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**Regulatory Method (WAT-RM-03)**

**Sewage Discharges to Surface Waters**

**Version: v9.0**

**Released: April 2022**

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**Update Summary**

|  |  |
| --- | --- |
| Ver | Description |

|  |  |
| --- | --- |
| v1.0 | First issue for Water Use reference using approved content from the following documents: CAR\_Manual\_-\_sewage\_discharges\_to\_surface\_water.doc |
| v1.1 | Added references to Position Statements PS-06-01 and PS-06-01 |
| v1.2 | Revised low dilution text sections 4.1.3, 5.2.1 & 5.3.1 |
| v2.0 | Revisions as detailed in RM\_03\_PS\_SurfaceWater 25 Apr.doc: Registration threshold revised to ≤ 50 p.e./ Sec. 3.2 added “Modifying Authorised Discharges” / Sec. 7.1 “Descriptive Conditions” modified / Refs added to WAT-SG-19 and WAT-LETT-14 |
| v3.0 | Fig 1 numbering revised, Links revised to new website, section 3.6 added, new template applied |
| v3.1 | Two-tier Multiplier hyperlink revised. |
| v4.0 | Revised Flows & Loads reference and value (180 l/head/day), text added (s 6.3.3 para 2, s 7.2.1 para 5), FRS now Marine Scotland |
| v5.0 | Text added: Augmenting river flows (sections 4.2.2 & 5.3.1), NEMS/CLAS requirements for Priority Hazardous Substances (section 7.2.5). Conservation procedure revised (section 5.2) |
| v5.1 | Section 7.22 para 6: Septic tank limits detail updated |
| v6.0 | CMS links reviewed and updated. |
| v6.1 | Minor corrections to external link references (s4.2.2, s6.2.2, s6.3.3, s7.2.6) |
| v7.0 | Change of effluent standards to mean standards for unsampled discharges. New section: 3.7 and 6.2.5, changes to: 3.2.1, 4.2.2, 5.3.2, 7.1 and 7.2. |
| v8.0 | Strengthening of wording that SEPA are minded not to authorise discharges where connection to public sewer is possible. |
| v8.1 | s7.2.2 Strengthening of wording in relation to limits for suspended solids, s5.3 clarified. |

| **Ver** | **Description** |
| --- | --- |
| v9.0 | * S2 Fig 1 Updated to include 9 and 3 properties * S3.1 Consistent with the online registration system which refers to CAR Practical Guide (and RM-04) which refers to 9 properties not homes. 3 domestic properties / 15 p.e. is referenced for new sewage discharges – Domestic excludes hotels, cafes etc. For existing sewage – registration for up to 9 domestic properties (or up to and including 50p.e. if a non-domestic property) * S3.2.1 Updated to reflect agreed position on modifying registrations * S3.3 Connection to public sewer – wording amended * S3.4 Discharge to land - wording amended * S4.1.2 Escalation to a Licence – simplified, saying this will occur if Loch Leven/Lunan Lochs * S4.2.1 Reference to new Registry GIS screening procedure for registrations based on 1:50,000 or 1:25,000 maps, including risk to potable water supplies (PWSs). The risk to PWSs is based on the 1.5km screening distance used for Bathing and Shellfish Water screening. * S4.2.1 Registration screening includes risk to nearby potable water supplies * S4.2.2 and 5.3 Augmentation of flows section removed – very unlikely to be proposed * S5.1.1 Reference to exceptional circumstances when another party other than individual or body corporate can be named as authorised person * S5.2 Licence section now includes risk to nearby potable water supplies * S5.2.1 Table 2 Licence level 15-50pe don’t now require modelling – simple dilution only. * S5.2.1 Table 4. >200pe discharges to watercourses with >400:1 dilution are allowed to be treated by a septic tank, though basic secondary treatment is encouraged. * S5.2.1 Table 4. >200pe discharges to watercourses with <400:1 dilution need basic secondary treatment. The standards are derived from modelling but a minimum BOD two tier standard of 40/80mg/l is normally required. * S5.2.1 Monte Carlo modelling for >200pe now needs to include consideration of reactive phosphorus (RP) as well as BOD and ammonia * S5.2.1 For licence level discharges, a partial soakaway can be used if it is <10m from a watercourse. If the partial soakaway is >10m from a watercourse, then the discharge needs to be assessed in accordance with WAT-RM-04. * S5.2.2 Clarification that septic tank treatment is normally acceptable for 15-100pe sewage to Coastal & Transitional. * S6.2 amendment of text on reedbeds * S6.4 Amendment of text on partial soakaways * S6.7.3 Discharge to Freshwater Lochs/Canals – Additional section ‘a new discharge of more than 50p.e. that is into a watercourse in the vicinity of a freshwater loch should have further treatment to reduce phosphorus. * S7.2.2 Suspended solids limit for sampled septic tanks - irrespective of the lower tier limit, an upper tier limit of 250mg/l is always applicable * S7.3 General conditions now reflects new licence templates on maintenance, flow monitoring, sample points. |

