

Objection to Development at Land to the South of Cousley Wood Road,  
Sparrows Green, Wadhurst, TN5 6DY  
Planning Application WD/2021/1285/MAO

# An Independent Assessment of the Proposed Sewage and Surface Water Drainage Designs and Solutions Proposed

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Charles Hedges B.Sc, C.Geol., FGS  
Chartered Geologist Specialising in Hydrogeology



1. In summary the Objections are based upon the following:

- a. The sewage from the proposed site will be pumped to a works whose effluent enters Bartley Mill Stream which has failed chemical analysis tests. Sewage from the extra houses will only make the situation worse.
- b. No planning approval should be given where sewage has to be pumped uphill and where failure of the system risks causing flooding of homes.
- c. Sewage from flooding would flow into the Attenuation Pond and via a pipe would then enter the stream and flow down to Bewl Water causing contamination. This would leave the house owners open to prosecution by the Environment Agency.
- d. The development is inherently unsustainable as the energy consumption is unquantifiable.
- e. Water from the SUDS scheme will flow into a stream which is practically dry in summer and will thereby change the hydrological regime.
- f. No assessment has been made of the likely slope stability post construction.

2. No further development should occur where sewage feeds into the works close to White Gates Farm where the effluent flows into Bartley Mill Stream which is tributary of the River Teise because in 2019 the Environment Agency assessed the river and it failed due to the Chemical Analysis.

3. Cycle 2 classifications

Classification Item	2013	2014	2015	2016	2019
<b>Overall Water Body</b>	Moderate	Moderate	Moderate	Moderate	Moderate
Ecological	Moderate	Moderate	Moderate	Moderate	Moderate
Chemical	Good	Good	Good	Good	Fail

Environment Agency - CDE - Bartley Mill Stream (data.gov.uk)

a. Priority hazardous substances, namely Polybrominate diphenyl ethers (PBDE) and Mercury.

Classification Item	2013	2014	2015	2016	2019
Hazardous Substances	Good	Good	Good	Good	Fail
Polybrominated diphenyl ethers (PBDE)	-	-	-	-	Fail
Mercury and Its Compounds	-	-	-	-	Fail

4. The Poor Grading was given for the Chemical Assessment due to excessive Phosphate.

5. Reasons for not achieving good status and reasons for deterioration are given by the EA:

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Reason Type	SWMI	Activity	Category	More	Classification Element
RNAG	Diffuse source	Poor soil management	Agriculture and rural land management	Details	Phosphate
RNAG	Diffuse source	Poor nutrient management	Agriculture and rural land management	Details	Phosphate
RNAG	Point source	Private Sewage Treatment	Urban and transport	Details	Phosphate
RNAG	Point source	Sewage discharge (continuous)	Water Industry	Details	Phosphate

The details are listed below:

Id	Swmi	Swmi Certainty	Activity	Activity Certainty	Category	Category Certainty	Business Sector	Classification Element
518393	Diffuse source	Probable	Poor soil management	Probable	Agriculture and rural land management	Probable	Agriculture - Arable	Phosphate
518398	Point source	Confirmed	Sewage discharge (continuous)	Confirmed	Water Industry	Confirmed	Waste water treatment	Phosphate
518400	Point source	Probable	Private Sewage Treatment	Probable	Urban and transport	Probable	Urban	Phosphate
528957	Diffuse source	Probable	Poor nutrient management	Probable	Agriculture and rural land management	Probable	Agriculture - Arable	Phosphate

6. The only confirmed source of Phosphate pollution is continuous sewage discharge from the Water Industry.

7. The excessively high Phosphate, Mercury and PBDE suggests:

- a. The sewage works is not working properly.
- b. The flow is too low in the streams to dilute the effluent from the sewage works, especially in summer.

