Model Farm; Supplementary Evidence on Sewage Provision

This Supplementary Evidence addresses the unresolved and legally significant issue of foul drainage capacity at Cog Moors Sewage Treatment Works (STW), and the consequences of the Local Planning Authority's (LPA) decision to defer this matter to a planning condition. The evidence demonstrates that Cog Moors is operating in breach of the Urban Waste Water Treatment Regulations (UWWT Regs), that the Environmental Statement (ES) was materially incomplete, and that the Inspector's conclusion on ES adequacy was legally flawed. The evidence also shows that the environmental and public-health impacts of Cog Moors' routine untreated discharges are substantial, predictable, and incompatible with PPW12's requirements for sustainable development, environmental protection, and public health.

This document refines and strengthens the case previously submitted by Friends of the Earth Barry & Vale to the Planning Committee (of 1 March 2023), and incorporates updated technical evidence, rainfall–spill correlation analysis, and legal argumentation.

---

1. Cog Moors STW: Non-Compliance with UWWT Regulations

Cog Moors STW is required under the UWWT Regs to provide **secondary treatment at all times**, with untreated discharges permitted only during **exceptional rainfall events**. The evidence shows that Cog Moors has been operating outside these requirements for many years.

Cog Moors STW operates outside the UWWT Regs that require secondary treatment… allowing for 'spills' solely during exceptional rainfall events. Rainfall–spill correlation analysis (Annex 1) demonstrates that spills occur after some rainfall events of **15–30 mm**, which are routine in South Wales and fall far below any reasonable definition of "exceptional". The analysis states:

"It appears that 15mm rainfall is marginally enough for a spill… None of the spills (summer season 2020) followed an extended period of wet weather."

This is consistent with the long-term spill data (2017–2020), which shows **dozens of spills per year**, with annual spill durations exceeding **800 hours** in multiple years.

Annual Spill Performance Data Cog Moors WwTW					
	2017	**2018**	**2019**	**2020**	**2021 YTD**
Spill Number	59	90	77	74	34
Duration of Spills (h)	363.75	1113.25	844.5	845	483.5
Data Completeness (%)	93.55	99.94	98.03	98.17	99.77

Such frequency and duration are incompatible with the UWWT Regs requirement that untreated discharges occur only in exceptional weather conditions.

2. Bathing Water Impacts and Public Health Risks

Cog Moors discharges untreated sewage via the Lavernock Point long sea outfall. The evidence shows that these discharges reach designated bathing waters at Barry Island and further.

The AMP3/4 technical paper [1] confirms the sensitivity of these beaches:

"There are three EU designated bathing waters in the Barry area… Other 'non-identified' bathing waters are located around the adjoining coastline, from Penarth in the east to Limpert Bay in the west."

This paper reported modeling to support sewerage upgrades in early 2000s towards meeting Bathing Water objectives. This was agreed to be inadequate to meet the Blue Flag ("excellent") standard, so a further assessment of adding UV disinfection equipment at Cog Moors was decided on [2].

The Environment Agency permitted this as a temporary measure in 2009 as projects to enhance the secondary treatment capacity (required by the UWWT Regs) would have taken some years to build.

NRW took over from EAW in 2013, and their tests of weekly samples from Barry Island beaches show elevated sewage pathogens, with some highs failing the Blue Flag standard for indicator bacteria and viruses..

Welsh Water's license requires them to operate the UVsystem only during the "bathing season" when NRW are taking samples (defined as 15 May to September). The UK government is currently consulting on extending the official bathing season from Easter to September, but that still leaves much of the year uncovered. The public increasingly use Barry's beaches for boating and swimming, with greater participation in 'wild swimming' and use of wetsuits, but the government does not currently intend to extend the bathing season throughout the year.

