I have read through the WA Consulting Engineers report on Water Neutrality in detail. This report is one of the many documents attached in support of Artemis' application. Considering the consequences highlighted in Natural England's Position statement (Appendix D of the report), namely; increasing water demand thought to be harming internationally protected species with a potential threat of extinction I find this report to be woefully inadequate, lacking in detail, inaccurate and misleading to the point of being irresponsible.

It is my conclusion that despite the report claiming that the new development would bring about a reduction in water demand would in fact greatly increase water demand and place an unacceptable and harmful impact on Arun Valley, SPA, SAC and Ramsar Site. I have listed out the full details of my findings below.

Foul Drainage: Seeing as foul drainage should be one of the prime considerations for such a large scale development I am surprised that there is no mention of any provision for foul drainage in the planning documents for the farm regeneration. I would have expected a communication on behalf of Artemis to Southern Water detailing plans of either connection to the mains sewer (routed to either the Kirdford or Loxwood Sewage treatment plants) or a stand-alone sewage treatment plant with discharge to an accepted water course along with permit from the environment agency.

As far as I can see, neither of these have been mentioned in the planning documents.

A big consideration of the farm's water demand is that it is clear that the increased water demand brought about by the farm development will be far greater than the existing demand. Not only will this severely impact water neutrality but it will also compromise the farm's ability to operate as a functioning farm. It is highly likely that the farm will become a side show to the equestrian centre, rural enterprise centre, glamping and farm hub facilities.

I strongly recommend that an independent water report covering both sewage and water is undertaken on an urgent basis as there is no mention of foul drainage in the planning documents and also the report produced by WA is extremely poor.

It is extremely difficult to believe that a development of this scale which includes; an indoor arena with 320 capacity, hydrotherapy pool, water treadmill, cold spa, cookery school, rural enterprise centre, luxury glamping facility, 4 stables, restaurant and wedding venue amongst others will somehow bring about a water reduction. It is my view that this report by WA is irresponsible and if taken at face value could lead to irreversible consequences for the Arun Site.

Detailed comments/areas of challenge/further questions to raise with CDC planning officer – to include document and page references if appropriate. Please draw out specific questions/queries to be drawn to the planning officer's attention.

Water Neutrality

Issue 1 – Water consumption does not account for projected 2022 livestock numbers

WA Report, P11. The report states that since the number of Livestock at Crouchlands Farm is ever changing for each category the maximum value of that reflects the farm capacity and has been considered in the existing demands. On P14, 6.3 It says that the existing demand is based on projected figures for 2022. It goes on to say (P14, 6.7) that it has been advised that the farm could accommodate:

- 180 Cattle
- 112 Pigs
- 1482 Sheep

On P14, 6.8 it says that if the above livestock figures are used the existing water usage would be 8219m³/annum vs a current demand of 5196.9m³/annum (4649.4m³ for livestock and 547.5m³ for the existing farm).

This higher figure has not been used for the Proposed demand so this in itself accounts for a shortfall in water demand of more than 3,570m³/annum. This should be corrected in the report.

Issue 2 – Utilisation of rainwater harvesting to offset livestock demand

The report incorrectly uses the previous livestock numbers for determining the area required for rainwater harvesting instead of the project livestock numbers for 2022 (See Issue 1). The report claims that to offset the livestock demand based on an annual rainfall figure of 808mm that a total surface area of 5,754m² would be required. This is claimed by the use of attenuation ponds which will also bring ecological benefits.

Whilst I have verified that the claimed rainfall figure of 808mm is correct there is a grave omission here in that there is no allowance for losses due to evaporation or seepage.

I checked and the evapotranspiration rates are available from the met office. These can be acquired by Artemis. In the meantime based on my own research I found the rates for Crondall which are available at www.cronallweather.co.uk. For 2020/2021 the evaporation figure is very close to Plaistows annual rainfall with a much higher predicted evaporation figure for 2022 and a greatly reduced annual rainfall.

In addition to evapotranspiration Artemis also need to account for seepage unless they can demonstrate any mitigation.

It should be noted that the report mildly says that this rainwater harvesting is straightforward but there are no details of any such ponds on the plan.

Any such plan needs to plot the expected level in these ponds against the expected rainfall, evaporation, seepage and livestock consumption month by month to ensure that water levels can be maintained throughout the entire year. However, in my opinion without topping up with mains water these ponds will run dry in the summer when the livestock demand is highest.

Therefore, it is my opinion that attenuation ponds cannot be used as a reliable source of livestock drinking water.