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# 1 Key Points

This guidance concerns sewage discharges to surface water. For sewage discharges to land please refer to [WAT-RM-04: Regulation of Indirect Sewage Discharges to Groundwater](https://www.sepa.org.uk/regulations/water/pollution-control/pollution-control-guidance/) for guidance.

For sewage discharges from a combined sewerage system refer to [WAT-SG-13: Municipal Sewage Treatment Works (STW)](https://www.sepa.org.uk/regulations/water/pollution-control/pollution-control-guidance/) in addition to this document.

The guidance is designed for use with the following permit templates available from the [Approved Templates folder](file:///C:\Users\andrew.hemingway\OneDrive%20-%20Scottish%20Environment%20Protection%20Agency\Documents%20-%20Permitting%20Cells\Approved%20Templates%20and%20Docs\Templates%20-%20Permits\CAR-PS):



# 2 Process Flow

**Figure 1 Decision Tree for Sewage Discharge Application**

No

Is the discharge from ≤ 3 domestic properties / ≤15p.e. non domestic?

Yes

Yes

Follow licensing sewage discharges to water guidance

*Section 5 and WAT-SG-13*

Follow licensing sewage discharge to water guidance

*Section 5*

Yess

No

Is the discharge from a combined sewerage system?

Is the discharge from a separate sewerage system?

No

No

Register if ≤ 9 domestic properties/50 p.e. (Registry)

Licence if >9 domestic properties/50 p.e.

*Section 3.1*

Yes

Yes

No

Yes

Follow registering sewage discharge to water guidance

*Section 4*

Follow discharge to land guidance

*Section 3.4*

Connect to public sewer

*Section 3.3*

Is it an existing sewage discharge?

Is it feasible to connect to public sewer?

Can the discharge be made to land?

# 3 Pre-Application Consultations

The flowchart in [Figure 1](#fig_1) details the initial steps which should be followed when receiving a query regarding a proposed sewage discharge.

## 3.1 Existing Unauthorised Discharges

All existing unauthorised discharges must be authorised. We will grant authorisation on the basis that the existing treatment system is not causing pollution.

If the existing system is causing pollution or there is no treatment system in place (i.e. a raw discharge) then we will require improvements within a reasonable timescale (to be inserted into the Notification of Registration) depending on the local circumstances. Untreated discharges should be assessed in accordance with [WAT-PS-](http://www.sepa.org.uk/regulations/water/pollution-control/pollution-control-guidance/)08-01: Untreated Sewage Discharges.

For existing discharges (i.e. discharges from properties that have been in use for >2 years) serving up to 9 domestic properties (or up to and including 50p.e. if a non-domestic property) (population equivalent, see section 3.5), applicants can apply to register their discharge. If the discharge is treated (e.g. septic tank or package treatment plant) they can use SEPA's [online application system](https://www.sepa.org.uk/regulations/authorisations-and-permits/application-forms/private-sewage-treatment-system). If the discharge is untreated, applicants can apply using SEPA’s [Registration - Existing Sewage Discharge Form](https://www.sepa.org.uk/media/219137/wat-app-reg-01.pdf). This application form can also be used for treated discharges. Existing discharges serving more than 9 domestic properties but less than 50p.e. can also be registered using this form.