Cog \Moors' UV system is said to reduce sewage indicator pathogens by 80-90%. When it's not operating over the winter months, pathogens are likely to be over 5 times higher than from NRW samling. Reduced sunlight in the winter means that's less effective in reducing the pathogens in the sea. In addition, more frequent rainfall-caused spills wintertime lead us to expect larger effects. The arguments in the 2000's for allowing Cog Moors UV system (as a temporary measure) and not requiring secondary treatment as the UWWT Regs specify, have not been reviewed.

The UV system installed in 2009 was explicitly a **temporary measure**, intended only to mitigate impacts during the bathing season until a full capacity upgrade could be delivered [2]. NRW has continued to permit this temporary arrangement for over a decade, despite rising flows from the Barry Waterfront development and increased year-round bathing use.

3. Welsh Water's Failure to Plan or Invest

Welsh Water has not designed or submitted any improvement scheme for Cog Moors since the 2009 temporary UV installation to submit it to Ofwat for funding approval.

No capacity upgrade is in the present AMP 7 program, or even in prospect despite DCWW claiming to be making housing growth-led upgrades (RLWP evidence). DCWW is profiting from the additional housing connections without investing in needed capacity, because the Vale Council takes their assurance that Cog Moors can take additional flows and spill increasing amounts untreated. There are indications that spill volumes from Cog Moors at the worst rainstorm reach the maximum licensed, when DCWW spills untreated sewage from major CSOs (Brockhill Rise; Barry Dock; Barry Knap LSO).

Their failure to plan any improvement scheme for submission under the AMP programme is despite:

- Known non-compliance with UWWT Regs

- Rising population and development pressures
- Increased bathing water designations
- Documented public-health risks

In England, water companies are required to halve coastal sewage spills by 2030. No equivalent target exists in Wales, and Welsh Water has not voluntarily adopted one.

---

4. NRW's Regulatory Failure

NRW has continued to permit Cog Moors to operate outside the UWWT Regs, despite clear evidence of routine untreated discharges and worsening environmental impacts. They have taken no steps to end the temporary permit to use UV disinfection instead of secondary sewage treatment and use it only May to September not year-round. They take no steps to enforce compliance with the UWWT Regs."

Sampling bathing waters only during the bathing season, despite year-round bathing use and winter spills without UV disinfection is clearly a public health risk. The public health aspect comes under the Vale Council duties under the Bathing Water Regs.RW puts pressure on them close beaches on public health grounds due to summertime spills – as at Ogmore-by-Sea and Barry's Watchtower Bay in 2025.

NRW's regulatory inaction has allowed a temporary mitigation measure to become a de facto permanent arrangement, contrary to the precautionary principle and PPW12's requirements for environmental protection.

---

5. PPW12 Policy Conflicts

The development at Model Farm must comply with PPW12, including:

- **Sustainable development (para 1.2)**
- **Preventing environmental harm (para 6.4)**
- **Protecting water quality (para 6.6)**
- **Ensuring adequate infrastructure before development (para 4.1.34)**

The evidence shows that:

- Cog Moors lacks capacity
- Untreated discharges are routine
- Bathing waters are impacted
- Public health is at risk
- No upgrade is planned
- NRW is not enforcing compliance

Permitting development that increases foul flows into a non-compliant STW is incompatible with PPW PPW12.

6. Legal Analysis: Grampian Conditions and EIA Adequacy

6.1 Grampian Conditions Cannot Be Used to Defer Sewage Capacity

Case law establishes that Grampian conditions may only be used where:

- The required off-site works are **certain** to be delivered
- The works are **within the control** of the applicant or a willing third party
- The environmental effects are **fully assessed** before permission is granted

None of these tests are met here.

Welsh Water has: designed scheme with timetable, no funding source and no commitment to deliver capacity upgrades Therefore, a Grampian condition deferring sewage capacity is **unlawful**.

6.2 The ES Was Inadequate

The ES omitted the sewage capacity issue entirely. This omission is material because:

- Cog Moors is non-compliant
- The development increases foul flows
- The environmental effects are significant and foreseeable

Under the EIA Regulations, environmental effects must be assessed **before** permission is granted. An ES that omits a known, significant environmental effect is **inadequate as a matter of law**.