The Water Report by WA proposes ponds and lakes located around the site to suit the site topography and that this method is relatively simple to implement to achieve water neutrality on the site (section 7.15, Page 17).

What WA seem to be proposing is livestock watering holes.

I have checked DEFRA which gives guidance on Ponds, Pools and Lochans;
https://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwjOpZjtz_r5AhUUWsAKHdiHCn8QFnoECAsQAQ&url=http%3A%2F%2Fadlib.eversite.co.uk%2Fadlib%2Fdefra%2Fcontent.aspx%3Fid%3D000IL3890W.17UT2GXBNFI3AJ&usg=AOvVaw1SVDLa4OYFN3CsT5ICkND_

According to this report, section 4.5, pollution constrains the range of plant and animal species that can use a pond, and is the source of the most intractable pond management problems.

One of the causes of pollution is listed as runoff from intensively farmed land

Run-off from intensively farmed land is likely to contain a variety of pollutants, particularly nutrients, various biocides (used in pest control and as veterinary medicines for grazing animals), sediments and organic matter. It goes on to say that ponds near to farm buildings may also be contaminated by slurry from livestock.

If these ponds are to be used for livestock drinking water these ponds will quickly become contaminated with slurry. In other words it will surely be impossible to provide access to livestock for drinking water whilst avoiding the infiltration of slurry.

In addition to the above I have read through the Joint Incident Response Plan for Crouchlands Lagoon 3, dated October 2019 produced in association with the Environment Agency, Chichester District Council, West Sussex Country Council, West Sussex Fire & Rescue Service and Public Health England. This report is available online at the following address:

https://www.whatdotheyknow.com/request/613600/response/1466616/attach/10/3.Multi%20agency%20Incident%20Response%20Plan%20Crouchland%20AD%20Plant%20Lagoon%203.pdf?cookie_passthrough=1

The purpose of the plan is to ensure that local responders have a baseline framework and background information to make a swift and effective response to a potential or actual release from Lagoon 3 at Crouchlands Farm.

This plan would need to be updated if any development of Crouchlands Farm is to be undertaken.

I do have some concerns which relate to this plan and the impact this could have on any open ponds. According to the plan Lagoon 3 contains approximately 53,000m³ of unknown digestate. Also that the lagoon is covered by a triple plastic liner, which could have a lifespan of ten years (installed 2013/2014).

The plan goes on to say that there have been 3 significant incidents that the Environment Agency responded to since 2013.

2013 – A discharge from a winter slurry deployment which polluted the River Kird

2015 – Discharge of Lagoon Effluent entering surface drainage onsite and into a nearby water course associated with a mechanical failure of equipment

2016 – Digestate Spill into a watercourse

Even if these ponds could provide a source of drinking water for the farm livestock (which I believe they could not) there is a serious concern that any future releases from Lagoon 3 could end up with polluting any drinking ponds with unknown digestate which could enter the food chain.

Issue 3 – Vast underestimation of the Farm development demand

Exhibit C of the water report gives the proposed demand of the equestrian centre. This based on an average number of visitors /occupants of 10 per day and 20 occupants (Total = 30) and 40 Litres/person/day = 438m³/annum.

In my opinion the above figure is a gross underestimation since it fails to account for the following details:

- The indoor arena has a capacity of 320. In order for the equestrian centre to have a successful business case the indoor arena would need to hold regular events. Therefore in this regard alone the water consumption would be far higher. The water consumption should be recalculated to include events
- In the transport assessment, item 6.42 advises a total of 105 secure cycle shelters. Also in section 3.1 of the WA report there is reference to accommodation for the rural enterprise centre (230m² for students or staff) and equestrian centre (live-work accommodation). This would be consistent with the documented opening hours that the equestrian centre is open 24/7. However, there is no related water consumption for these cyclists or people staying at the mentioned buildings. The report needs to be updated to show revised numbers
- The equestrian centre seems to discount entirely any provision for horses. The equestrian centre is equipped with a cold spa, water treadmill and hydrotherapy pool. These facilities would consume a huge amount of water so I am surprised that these users have been excluded from the water report along with wash down water for mucking out horses. Any water neutrality report needs to work in these numbers
- The equestrian centre would provide 40 livery boxes. However, it is surprising to see that no consumption has been taken into account for horses. According to <https://extension.psu.edu/how-much-drinking-water-does-your-horse-need> the average

horse will drink 5 to 10 gallons of fresh water per day. This needs to be factored into any water neutrality calculation