The threshold of 9 domestic properties (or up to and including 50p.e. if a non-domestic property), is used for existing discharges, whereas 3 domestic properties / 15 p.e. for non-domestic developments should be used for new sewage discharges.

## 3.2 Modifying Authorised Discharges

### 3.2.1 Modifying Registered Discharges

It is important that the authorisation continues to reflect the drainage arrangements of the site.

If the p.e. of an existing registered discharge is increased but no additional properties are added to the system (e.g. an additional bedroom is added) there is no need to vary the registration. If an additional property is added to the system but the total number of domestic properties does not exceed 3, then the registration requires variation to include this named property. The form [Registration - Variation to an existing CAR registration](https://www.sepa.org.uk/regulations/authorisations-and-permits/application-forms/) should be completed.

If the number of domestic properties increases beyond the registration threshold of 3 domestic properties then a new application for a simple licence should be made.

Some discharges between 3-9 domestic properties (or up to and including 50p.e. if a non-domestic property), are registered as ‘existing’ discharges. If the conditions in the registration cannot now be complied with, for example if an additional property is added to the treatment system or the discharge location changes from a soakaway to a watercourse, a new controlled activity is being undertaken. The discharge does not benefit from falling into the 9 domestic properties (or up to and including 50p.e. if a non-domestic property), existing category and a new application for a simple licence should be made.

For discharges ≤ 3 domestic properties, if the discharge location changes e.g. from a soakaway to a watercourse, a variation should be applied for.

The procedure for variation of registrations as described in [WAT-RM-09: Modifications to CAR Authorisations](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-RM-09) should be followed.

NOTE: Deemed registrations should be assessed in accordance with WAT-RM-09.

### 3.2.2 Modifying Licensed Discharges

For licensed discharges, changes to the licence such as an increase in the number of properties, requires a variation of the licence. Refer to [WAT-RM-09: Modifications to CAR Authorisations](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-RM-09) for details.

## 3.3 Connection to the Public Sewer

All sewage discharges from new developments should connect to the public sewer where reasonably practical. Developers should contact Scottish Water to investigate the possibility of connection to the public sewer and seek their authorisation. Where connection to the public sewer is possible, no authorisation from SEPA is required.

We may refuse any application to discharge to the water environment where we consider it reasonably practical to connect to the public sewer on the basis that it is not the most sustainable or efficient use of the water environment. Any application to discharge to the water environment from a new development within or close to the public sewer must be accompanied with a justification of why connection to the sewer is not practicable.

Reference should be made to [WAT-PS-06-08: Policy and Supporting Guidance on Provision of Waste Water Drainage in Settlements](http://www.sepa.org.uk/regulations/water/pollution-control/pollution-control-guidance/) which sets

out SEPA's policy principles on the provision of waste water drainage within and outwith settlements served by a strategic sewerage system.

## 3.4 Discharge to Land

We operate a presumption against direct discharges of sewage effluent to surface waters from developments less than 50p.e. Our preference is that

discharges of sewage effluent from new developments are treated before discharging to land via a constructed soakaway provided the ground conditions are suitable. Developers should investigate whether the ground conditions are suitable for a discharge to land. Please refer to [WAT-RM-04: Regulation of Indirect Sewage Discharges to Groundwater](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-RM-04).

## 3.5 Population Equivalent

### 3.5.1 Domestic Population Equivalent

Population equivalent for domestic housing should be determined using the number of bedrooms as referred to in the latest version of [Flows and Loads](http://www.britishwater.co.uk/Search/Default.aspx?q=flows+and+loads) (British Water Code of Practice).

For large developments (more than 10 houses) an alternative method for deriving p.e. such as described in [WAT-SG-13: Municipal Sewage Treatment Works (STW)](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-SG-13) can be followed.

### 3.5.2 Non-Domestic Population Equivalent

To calculate the population equivalent for 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). The Flows and Loads Code of Practice can be used to determine flow and load figures for various types of non-domestic sewage discharge.

## 3.6 Shared Outfalls

Some developments are served by more than one treatment system (septic tank/package plant etc) sharing an outfall pipe. In this case each treatment

system should be separately authorised by registration or licence as appropriate. See section 7.4.1. For shared soakaways see WAT-RM-04.

