



**Water Environment (Controlled Activities) (Scotland) Regulations
2011**

LICENCE APPLICANT GUIDANCE

**FORM B – POINT SOURCE DISCHARGES TO
SURFACE AND GROUND WATERS (EXCLUDING
FISH FARMS)**

FORM B POINT SOURCE DISCHARGES - GENERAL**INTRODUCTION**

There are 2 forms available for point source discharges to the environment. For **fish farms** please ensure you complete form C. For any other point source discharge to surface waters or indirect/direct discharges to groundwater please complete form B. You can include details of the engineering of new outfalls within the form, and do not have to complete Form E - Engineering.

SINGLE ACTIVITIES

If you are in doubt about which forms or sections to complete then remember that each effluent treatment unit is considered to be **one** activity (even if separate units all discharge to the same outlet). For example if you have a site that has a treated trade discharge, and also a sewage discharge that has its own treatment unit, then these are two separate activities and must be detailed in the form separately. However, if both of these effluents are treated by one single treatment unit, then this are considered to be a single activity.

SECTION 1: GENERAL DISCHARGE INFORMATION**1.1 Drainage Plans**

You must submit an annotated plan that displays the drainage arrangements of your site, such as the drainage layout, location of treatment facilities and all discharge points. The detail necessary will depend on the complexity of your site. In some circumstances e.g. small and simple sites, the Site/Scheme Plan required by Form A may contain the necessary drainage details i.e.

- Drainage layout
- All discharge point locations i.e. the point at which the discharge reaches the water environment
- Location of treatment units and sampling chambers
- Identified pollution risk areas (e.g. oil and chemical stores)

If so please reference this plan "SITE/SCHEME PLAN and DRAINAGE PLAN". However, please ensure that the drainage arrangements on your plan are clearly visible, annotated and scaled.

1.2 Existing or New Discharges

Most applications will be for new discharges; however your discharge may already exist but not yet be licensed by SEPA. Please tick "existing" in the box if this is the case. Alternatively, your discharge may be being altered (e.g. content, scale or location) and you should therefore tick the "alteration to existing" box if this is the case.

1.3 About the Outlets

You may be making a new discharge from an existing outlet, or a new outlet. It is important, therefore, to clarify if the outlet is new, existing or being altered. Again, we also need an accurate National Grid Reference for EACH outlet discharging effluent from your site (minimum 10 characters, e.g. XY 1234 5678). Please also state the outfall diameter.

SEPA (and you) must be able to obtain a representative sample of the effluent to aid assessment of compliance with any licence conditions.

Your treatment facility or outlet should be equipped with a suitably designed sampling chamber or some means of safely obtaining a representative sample of the effluent prior to its discharge to the water environment. Please describe these facilities. They should be identified on your plans.

If the outlet is new, or existing and being modified, you must submit the outlet design to SEPA to allow us to assess the engineering implications. **You do not have to complete form E (engineering) simply for**

a new/altered outfall unless SEPA believes the planned work will have a significant effect on the receiving water.

1.4 Environmental Service

Please identify if any of the discharges qualify as “Environmental Service”. If you are undertaking a controlled activity purely for “environmental service” e.g. by enhancing or restoring ecological integrity without obligation or legal requirement on your part, you may apply for your licence at a reduced fee. You should have discussed this issue with your local SEPA office for more detailed advice, prior to making an application.

Set out your claim on a separate sheet detailing why you consider an Environmental Service claim is appropriate and which activities are involved.

1.5 Table 1.5 Discharge Activity Summary

You may be applying for several similar discharges, or several types of discharge from one site. Remember if several effluents are treated by a single treatment plant, then please identify the main purpose of that treatment unit e.g. sewage treatment etc. Each main type of discharge is categorised here, please choose the type(s) applicable to your site.

This will allow SEPA to know at an early stage if we have received all appropriate parts of the form from you.