- The breakdown for water consumption for Glamping/Hardnips Barn is unclear and more detail needs to be provided. According to Table 8-8 of the transport assessment Hardnips Barn will be capable of hosting weddings. In 8.5.7 it says that Hardnips Barn and the glamping site would be hired out so that guests can stay overnight to reduce transport visits. However, it would appear that their water consumption has not been taken into account and needs to be accounted for.
- The farm plans for an addition 25,000 trees. This in itself will require a significant water demand which has not been accounted for in the WA report.
- I find it very difficult to believe that the report claims an overall reduction in water demand for the new facility when the following water consuming facilities will be added which goes some way to showing the vast scale of the new development:
 - Indoor arena (Ground Floor): 12 toilets, 12 wash hand basins, 9 showers)
 - Indoor arena (1st Floor): 7 toilets, 9 wash hand basins, 3 Urinals)
 - Stables (x4) (Ground Floor): 4 Washing machine, 4 kitchen sink, 4 wash hand basin, 4 Toilet
 - Stables (x4) (First Floor): 4 bath, 4 shower, 4 toilet, 4 wash hand basin
 - Food & Retail: 13 Toilets, 14 sinks, 2 Urinals
 - Building B: 9 Toilets, 11 sinks, 2 showers
 - Building D: 8 Toilets, 13 sinks, 2 showers
 - Building E: 4 Toilets, 8 sinks, 2 showers
 - Building F: 5 Toilets, 10 sinks, 2 showers
 - C Live Work Units: 4 Toilets , 8 sinks, 4 showers
 - Cookery School: 3 Toilets, 12 sinks
 - Lodges (x4): 4 Toilets, 4 basins, 4 showers
 - Underground Pods (x3): 5 Toilets, 3 showers, 2 baths
 - Wigwam (x2): 2 Toilets, 2 wash hand basins, 2 showers
 - Treehouses (x5): 9 Toilets, 9 wash hand basins, 9 showers

The water consumption for the glamping facility has been estimated at 100Litres/p/d. However, I believe this is an underestimation and the figure should be more inline with a holiday camp chalet which is 227 Litres/p/d according to the British Water table on page 12

Issue 4 – Incorrect credit for BREEAM standards

- The proposed water consumption figures making mention of BREEAM and a credit of 3 which equates to an estimated water saving of 40% and that this should be relatively easy to achieve. However, I have looked at the BREEAM recommendations and they seem to refer to toilets, wash basins, showers, baths, the use of water butts, smart meters, education on water usage and water saving appliances. In other words they are not relevant to an equestrian centre including equine rehabilitation pools. Therefore the report should either omit BREEAM as a credit or validate this against each consumer in the equestrian centre include the above omissions.

Issue 5 – Estimated increase in water demand due to farm regeneration

Based on my observations* mentioned above, if the Crouchlands Farm regeneration were to go ahead I estimate the water demand to be:

- As per P14 6.8 water usage would be 8219m³/yr
- Whole Farm Plan = 7898.3m³/yr
- Missing consumption due to indoor arena events + showering for cyclists + resident staff + Corrected increase for Glamping = TBD
- Total consumption = 16,117m³/annum + TBD

***No credit for BREEAM standards as these apply to domestic users and not to the usage given in the WA report. No allowance for rainwater harvesting since the ponds are not shown on the plan, the recorded evapotranspiration figures for 2021 in the link provided above negate the rainfall figures given, including no evidence provided showing that the ponds will provide year round water availability for livestock**

Foul Discharge

Issue 6 – Lack of provision for foul drainage

In the planning documents submitted on behalf of Artemis to date there is no undertaking on behalf of Artemis to approach Southern Water regarding connection to the existing sewage main or to engage with the Environment Agency if Artemis propose to install their own sewage treatment plant. For the latter this would require an odour assessment as picked up by the environment agency on the EIA scoping application and also a permit to discharge any treated water to an identified water course. Any such sewage treatment plant would need to provide provision for the maximum foul drainage based on all facilities.

I am surprised that for a development of this size that these major details are missing from the submitted application and that it has taken the environment agency and southern water to come forward with these comments.

It should also be noted that as per Southern Waters letter, dated 22nd August which is submitted as part of the application responses that their initial study indicates that these additional flows from the new development may lead to an increased risk of foul flooding from the sewer network.