8. Southern Water have been fined £123m by Ofwat and £90m by Canterbury Crown Court for malpractice:

[Southern Water employees 'hid evidence of sewage pollution in cupboards'](https://www.telegraph.co.uk/news/uknews/2017/05/12/southern-water-employees-hid-evidence-of-sewage-pollution-in-cupboards/) (telegraph.co.uk):

*"Southern Water employees 'hid evidence of sewage pollution in cupboards'. Workers locked documents away and tried to stop the regulator's officers inspecting sites in an 'unprecedented' effort to hinder investigation. Evidence of sewage polluting the Kent coastline was locked in cupboards to stop an investigation, a court has heard. Employees at Southern Water took documents from Environment Agency investigators and tried to bar*

*them from entering waste treatment works in an attempt to block the investigation into pollution of protected beauty spots on England's south coast. The water company has pleaded guilty to 51 counts of dumping waste, including raw sewage, into the sea between 2010 and 2015. The sewage dumping took place in areas including Whitstable, Herne Bay and the Solent, much of which has protected environmental status. On Wednesday, a judge at Canterbury Crown Court heard that employees of the firm tried to stop officers from the water regulator inspecting sites in Chichester, Queenborough and Portswood in July 2016. Andrew Marshall, acting for the Environment Agency, told the court that on one occasion records were taken from regulator staff and locked in a van, and on another documents were locked in a cupboard. "Across various sites, co-ordinated by senior officers including a senior lawyer, the defendant company placed itself in opposition to the agency," Mr Marshall said. The investigation was frustrated "in an unprecedented way for what might be considered an ordinary lawful company, rather than someone operating on the margins", he added. Five employees were convicted of obstruction of justice as a result of their actions, though two later had their convictions quashed. Later, the court heard that the discharges were likely to have been the reason for contaminated shellfish being discovered in the area, which risked causing norovirus in people who ate them – something that, in rare severe cases, can be fatal. The hearing continues, with sentencing expected to take place later this week. Earlier in the week, the court heard that the investigation was the "worst case brought by the Environment Agency in its history" and caused by "a deliberate lack of control and investment". The investigation, known as "Operation Garden", was launched following high levels of faecal bacterial contamination found in the coastal waters. Tanks were kept full and allowed to turn septic rather than being treated as required by law, with undiluted sewage released directly over shellfish beds, the court was told. On Wednesday Mr Marshall said customers of Southern Water had paid escalating bills on the understanding that their money would be used in part to improve and maintain the company's equipment. This meant people had been "paying for sewerage services that were in part not provided," he said. The company has made profits of more than £200 million in each of the past three years, the court heard."*

9. What evidence do we have that Southern Water has changed for the better?
10. The sewage system relays sewage to a tank half-way down the field from where a pump will then pump it back uphill to the Cousley Wood Road, a height of approximately 6 metres, via two 90 degree bends. There is no mains sewer in Cousley Wood Road so the sewage will need to be pumped across to South View Road.
11. This design creates a large energy demand for the life of the buildings. One of the oldest homes in Wadhurst is Little Pell Farm which dates from 1340. If we are to use this parameter for the proposed development then the sewage pump would have to last 500 years, unless the homes are designed to fall apart after a few decades.
12. A rough assessment of the sewage produced based upon 150L per person per day is 10,000L but this does not include emptying a Jacuzzi which can contain 1000L.
13. Pumping 10,000L up 6 metres every day uses  $10,000\text{Kg} \times 9.82 \text{ m/s}^2 \times 6\text{m} = 589,200\text{J} / \text{day}$ . However, this assumes no friction or energy loss in the system. It is likely that the system would only be 50% efficient =  $1,178,400\text{J} / \text{day}$ . Over 500 years this would multiplied by  $365 \times 500 = 2.15.79 \times 10^{11}\text{J}$ .

14. The sewage system proposed is a "Fail danger" design. Any failure in power, pump or system and the sewage could back up towards the homes or breach the confines of the storage tank and spill over into the field, into the Attenuation Pond and down towards the stream and Bewl Water.
15. When sewage moves under gravity, solid objects are designed to float away from homes. When pumping against gravity, if the pump stops, the solids settle out and the presence of fat can cement them in position leading to "Fatbergs". The 90 degree bends will be areas where solids are most likely to accumulate when the pump stops.
16. A major problem with modern sewage are the articles and materials which cause clogging and "Fatbergs":
  - a. Wet wipes;
  - b. Sanitary products;
  - c. Condoms;
  - d. Toys flushed down lavatories by children; and
  - e. Fat.
17. The report by Ashdown Site Investigation states the ground comprised Silty Clay and when a trial pit was excavated, the groundwater nearly reached the surface. This means any fracture in the sewer will result in ground water entering it so the volume of sewage that will need to be pumped up to the main sewer will greatly increase. Will the pump be powerful enough to cope with that extra flow?
18. There is no mains sewer in the Cousley Wood Road and so all sewage from the proposed site will need to be pumped to the sewer in South View Road. In the event of pump failure there could also be sewage ponding beneath Cousley Wood Road/B2100. During the normal operation, as soon as the pump stops, so does the flow of water leaving solids to accumulate and settle in the sewer.
19. Ground movement (see section 24 a to h) is likely and will cause unevenness in the sewer pipe which will increase the likelihood of blockage from solids. In addition, if the sewer is cracked as a result of ground movement then the inward flow of groundwater into the damaged pipe will cause erosion of silt and fine sand in the Tunbridge Wells Sand so leading to ground subsidence. Silt can be transported by very slow moving water.
20. The ground is on slope and likely to move creating undulations in the sewer pipe which will only increase friction and hence energy consumption. What will be the condition of the sewer pipe 100 years from now and hence the energy consumption?