6.3 Taking Inspector Duggan's report as determining Adequacy of the ES is Legally Flawed

The Inspector accepted the omission of sewage impacts from the ES. This was an error because:

- The omission is material
- The impacts are significant and are foreseeable
- The impacts cannot be deferred to a condition

An ES cannot be deemed adequate if it omits a known, significant environmental effect.

6.4 We take support from Mr D Clarke's evidence

We contend that the applicants have to report on impacts and remediation options **before** the ES can be accepted as adequate and that sewerage provision is **not a reserved matter** under planning law. We have written the attached Annex 2 with Cross-Reference matrix using Mr Clarke's legal angle and adding references to our points where we consider appropriate.

7. Conclusion

The evidence demonstrates that:

- Cog Moors STW is operating unlawfully
- Untreated discharges are routine, not exceptional
- Bathing waters are impacted
- Public health is at risk
- Welsh Water has no upgrade plan
- NRW is not enforcing compliance
- PPW12 policies are breached
- The ES was inadequate
- The Inspector's adequacy conclusion was legally flawed
- A Grampian condition cannot lawfully defer sewage capacity

The development cannot proceed without a full assessment of sewage impacts and a committed, funded upgrade to Cog Moors STW.

References

[1] *AMP3/4 Barry Bathing Waters Project* https://www.edie.net/barrys-beaches-better-by-design/

[2] *CogMoors-UVproject2009* waterprojectsonline.com/case-studies/cog-moors-wwtw-uv-treatment-2009/

Annex 1: Correlating untreated sewage 'spills' with local rainfall data

The Cog Moors storm overflow (untreated discharge) data were disclosed to FoE by Dŵr Cymru at *https://www.whatdotheyknow.com/request/cog_moors_stw_bypass_incidents*

With spill rates every 15 minutes these data allowed us to calculate the total spill volumes. We compare the times and storm discharges with the (hourly) rain-gauge data from Cog Moors https://rivers-and-seas.naturalresources.wales/Station/1060. The correlation for the 2020 summer season is very clear in timing and quantity.

CogMoors Overflows in 2020 Bathing Season (April-Sept)

	start	Duration hours	Spill litres/s	Total spill M-litres	Rain times	Rain depth	Comments
18/9 Jun	12:30	22:15	750	61	*no data*	*no data*	
28-Jun	**12:15**	**10:45**	..	1.2	..	..	
29-Jun	00:00	08:15	..	0.9	..	..	
08-Jul	03:30	03:15	550	4.7	18:00*-6:00	16.2mm	
27-Jul	12:45	01:00	500	1.8	04:00-16:00	17.0mm	follows 8.6mm 24-5 July
19-Aug	11:30	02:00	600	4.3	06:00-11:00	14.8mm	follows 4mm on 17th Aug.
25-Aug	05:45	06:30	850	20	01:00-06:00	26.2mm	follows quite dry week
27-Aug	19:30	24:15:00	950	83	11:00-15:00	32.6mm	} extended rainstorm with
28-Aug					21:00*-4:00	26.6mm	} second rainfall after 6 hours
30-Sep	16:15	01:30	550	3	08:00-15:00	21.8mm	follows 2.6mm on 26th Sept

* rain started previous day

The ten spills over the summer season are rather few for analysis, but more numerous than the 3 spill predicted from the 2005 modeling. These ten are still sufficient to draw tentative conclusions. It appears that 15mm rainfall is marginally enough to trigger a spill, commencing a few hours after the start of the rain. The 24-hour long spill of 27-8 August resulted from two episodes of rain, each about twice the marginal 15mm. None of the spills followed an extended period of wet weather, so the soils were not saturated. The rainfall two days prior to the 27 July and 19 Aug spills could have contributed, but the spills were small. The 25 Aug. spill seems surprisingly large (20 Ml) from only 26mm rain; and the rainfall would have worsened the spill from the 27-8 August rain.