## 3.7 Package Treatment Plant Certification to EN12566 Part 3

New sewage domestic discharges from package treatment plants (PTPs) serving up to and including 50 p.e. require to be treated by a plant tested and certified to EN12566 Part 3. To obtain certification to EN12566, plants must undergo rigorous independent testing which results in a documented mean discharge standard and percentage reduction in pollution across the plant.

The mean standard in the EN12566 Part 3 certificate is a clear and unambiguous assessment of the performance of the plant and is used in CAR registrations and unsampled licensed sewage discharges. Note that the mean standard is a **design** standard and not an effluent standard.

Although EN12566 Part 3 certification applies only to domestic premises, ‘domestic’ in terms of EN12566 includes cafes, restaurants and commercial premises. Influents from cafes/restaurants and commercial premises can be significantly stronger than those from residential/household premises and therefore the mean effluent standards in EN12566 Part 3 may not be achievable. Bearing this in mind, it may be proportionate for the applicant to determine the mean quality that will be achievable based on a realistic influent strength for non-residential/non-household uses and using the certified percentage reduction.

For situations where EN12566 Part 3 does not apply (i.e. domestic >50pe and reed bed/wetlands), process design for each situation must be undertaken to determine the mean BOD and ammonia for the treatment system based on the influent strength and loadings. These figures can then be used in the licence.

The use of low energy or passive systems can be more sustainable and should be encouraged.

## 3.8 Composting Toilets / Grey Water / Hot Tubs

Refer to WAT-SG-41 for information on discharges from hot tubs. Information on composting toilets and grey water can be found in WAT-RM-04 sections 3.10 & 3.11.

# 4 Sewage Registration Applications

NOTE: Steps in [Figure 1](#fig_1) flowchart should have been followed prior to this stage.

## 4.1 Receipt of Application

### 4.1.1 General

This section applies to new discharges to the water environment from less than or equal to 3 domestic properties, or for non-domestic properties up to and including 15p.e. Existing discharges should be dealt with in accordance with the guidance in section 3.1.

Registrations do not specify an authorised person and will not be routinely monitored.

It is advisable for the applicant to discuss with SEPA the level of treatment to be provided before a registration application is submitted. Applicants can apply using SEPA’s [Registration - New Discharge Form.](https://www.sepa.org.uk/regulations/authorisations-and-permits/application-forms/)

Application information for new sewage registrations is inputted into a [screening tool](file:///C:\Users\andrew.hemingway\OneDrive%20-%20Scottish%20Environment%20Protection%20Agency\Documents%20-%20Permitting%20Cells\Point%20Source\Admin%20and%20Guidance\Sewage\CAR%20Registration%20Water%20Triage%20v2.pptx) by SEPA Registry. This covers checks such as proximity of foul sewer and Bathing/Shellfish Waters, treatment standard and available dilution.

Note that since any new discharges will only be registered if they do not result in the deterioration of water quality, this will automatically protect sites designated for nature conservation such as SSSIs, SACs and SPAs.

### 4.1.2 Escalation to a Licence

If the new development is within the Loch Leven (Central Scotland) or Lunan Lochs catchments, we will require a licence application regardless of the size of the development. In these cases, the guidance contained in section 5 should be followed. However, the registration application charge will still apply in these cases.

## 4.2 Determine the Registration Application

If the discharge is an existing unauthorised discharge from up to 9 domestic properties or up to and including 50p.e. if a non-domestic property, then it should be registered in accordance with section 3.1. For a new discharge, GIS screening is undertaken by Registry. If the screening fails, then the application is passed to the Permitting Team for further determination. The guidance below sets out the [tests](file:///C:\Users\andrew.hemingway\OneDrive%20-%20Scottish%20Environment%20Protection%20Agency\Documents%20-%20Permitting%20Cells\Point%20Source\Admin%20and%20Guidance\Sewage\CAR%20Registration%20Water%20Triage%20v2.pptx) that should be undertaken to make this further determination.