Roman aqueducts still provide water after 2,000 years because they flow downhill. How is the proposed system compatible with reducing Carbon Dioxide emissions? The leader of Wealden District Council has declared there is a Climate Emergency so why is the Council even considering allowing a development to go ahead that depends on an electric pump to carry its waste away, a pump whose energy consumption is un-quantifiable and will inevitably negate any benefits in carbon reduction that better thermal insulation of the buildings will provide?

21. How long will it take to fix the sewage pump when it fails and who will do it? If the pump fails at Christmas it could take days for it to be repaired. A groundwater level close to the surface, such

as is the case at this site, will mean that as soon as any excavation is undertaken the foul water pumping station will flood with sewage. It is unknown how long the pump will not be working for and so it is impossible to calculate the volume needed to store the sewage, especially if the sewers are cracked and groundwater is entering. The sewage will flow into the Storage Pond where it will flow into the stream and enter Bewl Water.

22. The Flood Risk assessment report by Monson contains factual mistakes.

- a. Table 1 The site is underlain with a base of Tunbridge Wells Sand h<sup>1d</sup> (1;50,000 Scale Geology Map no 303, Royal Tunbridge Wells which shows that it is part of the Wealden group but not underlain by the Weald Clay) which comprises fine to medium grained sand with layers of clay, silt, iron and limestone. The Ashdown Report describes the ground in the trial pits as yellow brown, slightly gravelly siltstone and ironstone clay. The Tunbridge Wells sand contains clay layers at its base.
- b. Consequently, infiltration into the ground is heavily influenced by proximity of clay layers to the ground surface. Where they are few millimetres, the Tunbridge Wells Sand h<sup>1d</sup> can behave as clay.
- c. The Reports on Flood assessment are incorrect, they underestimate run off because they do not use the Ashdown report which shows the ground comprises clay with groundwater at or close to the surface.
- d. The Ashdown Report paragraph 4.3 states the following on Groundwater Conditions:  
*“Whilst the results of the groundwater monitoring are still ongoing, it is noted that the datalogger installed in the trial pit to record soakage test data appeared to record groundwater rising to close to ground level after the second test. Groundwater was present at surface level at the time of the third visit to site to refill the test pit. It is noted that groundwater levels should be expected to fluctuate seasonally.”*
- e. The Ashdown Report therefore contradicts the Monson Report by showing there is a risk of groundwater flooding. It should be noted that water ponds on the site.
- f. It has been noted that after heavy rain, people standing on the site have had water run over their boots. This shows the high run off due to the impermeability of the ground and the steepness of slope.
- g. The Geological strata dips towards the South-East in line with the surface slope of the site. Any slope is at its most unstable when the water table is close or at the surface. The Tunbridge Wells Sand includes Gravel which indicates it may have been fractured by faulting.
- h. The Withyam Fault is approximately 210 metres south of the site and it is quite possible more detailed investigations would show faults closer to the site and running parallel to it. 1 to 50,000 scale geology is quite broad scale and will not show all geological features, especially faults. The site is underlain by the Wealden Anti Cline (in geological terms this is where folding has arched the strata upwards).
- i. There is no statement as to excavation into slopes and calculation of slope stability.

