Environmental Management Plan

Package Sewage Treatment Plant

Caer Myndd Caravan Park – Permit Application PAN-031958

1. Purpose of this Environmental Management Plan

This Environmental Management Plan has been prepared to demonstrate how the package sewage treatment plant will be operated, maintained, monitored and managed to achieve technical competence and consistent compliance with the revised discharge limits associated with the proposed increase in maximum daily discharge from 20 m^3/day to 35 m^3/day.

The revised discharge limits are:

Parameter	Revised permit limit
Ammoniacal nitrogen as N	1 mg/l
Biochemical Oxygen Demand	14 mg/l
Suspended solids	30 mg/l

The purpose of this plan is to address previous poor performance of the treatment plant and to set out a robust operational regime that ensures the plant is correctly managed, maintained and monitored at all times.

2. Site and treatment plant details

The site is served by a Premier Tech Aqua Conder SAF packaged sewage treatment plant. The plant receives foul flows from the caravan park drainage system and discharges treated effluent to the existing watercourse.

The treatment process comprises:

1. Primary settlement;
2. Submerged aerated biological treatment zone;
3. Humus / secondary settlement;
4. Final treated effluent discharge.

The proposed arrangement includes an alarm kiosk adjacent to the treatment plant. The plant, kiosk, foul inlet and receiving watercourse are shown on DART Engineers drawing 25609-DR-C-0100 P1.

3. Management responsibilities and technical competence

The permit holder shall retain overall responsibility for ensuring that the treatment plant is operated in accordance with the environmental permit and manufacturer's requirements.

A nominated technically competent person shall be appointed to manage the plant. Their responsibilities shall include:

- Ensuring the treatment plant is inspected at the required frequency;
- Reviewing effluent monitoring results;
- Arranging servicing, maintenance and desludging;
- Responding to alarms and faults;
- Maintaining site records;
- Ensuring contractors are competent and suitably trained;
- Reporting non-compliance or pollution incidents to Natural Resources Wales where required.

The nominated person shall receive plant-specific training from the treatment plant supplier, service contractor or other competent wastewater specialist. Training shall cover:

- Safe access and confined-space awareness;
- Basic SAF process operation;
- Blower and air distribution checks;
- Alarm response;
- Sludge management;
- Sampling and monitoring requirements;
- Spill and pollution response;
- Record keeping and permit compliance.

A written training record shall be retained on site.

4. Treatment performance objective

The plant shall be operated with the objective of consistently achieving the following final effluent quality before discharge:

- Ammoniacal nitrogen: less than 1 mg/l;
- BOD: less than 14 mg/l;
- Suspended solids: less than 30 mg/l.

Because the revised ammonia limit is significantly tighter than the previous 2 mg/l limit, the operator shall place particular emphasis on:

- Continuous blower operation;
- Balanced aeration across the SAF media;
- Avoidance of hydraulic overload;
- Avoidance of shock chemical loading;
- Regular sludge removal;
- Early response to elevated ammonia or BOD results.

5. Daily and weekly operational checks

The following checks shall be undertaken and recorded.

Daily visual checks during occupied season

During periods when the caravan park is occupied, the operator shall check:

- The alarm beacon is not activated;
- There are no unusual odours;
- There is no visible leakage from exposed pipework;
- There is no evidence of backing up within the drainage system;
- The discharge point is clear and free-flowing;
- There is no visible pollution, sewage fungus, discolouration or solids in the receiving watercourse.

Weekly treatment plant checks

At least once per week, the operator shall:

- Confirm the blower is operating;
- Lift the relevant access cover safely and check for visible aeration bubbles in the biological zone;

- Confirm the aeration pattern is even across the biozone;
- Check the final effluent appearance;
- Check for excessive suspended solids, cloudiness, sewage odour or foam;
- Check for damage, vandalism or obstruction around the kiosk and plant;
- Record the findings in the site log.

Where the final effluent is cloudy or contains suspended particles, the humus tank shall be inspected and desludged if required.