It is important to realise that it is the impact on the water environment at a local scale which must be assessed rather than assessing the impact on the scale of the overall water body (the scale of which may be many kilometres).

### 4.2.1 Registration Determination using Screening Test

* Public Sewer Network is within 50m

If the GIS screening is failed because a proposed discharge point is within, or immediately adjacent to a sewered area, you should confirm the location of the discharge and ask the applicant to clarify why they can’t connect. SEPA will be minded to refuse the application, see section 3.3.

* Risk to potable water supplies

If the GIS screening indicates that there is a potable water supply within 1.5km and downstream of a discharge, then the application will be passed to the Permitting Team. The Permitting Team should then ascertain where the potable abstraction’s intake is. The risk of a small sewage discharge impacting on a downstream potable water abstraction which has a basic pathogen treatment system[[1]](#footnote-2) is considered to be low and can be ignored if

* the dilution prior to the point of abstraction is more than 100:1 (using the discharge flow and Q95 in the watercourse at the abstraction point) *and*
* the abstraction is greater than 100m downstream from the discharge (this is assumed to be the mixing zone).

For discharges with <100:1 dilution or within 100m and upstream of a potable abstraction, additional treatment will be required such as use of a filter (e.g. bio-fibrous filter such as coir) system to reduce the pathogen load.

* Risk to Bathing Waters or Shellfish Waters

Where screening indicates that a discharge is close to a Bathing or Shellfish Water, you should follow the guidance set out in WAT-RM-13 to determine the appropriate level of treatment required.

* Discharge into a freshwater loch

Where screening indicates that a discharge is into a freshwater loch, the application should be assessed in accordance with section 6.3.3.

* Discharge into coastal or transitional waters

Where screening indicates that a discharge is into a coastal or transitional water, the application should be assessed in accordance with section 6.3.2 and if necessary, the relevant guidance WAT-RM-13. Treatment by septic tank (with partial soakaway) is normally acceptable for discharges to tidal waters due to the large dilution available. However, there may be site specific circumstances such as where there are cumulative impacts or issues relating to the Protected Area’s status which require enhanced treatment.

The outfall should normally be below MLWS. If the applicant indicates on the application form that the outfall is not below MLWS, then the application is passed to the Permitting Team. Registry also check that the outfall NGR is below MLWS.

* Discharge into a watercourse

Discharges should not result in local environmental standards being breached. Following the guidance below ensures that this criteria is met.

To facilitate processing of applications, Registry assess applications using simple screening rules based on required dilution for particular levels of treatment. The application will pass the screening test if:

* there is secondary treatment/package treatment plant and the watercourse is shown on the 1:50,000 map; or
* there is secondary treatment/package treatment plant which discharges to a partial soakaway and the watercourse is shown on the 1:25,000 map.

If the discharge does not meet these requirements then it is passed to the Permitting Team for further determination.

**Table 1 Registration look up table for sewage discharges to watercourses**

|  |  |  |
| --- | --- | --- |
| **Discharge location** | **OK to issue registration if** | **Who does the assessment** |
| Watercourse has >400:1 dilution  (NB A 10 km2 catchment will provide approx. 800:1 dilutions for 15p.e., so this would be acceptable) | Septic tank and partial soakaway (with a high level overflow; normally 25 m2 per house)  Or secondary treatment / Package treatment plant (PTP) | Permitting Team |
| Watercourse shown on 1:50,000 map | Secondary treatment / PTP | Registry |
| Watercourse shown on 1:25,000 map (or on 1:50,000 map) | PTP and partial soakaway (with a high level overflow and normally 10m2 per house) | Registry |
| Watercourse is not marked on the 1:50,000 or 1:25,000 map | Enhanced treatment, mound soakaway or refusal | Permitting Team |

Partial soakaway design should be in accordance with section 6.4.

Where a septic tank is proposed, dilution can be estimated by the ratio of the discharge flow figure (using the latest version of [Flows and Loads](http://www.britishwater.co.uk/Search/Default.aspx?q=flows+and+loads)) and the watercourse Q95 low flow. The Q95 low flow estimate can be obtained from SEPA Hydrology. It should be noted however, that the estimated Q95 flow becomes significantly inaccurate for catchments of <5 square kilometres or where there may be significant abstractions / discharges to the watercourse.