- j. Paras a to i mean that any cutting into the slope could cause it to become unstable. Wealden District Council and Monson do not appear to have Chartered Engineers and Geologists who can calculate slope stability. We note that there have been issues with slope stability at the College site in Mayfield Lane after the development was completed. This should not happen if chartered engineers and geologists are competent in what they do.
  - k. Slope stability is a separate issue to designing foundations. The foundations can be adequately designed but if the slope starts to move there is a much larger problem.
23. Any slope movement is likely to rupture services such as sewers, water pipes, gas pipes and electricity cables. Ruptured water and sewer pipes would introduce more water into the ground and increase sliding.
  24. There are 1:50,000 and 1:10,000 Scale Geology Maps which have been ignored by the Developers, resulting in factual mistakes.
  25. There is also the issue as to whether Wealden District Council has adequate Building Control specialists to ensure construction follows the designs. Who will be on site to make sure construction is adequate?
  26. The Report shows the site is underlain by Clay, the groundwater nearly reaches the surface and it is steeply dipping. The calculation for run-off from the site has therefore been underestimated because a factor of 0.47 was used. The report by Ashdown would suggest the run-off factor should be 0.8 or higher where groundwater is close to the surface. It should be noted that the site floods.
  27. The SUDs System allows for water to flow into the stream at 1.6l/s but the stream is practically dry in summer. Consequently, the discharge will change the hydrological characteristics of the stream.
  28. Run off from roofs and roads carries bird faeces, road kill and sediment which means high concentrations of pathogenic bacteria (E.Coli and Enterococci ), ammonia, nitrate, phosphate, dissolved organic carbon, bacteria, copper, zinc and petroleum hydrocarbons. Consequently, the stream could become polluted. Where water naturally flows through grass and topsoil many of the pollutants are filtered out. The water from the SUDs will be more polluted than water running off grass.
  29. The aim of the SUDs system is to replicate discharge from the greenfield site once development has occurred. At present run off rain has to flow over grass which acts as a filter removing pollutants and enters the stream over a stretch of tens of metres. The SUDs collects the surface water from top of the fields and delivers it to an Attenuation Pond where it is discharged via a pipe at 1.6l/s to a particular point in the stream. This design will increase the speed at which water enters the stream because it bypasses overland flow and there will be no filtering.
  30. It is not known how the volume of the storage pit was calculated but allowances should be made for groundwater at the surface with 100% run off. The Monson report ignores water ponding at the site. Consequently, the volume of the Attenuation Pond will need to be larger.

31. If the stream is close to being dry, the water level will rise relatively slower compared to post development. Attenuation Storage is to prevent soil erosion in stream. However, the design of the SUDs will cause water to enter the stream more quickly causing erosion.

32. In conclusion, **the design of the sewage and drainage at this site is inherently unsustainable:**

The sewage will be pumped to a works whose effluent enters Bartley Mill Stream which fails on chemical grounds and increasing the number of houses dependent on this sewage plant will only make the situation worse.

- a. The energy consumption needed for the lifetime of the pump is unquantifiable. No planning should be given where sewage has to be pumped uphill and where failure of the pump will cause flooding as this a “Fail danger” design, not “Fail safe” design. The presence of groundwater close to the surface combined with summer drying causing shrinkage and swelling of the clay, greatly increase the risk of sewers cracking and water entering them, thereby causing flooding. Once ground water enters a cracked sewer, then the mass which needs to be pumped uphill increases by an amount that cannot be calculated. Plant roots often enter cracked sewers causing blockages. Flooding of sewage is a health issue, especially in a hot weather.
- b. Water from the SUDS scheme will flow into a stream which is practically dry in summer, and this will change the hydrological regime as well as causing pollution. The Engineers Report underestimates run off and no method is shown to calculate the required volume of the Attenuation Pond.
- c. No assessment has been made of ground stability following excavation of the slopes. Any movement of the slope following construction could crack sewers leading to an increase in the volume of the water when the groundwater levels are high and the pump may then not be able to cope. Cracking of sewers due to ground movement will encourage plants roots to grow into them which will increase the likelihood of blockages.
- d. The Monson Report underestimates surface run off which if it occurs in Winter when the groundwater level is close to the surface is more likely to cause an excavated slope to move. Movement of the slope could rupture water and sewage pipes as well as damage electrical and gas supplies. Ruptured sewage pipes could result in sewage flooding into the Attenuation Pond and from there down to the stream and onward to Bewl Water. Any contamination of the stream and Bewl Water would lead to prosecution by the Environment Agency.
- e. Wealden District Council and Monson have not shown that they have the Chartered Engineers and geologists who can calculate the stability of an excavated slope. Wealden District Council also need to show that they have the Building Control Officers who are capable of supervising site construction adequately.