Much of the sewer flow to Cog Moors comes from west Cardiff (all west of the Taff), where the rainfall differs somewhat (St Fagans data are available). The flow time to Cog Moors must be longer. Only a general correlation between the overflow and the rainfall data would be expected, so that between the rather small data-sets of the Table is surprisingly clear.

The treatment capacity of Cog Moors is 1400 l/s; some of the spills could be avoided by building storage tanks for say 5 Ml, but to deal with the 27/8 August overflow would require 66% extra capacity. This is not the only problem, as the lower Penarth CSO at Brockhill Rise is known to operate frequently (91 times in one year), and discharges closer in-shore than the Lavernock Point outfall from Cog Moors.

Dŵr Cymru use UV lamps on the spills, to reduce the sewage bacteria and viruses bypassing the normal bio-treatment in the sewage works. The reduction was calculated to allow Whitmore Bay to reach the Blue Flag bathing water standard – but it failed, with the data showing significant levels. The under-capacity at Cog Moors is unlawful; the UV lamps could be used as tertiary treatment on top of the necessary bio-treatment to reach a high standard.

Summary for the Inquiry **March 2026**

This Supplementary Evidence demonstrates that the proposed development cannot lawfully and sustainably proceed without an assessment of foul drainage impacts and a committed upgrade to Cog Moors Sewage Treatment Works (STW). The evidence shows that Cog Moors is operating in breach of the Urban Waste Water Treatment Regulations (UWWTR), that untreated discharges occur routinely rather than exceptionally, and that these discharges impact designated bathing waters at Barry Island,

The Environmental Statement (ES) omitted this issue entirely. That omission is material, because the environmental effects of routine untreated discharges are significant, foreseeable, and directly relevant to the development's foul drainage. The ES was therefore inadequate as a matter of law, and the Inspector's earlier acceptance of leaving sewerage to a condition was legally flawed.

The rainfall–spill correlation analysis (Annex) shows that rainfall events of 30 mm and less cause Cog Moors spills— well below extreme rainfall in South Wales. This is incompatible with the UWWTR requirement that untreated discharges occur only during "exceptional" rainfall. Long-term spill data (2017–2020) confirms dozens of spills per year, with annual spill durations exceeding 800 hours in multiple years. These are not exceptional events; they are routine operational spills bypassing secondary treatment plant.

The UV system installed in 2009 was permitted as temporary, switched on to mitigate impacts during the bathing season while a permanent capacity upgrade was developed. No such upgrade has been designed or submitted for funding. Welsh Water has no scheme, no timetable, and no commitment to deliver the necessary improvements. NRW has continued to permit this temporary arrangement for over a decade, despite rising flows from the Barry Waterfront and Sully housing developments and increased year-round bathing use.

PPW12 requires that development be supported by adequate infrastructure, that environmental harm be prevented, and that water quality and public health be protected. Allowing additional foul flows into a non-compliant STW directly conflicts with these requirements.

Case law establishes that Grampian conditions cannot be used to defer essential off-site infrastructure where the works are uncertain, outside the applicant's control, or where the environmental effects have not been fully assessed. All three tests are failed at Model Farm. Welsh Water has no upgrade scheme; the environmental effects have not been assessed; and impacts already occurring will worsen. A Grampian condition would therefore be unlawful.

In summary:

- Cog Moors STW is non-compliant with the UWWT Regs.
- Untreated discharges are routine, not exceptional.
- Bathing waters and public health are affected.
- Welsh Water has no upgrade plan.
- NRW is not enforcing compliance.
- PPW12 policies are breached.
- The ES was inadequate in omitting sewerage
- Inspector Duggan's agreement to the omission was legally flawed.
- A 'Grampian' condition cannot lawfully defer sewage capacity.

The development cannot proceed without a full assessment of sewage impacts and a committed, funded upgrade to Cog Moors STW.