Table 1.5 allows you to summarise a number of different discharges occurring at your site relating to your licence application. Please detail

- the level of licence applicable (Simple licence or complex licence)
- The NGR of the outlet to the water body
- Outlet diameter
- Type of receiving environment i.e. what sort of water body is the receiving environment
- If a partial soakaway is in use
- Name of the receiving water body if known.

Note on calculating population equivalent (p.e.)

Domestic sewage effluent: Full details on calculating population equivalent for domestic dwellings can be found in Section 5 of the latest Flows and Loads document - Sizing Criteria, Treatment Capacity for Small Wastewater Treatment Systems (package plants) [available on British Water website (www.britishwater.co.uk)].

Non-domestic sewage effluent: Multiply the number of people using the system by the BOD load (g/day) and divide by 60 (60g is the average BOD load for one person in one day). Information on BOD loading is contained in the Code of Practice.

For larger developments: (normally Scottish Water) An appropriate census figure for occupancy can be used. This should be discussed with your local SEPA office beforehand.

Receiving Environment

Please tell us the destination of the discharge within the water environment. This could be to a surface water body such as a river or loch, or to the coast or “transitional waters” (transitional waters are inland tidal waters such as an estuary). Or you may have a discharge to a constructed soakaway or direct to land or groundwater. If the discharge is to a soakaway, please tick the box provided (even it is only a partial soakaway – there is a further question about this later). If the discharge is into or onto land without a soakaway, please tick “land”. If a direct discharge to groundwater i.e. without soakaway, then please tick groundwater.

You may know the name of the receiving water. If not and the water is a tributary of a named river you could state “tributary of *named river*”. Your local SEPA office may be able to give you more advice on this. Otherwise, if you are unsure you may leave this box empty.

POINT SOURCE – SPECIFIC DISCHARGES

The following sections are split according to types of discharge:

- **Section 2** - Sewage Effluent (Sewage Treatment Works, Combined Sewer Overflows etc)
- **Section 3** - Other Effluents (e.g. trade and industrial effluents)
- **Section 4** - Surface Water Discharges (including those from Sustainable Urban Drainage Systems (SUDS))
- **Section 5** - Discharges to land (non-agricultural)

SECTION 2: SEWAGE EFFLUENTS

Please detail the population equivalent served by your sewage treatment facilities. Giving the total population equivalent (p.e.) of all effluent received at the works.

For sewage or organic discharges “p.e.” stands for population equivalent and is the term used to express the Biochemical Oxygen Demand (BOD) load of waste water. To work out the p.e multiply the daily flow of the discharge (m³/d) by the average BOD (mg/l) and divide by 60. (There is 60g BOD in the average load from one person per day). Further guidance on p.e and BOD loadings for particular discharge types can be found on the British Water website (www.britishwater.co.uk/).

Justification for not connecting effluent to any existing mains network must be provided if your premises are within a sewered area.

2.1 Foul-only Separate Sewage Systems Serving Domestic Premises

Refers to foul-only separate sewage systems serving domestic premises only.

For these systems, complete only section 2.1 and section 2.6 (if an Emergency Overflow is provided) along with section 4 (if discharge is to groundwater).

2.2 Sewage Effluent General Questions

We require several types of anticipated sewage flow to be provided. For example, the flow of **domestic sewage** and the flow of anticipated **trade effluent** going to the treatment unit should each be detailed (in m³/day). Additionally the expected infiltration of water into the sewerage system should be given.

Please also detail the current and design dry weather flow (i.e. the flow expected after 7 days without rain).

2.3 Sewage Treatment Works

Please state the mean daily flow of final effluent from the sewage treatment works to the water environment. This is an average flow measured on a daily basis in m³/d. Additionally, you should tell us the maximum flow rate (litres per second) that can be received at the works and undergo FULL treatment prior to discharge to the water environment.

The level and type of sewage treatment given should be detailed here e.g. settlement, activated sludge etc. Where applicable please categorise treatment into primary, secondary and tertiary treatment. Additional documents or diagrams can be appended to help explain your treatment system, but must be clearly referenced (e.g. with the question number from the form).