NOTE: Table 1 is a guideline only and officers should use their professional judgement when determining whether a type of treatment is acceptable at a particular location.

* Watercourse is not marked on the 1:50,000 or 1:25,000 map

Where an application fails the screening because it is not on the 1:50,000 or 1:25,000 map as set out above, then the flow in the watercourse is likely to be very low. A discharge into these watercourses may result in a discharge into a dry ditch at certain times of the year or the environmental standards being exceeded. It may be possible to provide enhanced treatment in these circumstances such as PTP plus wetland or long field drain. In other low dilution situations, there may not be an acceptable drainage solution for a discharge to a watercourse. A mound soakaway or refusal may be necessary.

An overview of treatment options can be found in Section 6.

## 4.3 Registering the Discharge

Developments involving registration of a sewage discharge may also involve another authorisable water use activity such as a potable water abstraction, bank reinforcement or a road crossing of a watercourse. If this is the case, the relevant authorisation must be obtained (Refer to [WAT-RM-02: Regulation of Licence-level Engineering Activities](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-RM-02)). NOTE: Construction of the sewage outfall itself would not normally require authorisation if the outfall design adheres to best practice (i.e. as described in [WAT-SG-28: Good Practice Guide - Intakes & Outfalls](http://www.sepa.org.uk/water/water_regulation/guidance/engineering.aspx)).

Once submitted, SEPA has 30 days in which to determine a registration. During this period informal discussions may take place regarding the proposed discharge and agreement may be reached to amend the registration details. In particular, this may be done when the submitted registration details are unclear or not appropriate to protect the water environment. For example the submitted registration form may propose septic tank treatment, whereas SEPA may consider that secondary treatment is required in that particular situation. In such cases, discussions on the level of treatment must be undertaken with the applicant.

Once agreement on treatment has been reached, the submitted registration details can be amended if necessary.  
NOTE: This should be submitted in writing by the applicant for a significant change such as the type of treatment.

Where the SEPA officer requests further information [Regulation 14(1)] and considers that the discussions will extend beyond the 30 day statutory determination period [Regulation 16(1)(a)] then the officer should request the information in writing as part of a request for further information (Refer to [CAR Reg 14 email](https://scottishepa.sharepoint.com/:w:/r/sites/PermittingCells/Shared%20Documents/Approved%20Templates%20and%20Docs/Templates%20-%20Other%20Docs/Letters,%20Email%20Wording/CAR/CAR%20-%20Reg%2014%20(Email).docx?d=wc5b48df72e3a4a6496e8cf77c4c3aade&csf=1&web=1&e=qH6BMr) signed by SEPO/Spec 2 level or above). This effectively stops the determination and will only begin again once the required information has been supplied [Regulation 16(2)(b)].

SEPA Registry then forwards to the applicant the Notification of Registration CAR-R – New Sewage Template, which contains the registration details that the discharger is legally required to comply with. This includes address of the property(s), discharge NGR and type of treatment. The registration also requires that the treatment system will not cause pollution and requires the treatment system (septic tank, PTP, reedbed, etc.) to be maintained.

The Notification also gives the applicant the right to appeal any conditions of the Registration.

## 4.4 Upgrading of Treatment for Existing Registered Discharges

There may be occasions when a registered discharge is causing a significant environmental impact, requiring remedial action. Upgrading of treatment can be addressed by various means such as:

* A SEPA-initiated variation of the registration details to require improved treatment.
* A Notice can be served under Regulation 32 requiring specific work to be undertaken.
* A licence can be imposed under Regulation 10.

## 4.5 Variation of Registered Discharge Details

SEPA may vary, or the discharger may apply to vary a discharge registration. If the details associated with a registration (such as the properties associated with the discharge etc) change, then the change of details must be submitted in writing with the appropriate fee. If the p.e./number of bedrooms changes, there is no need to vary the registration. Refer to [WAT-RM-09: Modifications to CAR Authorisations](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-RM-09) for further details.