I have checked the catchment areas for both the Loxwood and Plaistow sewage treatment plants which are available at:

<http://www.chichester.gov.uk/CHttpHandler.ashx?id=27842>

Loxwood catchment area



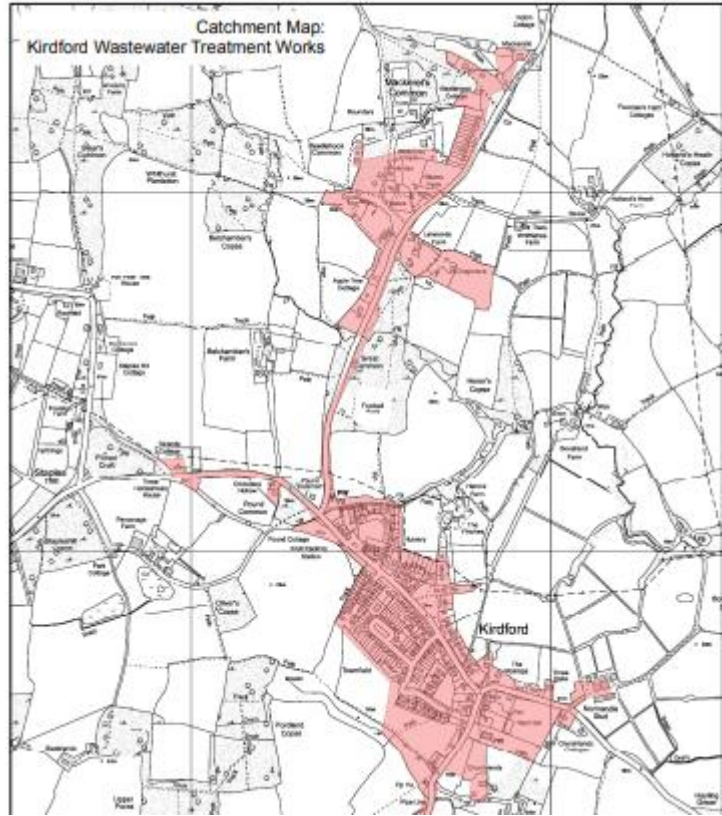
Gravity section

Pumped section

The foul drainage from Plaistow appears to consist of a gravity section in the main village and a pumped section which extends to a distance of approximately ½ mile from the centre of Plaistow at a lower elevation. There is a pumping station located on Rickmans Lane .

Crouchlands farm is located well beyond the pumped section so any connection to the Loxwood mains sewage would involve considerable investment which would need to include a new pumping station and main.

Kirdford catchment area



The Kirdford wastewater catchment area extends north to Mackerels Common on Plaistow Road. Crouchlands farm is located approximately 1.5 miles from this extent so again would need a considerable investment in infrastructure to connect to this main.

I have received further correspondence from Rachel Powys-Keck from Southern Water (Future Growth Planner) on 13th September 2022 which states the following:

“Good Morning Jeremy,

Following on from the email I sent out to you (attached) I have further information I can provide you with.

The assessment of this site in relation to available capacity at Loxwood WTW flagged that although DWF capacity was exceeded in 2021, this site could connect, if it is ready to, during AMP7 (2020-2025). I’ve been informed that Loxwood WTW is not expected to exceed its DWF permit in 2022 based on flow measured so far, but obviously this is not 100% certain until the year end. In addition, Loxwood WTW is included in PR24 for a growth scheme for AMP8 (2025-2030), including application for a new DWF permit.

In AMP7 (the current investment period 2020-2025), there is a capital scheme Loxwood WTW that will increase the FFT (Full Flow to Treatment). This will significantly reduce storm overflows.

In summary, we are able to accept the connection of foul flows from this development at Loxwood WTW.

The remaining issue relates to network (pipes) rather than treatment and for the developer/a NAV or other appointee to construct a satisfactory sewer to join new development to the Loxwood network which is located some distance away.

You’re aware from our response to the planning application consultation that network reinforcements are needed to accommodate flows from this site at the nearest manhole in the Loxwood catchment, and we have requested conditions that will allow the necessary time for us to deliver the reinforcements. We will commence work on this once planning consent has been granted.

I hope that helps”.

Kind Regards

Rachael Powys-Keck
Future Growth Planner, Sussex

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[southernwater.co.uk](https://www.southernwater.co.uk)



As per the above it states, “In addition, Loxwood WTW is included in PR24 for a growth scheme for AMP8 (2025-2030), including application for a new DWF permit”.

Artemis would need to submit the foul drainage flows and verify with Southern Water that along with any other developments that the increased capacity can be accommodated in the application for this new permit. To date as far as I am aware no capacities have been submitted.

I may continue to provide further details but this is where I am to date.

Kind Regards,

Jeremy Ponting – FIChemE, MSc, BEng Hons