It is important that mechanical failure is guarded against and that systems are in place to warn of such failures. There should be maintenance arrangements to ensure that the sewage treatment system is in good working order and is maintained in accordance with the manufacturers’ or designers’ recommendations, or in any case recognised best practice.

2.4 Combined Sewer Overflows (CSOs)

No further guidance is presented here – applications should follow previous formats agreed with Scottish Water by completion of the detailed table in the form.

2.5 Storm Tanks

Please justify the size of the storm tank provided and explain how tank contents will be returned to treatment once the high flow has abated i.e. explain how the storm tank capacity and function has been designed for the purpose of preventing polluting releases to the water environment during high flows.

2.6 Emergency Overflows (EOs)

The need for an EO must be fully justified to SEPA, due to the potential environmental harm from such flows. There is a presumption against use of EOs except in exceptional circumstances, and adequate storage in the system may be able to counter the need for an EO. You are advised to contact SEPA to discuss this issue prior to submission of your application.

SECTION 3: OTHER EFFLUENTS (E.G. TRADE, COMMERCIAL AND INDUSTRIAL)

Every commercial or industrial effluent will be different, and this guide cannot detail all types.

3.1 will allow you to give a description of your effluent and aid our understanding of it. Each effluent discharging from individual treatment units should be described.

3.2 The **composition** of your effluent must be detailed. The tables within the form will allow you to list the key pollutants within both the treated and untreated effluent i.e. the maximum and mean concentrations of pollutants within the treated “final” effluent, including the chemicals highlighted in the Annex I of Form B. For discharges to groundwater please detail the minimum and mean annual concentration of pollutants in the effluent. Please give concentrations in units of mg/l or ug/l where appropriate.

3.3 SEPA also needs to know if the untreated effluent contains substances listed in Annex I, even if they have been removed by treatment. Please detail the maximum and mean annual concentrations of such substances if they are found in the influent i.e. untreated effluent.

3.4 If you store chemical and liquid wastes on site this must be properly contained to prevent polluting releases to the water environment. Please detail how these chemicals are stored and what containment measures are in place to prevent accidental releases.

Summary Note: Annex 1 substances:

For untreated effluent (i.e. the influent); give the mean annual concentration of each Annex 1 substance in the influent.

For the treated effluent; (i.e. the final effluent) give the maximum concentration and mean annual concentration for these substances.

If there are daily, weekly or seasonal patterns in the concentrations of these pollutants please detail this in the form, showing the degree of change expected over the relevant period.

3.5 Treatment: Each effluent treatment unit must be described. If applicable, treatment descriptions can be split into primary, secondary and tertiary levels of treatment. If your effluent has a significant Biochemical Oxygen Demand (BOD) i.e. it is an “organic” discharge, then please state the BOD level (mg/l) contained within it and the relevant **population equivalent**.

3.6 and 3.7 Please tell us the maximum and mean daily volumes discharged i.e. in a 24 hour period how much effluent will enter the water environment. Use the units “cubic metres per day (m³/d). Also detail the maximum flow rate i.e. how many litres of effluent are discharged every second (l/s).

3.8 Indicate how failures in the treatment system including pumps will be detected – telemetry and/or visible/audible alarms

3.9 The temperature of your effluent may be very different from the ambient temperature of the receiving environment (because the effluent from your process is heated or cooled in some way). If this is the case please give the mean temperature expected and the range i.e. highest and lowest temperature expected.

3.10 You must consider how you will ensure the maintenance and good working order of your process and effluent treatment system. You may receive conditions in your licence which specify the maintenance arrangements to be complied with. Please give the details here of any maintenance and process management techniques to be employed (you can refer to extra sheets or available site procedures if necessary).

3.11 Sewage effluent may be contained within your discharge (e.g. non-residential domestic sewage from staff lavatories, showers and canteen areas). Please detail the number of people served by any on-site sewerage system, or the population equivalent.