# 5 Sewage Licence Applications

NOTE: The flowchart in [Figure 1](#fig_1) should have been followed prior to this stage in order to determine whether it is feasible to discharge to land or connect to the public sewer.

## 5.1 Licence Applications

### 5.1.1 General

Sewage discharges to the water environment from > 3 domestic properties / >15p.e. for non-domestic developments (for new discharges) or from more than 9 properties/50p.e. (for existing discharges) must be licensed by SEPA. Due to their size, these discharges are of intrinsically higher risk than registered sewage discharges.

The [CAR Licence Application Forms](http://www.sepa.org.uk/regulations/authorisations-and-permits/application-forms/#Water) are available on SEPA’s website along with details of the current application fee. Sewage discharges from 3 domestic properties/15p.e. to 100 p.e. require to pay the simple or lower licence application fee. Discharges from a p.e. in excess of 100 require to pay the complex or higher licence application fee.

For STWs serving a combined sewerage system refer to [WAT-SG-13: Municipal Sewage Treatment Works (STW)](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-SG-13) in addition to the guidance in this document.

An authorised person must be named on the licence. The authorised person is the person specified in a licence who shall secure compliance with the terms of the licence. The authorised person can be a named individual or the body corporate. (In certain exceptional situations, SEPA can issue a licence with an unincorporated/voluntary association such as a residents association as the authorised person. Contact Water Legal for further advice).

### 5.1.2 Advertising and Consultation

Refer to [WAT-RM-20: Advertising and Consultation](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-RM-20) for more details.

### 5.1.4 Other Water Use Regimes

An assessment should be made as to whether an application is required under other water use regimes. For example the development may involve a road crossing of a watercourse, bank reinforcement or a potable water abstraction, any of which may require incorporating in a multiple water user licence. NOTE: Construction of the sewage outfall itself would not normally require authorisation if the outfall design adheres to best practice (i.e. as described in [WAT-SG-28: Good Practice Guide - Intakes & Outfalls](http://www.sepa.org.uk/water/water_regulation/guidance/engineering.aspx)).

## 5.2 Determining the Licence Application

* **Status of the water body**

You should **check** on GIS if the discharge is to a waterbody with a water quality classification and whether the water quality status is good or above. If the water is not of good status due to pollution pressures and the discharge would result in further deterioration, then the licence application for an additional discharge should normally be refused. Refer to [WAT-RM-21: Allocation of Capacity and Protection of the Water Environment](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-RM-21) and [WAT-RM-22: Managing Refusals and Appeals](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-RM-22) for details. However, frequently the discharge may be to watercourses without a water quality classification. This may be the case for small watercourses with a catchment of <10km2.

* **Other pollution pressures**

Depending on the officer’s local knowledge, it may be necessary to check GIS for other discharges in order to assess pollution pressures on the water environment. As required, other officers in the local team should be consulted to gain local information.

* **Public Sewer Network**

You should check the GIS to see how far from the public sewer network the proposed discharged is. Where the site or proposed discharge point is within, or immediately adjacent to a sewered area SEPA will be minded to refuse the application, see section 3.3**.**

* **Nearby potable water supplies**

Sewage discharges can pose a risk to potable water supplies because they contain elevated concentrations of ammonia and pathogens such as E.coli as well as other pollutants. A GIS check should be undertaken to check for any authorised potable abstractions.

If any such abstractions are identified downstream of the discharge and within 3km for a 15-100p.e. discharge or within 10km for a >100p.e. discharge, then an assessment of the risk to the abstraction should be undertaken. The risk should be considered minimal if the dilution prior to the point of abstraction is more than 100:1 (using the discharge flow and Q95 in the watercourse at the abstraction point) and the discharge is greater than 100m upstream of the abstraction. Where this is not the case, the risk is greater and treatment to reduce the microbiological content should be incorporated in the treatment facility. This can be determined on a site specific basis but may involve the use of a filter (e.g. a bio-fibrous filter such as coir) system to reduce the pathogen load.

* **Shellfish Water Protected Areas, Harvesting Areas and Bathing Waters.**

The location of the discharge relative to designated Shellfish Waters and designated Bathing Waters on the GIS database should be checked. The guidance in [WAT-RM-13: Regulation of Microbiological Discharges](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-RM-13) should be followed.