6. Monthly management checks

Each month, the nominated competent person shall review:

- Site inspection records;
- Alarm activations;
- Maintenance actions;
- Desludging records;
- Effluent sample results;
- Any complaint or odour records;
- Any incidents or near misses.

Where monitoring shows rising ammonia, BOD or suspended solids, the operator shall implement corrective action immediately and shall not wait for formal permit failure.

7. Servicing and planned maintenance

The treatment plant shall be serviced by a competent wastewater servicing contractor at least every six months, and more frequently if required by monitoring results or manufacturer recommendations.

The six-monthly service shall include:

- Isolation of electrical supply before work;
- Inspection of blower operation;
- Cleaning or replacement of blower air filter;
- Inspection and cleaning of air distribution manifolds;

- Checking the aeration pattern;
- Checking air valves are correctly set;
- Checking for blocked aeration pipework or drop legs;
- Checking the water level in the biozone remains above the media level;
- Inspection of the integrated filter;
- Cleaning the integrated filter if required;
- Inspection of humus return and forward feed airlifts;
- Confirmation that alarm systems are functional;
- Inspection of covers, access chambers and kiosk condition;
- Review of sludge levels;
- Confirmation of final effluent clarity.

A written service report shall be retained on site and made available to NRW on request.

8. Desludging regime

The primary and humus settlement stages shall be desludged by a licensed waste carrier using a vacuum tanker.

Desludging shall be undertaken:

- At the manufacturer's recommended frequency;
- At least every 60–90 days when operating near full loading, unless sludge depth monitoring justifies an alternative frequency;
- Immediately if monitoring or visual checks indicate sludge carryover, cloudy effluent or elevated suspended solids;
- Prior to periods of high occupancy where necessary.

The primary settlement tank shall be emptied completely. The humus tank shall also be emptied where required. Following desludging, the tanks shall be refilled with clean water as quickly as possible to maintain process stability and prevent structural or operational issues.

Waste transfer notes shall be retained.

9. Effluent monitoring plan

Final effluent sampling shall be undertaken from a suitable safe sampling point downstream of the treatment plant and prior to discharge to the watercourse.

The minimum monitoring regime shall be:

Period	Monitoring frequency	Parameters
First 3 months after approval / recommissioning	Fortnightly	Ammonia, BOD, suspended solids, pH, temperature, visual appearance
Months 4–12	Monthly	Ammonia, BOD, suspended solids
Thereafter, subject to compliance	Quarterly, or as required by permit	Ammonia, BOD, suspended solids

Where any result exceeds 80% of a permit limit, the sampling frequency shall increase to fortnightly until three consecutive compliant results are achieved.

Where any result exceeds a permit limit, the operator shall:

1. Notify the nominated competent person immediately;
2. Inspect the plant within 24 hours;
3. Check blower operation and aeration pattern;
4. Check sludge levels;
5. Check for abnormal flows or chemical inputs;
6. Arrange urgent servicing if required;
7. Take a follow-up sample within 7 days;
8. Record all actions taken.

10. Alarm and fault response

The alarm kiosk shall remain operational at all times.

Any alarm shall be treated as urgent. The response procedure is:

Fault / alarm	**Action**

Blower failure	Check power supply, MCB and control panel. If unresolved, call qualified electrician or service contractor immediately.
High or low blower pressure	Inspect for blocked pipework, closed valves, damaged air lines or blower malfunction.
Uneven aeration	Adjust air distribution valves and inspect for blocked drop legs.
No aeration bubbles	Stop and investigate blower, power supply and aeration pipework.
Cloudy effluent / solids carryover	Inspect humus tank and arrange desludging if required.
Sewage backing up	Inspect downstream discharge, pump station if present, and drainage network.

Where there is a risk of untreated or poorly treated effluent entering the watercourse, NRW shall be contacted and emergency measures implemented.

11. Control of hydraulic loading

The plant shall not be overloaded above the permitted maximum daily discharge.

