

[REDACTED]

Sent: 18 March 2026 19:30
To: Planning
Cc: Alice.Johnson
Subject: DC/25/2057 Land North of Little Slaughterford, Chapel Road, Barns Green, West Sussex
Attachments: Annex A (DJP dated 18-03-26).pdf
Categories: Comments Received

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18th March 2026

From a Member of the Public and Resident of Barns Green for over 50 Years with over 47 years of experience in the water and wastewater treatment industry

For the attention of Ms Alice Johnson,

Objection: Application DC/25/2057 Land North of Little Slaughterford, Chapel Road, Barns Green, West Sussex – 68 Dwellings by Miller Homes

I object very strongly to this planning application.

Sewage Treatment Capacity and Discharges into Parsons Brook

I wish to challenge the Southern Water letter ref: EIR 4275 dated 11th March 2026 which we understand is based on modelled results, and in particular the inference in this letter that the Barns Green Wastewater Treatment Works has adequate capacity.

From our own check calculations and research, the existing plant has very severe limitations in respect of the hydraulic capacity of both the primary tanks and humus tanks as well as the tertiary filters as demonstrated by the issues and check calculations detailed below and in Annex A.

Tank and Filter Sizes

Based on measurements extracted from satellite imagery of the Barns Green Wastewater Treatment Works that is in the public domain we have extracted the following information:

- a) Primary Settlement Tanks – 2 tanks each 4.2 metres x 4.2 metres.
- b) Biological Media Filters – 2 filters each 17.2 metres diameter.
- c) Humus (Final) Tanks – 2 tanks each 6.5 metres diameter.

We have made assumptions regarding the average tank and filter media depths and developed our own check calculations, and these are attached as Annex A.

These check calculations indicate the following issues:

Issue (1) - Existing Primary Tanks

Based on a Dry Weather Flow (DWF) of 291 m³/day it appears that the existing primary tanks are hydraulically undersized and not fully compliant with requirements of the current Southern Water process standards.

By back calculation we would suggest that the maximum DWF that the existing primary tanks could hydraulically handle with 2 tanks in service would be **161 m³/day** based on a minimum retention time of 1.5 hours.

Issue (2) - Existing Humus (Final) Tanks

Based on a DWF of 291 m³/day it appears that the existing humus tanks would be hydraulically undersized and not fully compliant with the requirements of the current Southern Water process standards.

By back calculation we would suggest that the maximum DWF that the existing humus tanks could hydraulically handle with 2 tanks in service would be **253 m³/day** based on a maximum upflow rate of 1.0 m³/m²/hr.

Issue (3) - Tertiary Filtration Package

Although not evident on the satellite imagery we are aware that a tertiary filtration package was installed in 2020/2021 together with the associated chemical dosing in order to reduce the phosphorous levels in the final treated effluent and meet the current **Environment Agency (EA)** discharge consent into Parsons Brook.

The De Nora Tetra tertiary treatment package comprises five (05) deep bed media filter cells each 1.0 metre diameter (from De Nora website) and as confirmed by De Nora this package has a total maximum filtration capacity of 1362 m³/day.

The maximum filtration capacity of 1362 m³/day equates to the current **full flow to treatment (FFT)** and is therefore based on the current EA consented DWF of 227 m³/day.

It would seem that the existing tertiary filtration package is currently designed to treat a maximum DWF of 227 m³/day and would be therefore be undersized for any DWF greater than 227 m³/day.

Conclusion

We would strongly suggest that Southern Water need to consult with their process engineers regarding the capacity of the existing Barns Green Wastewater Treatment Works and whether it is able to accept any additional flows above the current EA consented DWF of 227 m³/day from either the Barns Green area (including the Miller Homes application DC/25/2057) or other proposed local housing developments (we refer here to DC/26/0366).

I would be grateful if the full contents of this email together with the attachments could be placed before the Planning Committee.

Yours faithfully,



Attachments:

Annex A - Barns Green Wastewater Treatment Works - Check Calculations (Ref: DJP dated 18/03/26)

Annex A

Barns Green Wastewater Treatment Works – Check Calculations

Primary Settlement Tanks – 2 tanks each 4.2 metres x 4.2 metres with a total surface area (2 tanks) of 35.28 m². Assuming an average tank depth of 1.8 metres then a total tank volume (2 tanks) of 63.5 m³.