3.12 If the effluent treatment unit(s) at your site receive surface water (i.e. rain water) from impermeable hard standing areas such as yards, roof space, car parks, site roads etc, please tell us the area (m²) involved.

3.13 If your premises has material storage areas or has other maintenance or operational areas, and areas with regular vehicle movements that do **not** drain to your effluent treatment plant, then this surface water may be at risk of being contaminated. Please tell us how surface water **not** entering the effluent treatment system is handled prior to discharge to the environment. A separate discharge of surface water from your site may also require licensing, unless it is covered by a GBR (see “CAR Practical Guide” within this document). The next section of the form contains the questions relevant to this.

SECTION 4: SURFACE WATER DISCHARGES INCLUDING SUDS

4.1 The treatment train refers to the series of techniques employed to change the flow and characteristics of a surface water discharge. As a general principle it is better to deal with runoff locally (i.e. in the first stages of a ‘management train’ close to the source of runoff) returning water to the natural drainage system as close to source as possible. More on SUDS at www.ciria.org.uk

Attenuation of flow must be demonstrated. A guiding principle is to ensure that the treated water runoff rates after development are the same as runoff rates prior to development (effectively as if the site was ‘greenfield’ prior to development). Maintenance agreements: many SUDs systems require regular maintenance to ensure that they perform effectively. Please detail any such arrangements.

SECTION 5: DISCHARGES TO LAND (NON AGRICULTURAL) – PRIOR INVESTIGATION

This section of the form is for you to detail how any of the previously detailed effluents (sewage, surface water or other) discharge to groundwater (either by soakaway, direct to land or direct to the ground water). If your discharge is direct to surface waters (rivers lochs, estuaries or the coast) then you do not need to complete this section. The guidance here follows directly the Prior Investigation questions within the application form.

APPLICANT NOTES TO COMPLETING THE PRIOR INVESTIGATION FORM

¹ Please note that most direct discharges to groundwater are prohibited. It is recommended that the disposal is made to land or infiltration system.

² Part 2 of the form is to be completed for those discharges which have a high loading classification or for sewage discharges serving greater than 50PE. To determine whether your discharge has a high loading classification use the following formula and table:

Loading classification	Criteria
	Presence of:
Low - Medium	<ul style="list-style-type: none"> Heat above or below temperature normally found in groundwater. Loading factor <1200 for non-List I* pollutants
High relative	<ul style="list-style-type: none"> Loading factor >1200 for non-list I* pollutants Presence of List I* substances

* (as defined by the Groundwater Directive)

*Loading factor = Concentration in the discharge (mg/l) x discharge rate (m³/d)
/Compliance concentration for contaminant (e.g. DWS) (mg/l)*

The mean (post treatment) concentration should be used when calculating the loading classification. If more than one contaminant is present in the discharge then the loading classification should be worked out for each contaminant. The loading classification used to determine the amount of information required, and whether Part 2 of the form needs to be completed, should be based on the highest loading classification for the discharge. This equation does not work for heat and in general if the discharge contains heat in excess or below that normally found in groundwater the discharge should be considered to be low-medium risk unless it contains list I substances or large amounts of other pollutants.

³ The depth to groundwater at the discharge location should be provided for all discharges. This information should be obtained from trial pits or boreholes if available. Where the depth to the water table is determined from trial pits and are assessed in the summer when the water table is likely to be at a low level, the soil should be examined for the presence of mottling, which can indicate the position of a seasonally high water table

⁴ A check should be carried out to determine the nature and the locations of water abstractions in the area as these could potentially be impacted by the discharge. The location of these should be marked on a map and it should be indicated whether the abstraction is from a surface water (SW), spring (S), well (W) or borehole (B). If the site is supplied by a private water supply please also detail this supply on the form and map.

⁵ If there are any abstractions within 50m of the discharge then you should consider relocating the discharge since the discharge may pose a high risk of contamination to these supplies.

⁶ Field drains can provide a rapid flow path for any discharged effluent to be routed into surface waters. Due to the risk of contamination of water courses any discharges within 10m of a field drain of should be relocated unless a scientific justification can be provided to demonstrate that these discharges will not pose a risk to environment.