To manage hydraulic loading:

- Surface water shall not enter the foul drainage system;
- Roof water, yard drainage and land drainage shall be excluded;
- Caravan park drainage shall be checked for cross-connections;
- High-volume discharges shall be avoided;
- Occupancy levels shall be reviewed during peak periods;
- Flow shall be monitored where required to demonstrate compliance with the 35 m^3/day limit.

If flows approach the permitted maximum, the operator shall review water use, infiltration and drainage integrity.

12. Control of chemical and biological shock loads

The treatment plant relies on biological treatment. The following shall not be discharged to the system:

- Large quantities of bleach or disinfectant;

- Strong acids or alkalis;
- Oils and grease;
- Pesticides;
- Photographic chemicals;
- Paints, solvents or fuels;
- Water softener regeneration waste in excessive quantities;
- Swimming pool or hot tub emptying;
- Chemical toilet waste unless specifically confirmed acceptable by the plant supplier and permit.

Clear instructions shall be provided to staff, contractors and site users. Signage and written guidance shall be used where appropriate.

13. Watercourse protection measures

The discharge point to the existing watercourse shall be inspected regularly.

The operator shall check for:

- Sewage fungus;
- Odour;
- Discolouration;
- Foam;
- Deposited solids;
- Blockage or erosion;
- Damage to the outfall structure.

If evidence of pollution is observed, the discharge shall be investigated immediately and NRW shall be notified where required.

14. Incident response plan

An environmental incident includes:

- Permit limit exceedance;
- Alarm not resolved promptly;

- Blower failure;
- Sewage backing up;
- Uncontrolled discharge;
- Visible pollution in the watercourse;
- Spillage of sludge or sewage;
- Loss of electrical supply affecting treatment.

Immediate actions:

1. Make the area safe;
2. Stop or reduce the source where practicable;
3. Contact the service contractor;
4. Prevent further discharge where practicable;
5. Use tankering if required to prevent pollution;
6. Notify NRW where there is actual or potential environmental harm;
7. Record the incident and corrective actions;
8. Review procedures to prevent recurrence.

Emergency contact numbers for the operator, service contractor, electrician, tanker contractor and NRW shall be displayed in the kiosk or site office.

15. Record keeping

The following records shall be retained for at least six years:

- Daily, weekly and monthly inspection logs;
- Service reports;
- Desludging records and waste transfer notes;
- Effluent monitoring results;
- Alarm records;
- Incident reports;
- Training records;

- Contractor competency records;
- NRW correspondence;
- Calibration certificates where applicable.

Records shall be made available to NRW on request.

16. Competent contractors

Only competent contractors shall be used for:

- Electrical works;
- Treatment plant servicing;
- Desludging;
- Effluent sampling;
- Laboratory analysis;
- Emergency repairs.

Contractors shall provide evidence of relevant competence, insurance and waste carrier registration where applicable.

17. Corrective action plan for previous non-compliance

Given previous failures against ammonia, BOD and suspended solids limits, the following immediate corrective actions shall be implemented:

1. Commission a full service inspection of the treatment plant by a competent wastewater contractor;
2. Confirm the installed plant model, capacity and suitability for 35 m^3/day;
3. Confirm blower size, operation and duty cycle;
4. Inspect and balance aeration across the SAF media;
5. Inspect forward feed and humus return airlifts;
6. Check sludge levels and desludge primary and humus tanks;
7. Clean the integrated filter;
8. Review site drainage for surface water ingress;
9. Review occupancy and hydraulic loading;

10. Undertake fortnightly effluent sampling until stable compliance is demonstrated;
11. Provide NRW with service records, monitoring results and evidence of technical competence.

18. Review of this plan

This Environmental Management Plan shall be reviewed:

- Annually;
- Following any permit breach;
- Following any pollution incident;
- Following any significant change in site occupancy or drainage;
- Following plant modification or replacement;
- At the request of NRW.

The review shall consider monitoring results, maintenance records, incidents and any further improvements required to ensure continued compliance with the permit.

19. Commitment

The operator commits to implementing this Environmental Management Plan in full and to maintaining the package treatment plant in a manner that protects the receiving watercourse, demonstrates technical competence and ensures compliance with the revised permit limits.