Based on a dry weather flow (DWF) of 291 m³/day and a full flow to treatment (FFT) of 6 x DWF including 5% for process returns gives 21.2 litres/sec or 76.38 m³/hour.

Surface loading of primary tanks – 2 tanks in service at FFT would be 2.165 m³/m²/hr and with just 1 tank in service this would increase to 4.32 m³/m²/hr. Our understanding is that the current process standards used by Southern Water are based on a maximum surface loading rate for primary tanks of 2.0 m³/m²/hr with 2 tanks in service and 4.0 m³/m²/hr with 1 tank in service. So, even with the 2 tanks in service the maximum surface loading rate would exceed the process standard by at least 8% and with only 1 tank in service by at least 8%.

Retention time in primary tanks – 2 tanks in service at FFT would be 0.83 hours and with just 1 tank in service this would be reduce to 0.41 hours. Our understanding is that the current process standards used by Southern Water are based on a minimum retention time for primary tanks of 1.5 hours. So even with 2 tanks in service the retention time is just 44.6% of the 1.5 hour minimum.

Biological Media Filters – 2 filters each 17.2 metres diameter with a 2.0 metre diameter central well gives a total surface area (2 filters) of 458.40 m². Assuming an average media depth of 1.6 metres then a total media volume (2 filters) of 733.44 m³.

At a population served of 1630 the daily BOD load would be 97.8 kg/day (1630 x 60g/head per day) and an Ammonia loading of 13.04 kg/day (1630 x 8g/head per day).

Biological loading of media filters (BOD) – 2 filters in service at FFT the BOD loading would be 0.13 kg/BOD/m³ and with just 1 filter in service this would increase to 0.26 kg/BOD/m³. Our understanding is that the current process standards used by Southern Water are based on a maximum loading of media filters of 0.15 kg/BOD/m³. So, with the 2 tanks in service the maximum biological loading rate would comply with the process standard but with only 1 tank in service the maximum biological loading rate would be exceeded by 73%.

Biological loading of media filters (Ammonia) – 2 filters in service at FFT the Ammonia loading would be 0.017 kg/Ammonia/m³ and with just 1 filter in service this would increase to 0.035 kg/Ammonia/m³. Our understanding is that the current process standards used by Southern Water are based on a maximum loading of media filters of 0.03 kg/Ammonia /m³. So, with the 2 tanks in service the maximum biological loading rate would comply with the process standard but with only 1 tank in service the maximum biological loading rate would be exceeded by 16%.

Based on a dry weather flow (DWF) of 291 m³/day and a full flow to treatment (FFT) of 6 x DWF including 5% for process returns gives 21.2 litres/sec or 76.38 m³/hour.

Surface loading of media filters – 2 filters in service at FFT would be 0.16 m³/m²/day and with just 1 filter in service this would increase to 0.33 m³/m²/day. Our understanding is that the

current process standards used by Southern Water are based on a maximum loading of media filters of 6.0 m³/m²/day. So, with both 2 media filter in service and just 1 media filter in service they are compliant with the process standard.

Humus (Final) Tanks – 2 tanks each 6.5 metres diameter with a total surface area (2 tanks) of 66.36 m². Assuming conical tanks with an average tank depth of 3.0 metres then a total tank volume (2 tanks) of 199.08 m³.

Based on a dry weather flow (DWF) of 291 m³/day and a full flow to treatment (FFT) of 6 x DWF including 5% for process returns gives 21.2 litres/sec or 76.38 m³/hour.

Upflow rate of humus tanks – 2 tanks in service at FFT would be 1.15 m³/m²/hr and with just 1 tank in service this would increase to 2.30 m³/m²/hr. Our understanding is that the current process standards used by Southern Water are based on a maximum upflow rate for humus tanks of 1.0 m³/m²/hr. So, even with the 2 tanks in service the maximum upflow rate would exceed the process standard by at least 15% and with only 1 tank in service by 130%.

Retention time in humus tanks – 2 tanks in service at FFT would be 2.60 hours and with just 1 tank in service this would be reduce to 1.30 hours. Our understanding is that the current process standards used by Southern Water are based on a minimum retention time for humus tanks of 2.0 hours. So, with 2 tanks in service the retention time is compliant with the standard but with just 1 tank in service is below the 2.0 hour minimum by 33%.