⁷ Details of the slope of the land should be provided. It is more difficult to install pipework and ensure that the wastewater will stay in the soil if the land has an extreme slope. For this reason areas with extreme slopes are not suitable for infiltration systems unless it can be demonstrated via on site assessment that the infiltration system will adequately function in these areas.

⁸ Percolation testing should be carried out to determine whether the strata are able to accept the discharge. The percolation value (or Vp value) can also be used to calculate the size of infiltration areas which will be required for the discharge.

⁹ Trial pit logs should be recorded on the trial pit log table provided or in a similar format. The description of the soil/subsoil should be carried out in accordance with BS5930:1999. This part of the form should be replicated depending on the number of trial pits which have been constructed.

¹⁰ Superficial deposits overly bedrock and have a primary porosity whereby water can move through the pore spaces between the grains of material. Where these materials are unsaturated, pollutant attenuation processes are often enhanced. The thickness of these deposits (or depth to bedrock from the surface) can be obtained from the trial pit or borehole log.

¹¹ The area of the infiltration system should be calculated and detailed.

¹² The length of the infiltration system, perpendicular to the groundwater flow direction (or the slope of the topography which can be used as a guide to the groundwater flow direction in absence of more detailed information) should be provided.

¹³ A diagram showing the construction of the infiltration system should also be provided. This should show and detail the depth of the discharge pipes beneath the ground as well as the area, length and orientation of the discharge system.

¹⁴ Part 2 of the form is to be completed for those discharges which have a high loading classification or for sewage discharges of greater than 50PE. To complete this section it is likely that at least 3 boreholes or piezometers should be constructed. Consideration should be given when drilling and positioning these boreholes for their potential use as ongoing monitoring points.

¹⁵ Mark the groundwater flow direction on the map. This should be determined from groundwater level data obtained from boreholes.

¹⁶ The hydraulic gradient is the slope of the water table, This can be determined by the difference between the groundwater level up and down gradient divided by the distance between them. The groundwater level needs to be expressed in metres relative to a common datum to determine the hydraulic gradient and groundwater levels in metres below ground level should not be used.

¹⁷ The permeability of the aquifer should be determined by carrying out testing of the boreholes e.g. test pumping.

¹⁸ The background groundwater quality should be obtained by taking samples of groundwater from the boreholes drilled. These should be taken from up and down gradient boreholes. Analysis sheets should be attached.

¹⁹ Proposals should be put forward for the ongoing monitoring of the impact which the discharge is having on groundwater. In general at least one down gradient monitoring point will be required.

²⁰ A quantitative risk assessment to determine the impact that the discharge will have on groundwater quality should be carried out and include any measures necessary to ensure that the discharge does not allow the entry of **List I substances (as defined by the Groundwater Directive) into groundwater or groundwater pollution by other pollutants. This assessment should be attached.**

Information on the contaminants present in the discharge should be provided in section 3.2. of the point source application form. Where possible this should be supported by analysis of the effluent quality. If this is not possible (for example the process is not yet up and running) other forms of data, such as analysis of effluent from similar sites, could be provided. The effluent should be sampled for the contaminants which are likely to be present and those which are most toxic.

A map should also be provided detailing the information listed in the application form.

ANNEX**The Annex to the form (Substances)**

The Annex to the application form lists a number of substances which are considered to be potentially dangerous if they are discharged to the water environment. Under the Water Environment and Water Services (Scotland) Act 2003 SEPA is under a duty to protect and enhance the aquatic environment by, amongst other measures, the progressive reduction of discharges of priority substances and the cessation or phasing out of discharges containing priority hazardous substances.

The annex lists the;

- Priority Hazardous Substances,
- Priority Substances under review
- Priority Substances not proposed as Priority Hazardous Substances, and
- Other specific pollutants SEPA is concerned to limit within effluents.

You must check the annex to record whether the influent into or effluent from your site contains any of the listed substances.