* **Areas designated for the protection of habitats and species**

A national agreement between SEPA and NatureScot has identified environmental standards and criteria required to protect designated sites. SEPA will undertake the SEPA Conservation test using [WAT-SG-90 Application of environmental standards in assessing risks to river and loch Natura 2000 interests](https://www.sepa.org.uk/media/219920/wat_sg_90.pdf).

### 5.2.1 Discharges to Watercourses

It is important to realise that the impact on the water environment at a local scale must be assessed as well as assessing the impact on the scale of the overall water body (the scale of which may be many kilometres). Compliance with local environmental standards will automatically ensure that there will be no deterioration in status. Deterioration from high to good status can only be permitted in certain circumstances. Refer to [WAT-RM-22: Managing Refusals and Appeals](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-RM-22).

Tables 2, 3 and 4 set out the treatment required depending on the size of the discharge and the dilution available.

Table 2 Look up table for >3 domestic properties (or >15pe for non-domestic) to 50pe sewage discharges to watercourses

|  |  |
| --- | --- |
| Dilution range: | Treatment / standards required |
| >400:1 | Primary / Septic tank (with partial soakaway) |
| 30:1 - 400:1 | Secondary treatment **designed** to produce effluent with a mean BOD concentration ≤20mg/l |
| 10:1 - 30:1 | Secondary treatment **designed** to produce effluent with a mean ammonia concentration ≤5mg/l |
| <10:1 | Enhanced treatment or refuse |

**Table 3 Look up Table for >50-200pe sewage to watercourses**

|  |  |
| --- | --- |
| Dilution range: | Treatment / standards required |
| >400:1 | Primary / Septic tank (with partial soakaway) |
| 100:1 - 400:1 | Secondary treatment **designed** to produce effluent with a mean BOD concentration ≤20mg/l |
| <100:1 | Modelling required to derive a site-specific standard. |

**Table 4 Look up Table for >200pe sewage to watercourses**

|  |  |
| --- | --- |
| Dilution range: | Treatment / standards required |
| >400:1 | Septic tank is acceptable but basic secondary treatment with a two-tier BOD standard 40/80mg/l is encouraged |
| ≤400:1 | Modelling required to derive a site-specific standard. The treatment must normally be at least basic secondary treatment with a two-tier BOD standard 40/80mg/l. Ammonia and reactive phosphorus (RP) standards need to be considered in the modelling. |

NOTE: The above dilutions are guidelines only and officers should use their professional judgement when determining whether a type of treatment is acceptable at a particular location. The tables also only apply to new or modified discharges.

Dilution is based on the ratio of the discharge flow figure and the watercourse Q95 low flow. The discharge flow figure should be based on data in the latest version of [Flows and Loads](http://www.britishwater.co.uk/document/search.aspx) or for large developments [WAT-SG-13](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-SG-13) (section 3.1).

If available, a measured Q95 low flow should be used. Where no measured Q95 low flow is available, a Q95 low flow estimate can be obtained from SEPA Hydrology (where the watercourse is shown on the 1:50,000 map) or by using the Modelled Flow Data Explorer tool (if available). It should be noted however, that the estimated Q95 flow becomes significantly inaccurate for catchments of <5 square kilometres or where there may be significant abstractions / discharges to the watercourse.

Where modelling is required to derive a site-specific standard, a Monte Carlo combined distribution calculation should be undertaken to determine the degree of treatment required. This is described in [WAT-SG-02: Modelling Continuous Discharges to Rivers](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-SG-02). (Refer to the [Monte-Carlo Mass Balance](http://sepa-app-spt02/InformaticsHub/App/Open/35-Monte%20Carlo%20Mass%20Balance%20Spotfire%20Tool) guidance and tool). The outputs from Monte Carlo modelling include a mean standard and a 95%ile figure (which if required, should be multiplied by a factor in order to obtain the upper tier standard).The document [WAT-RM-21: Allocation of Capacity and Protection of the Water Environment](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-RM-21) and [WAT-SG-53: Environmental Standards for Discharges to Surface Waters](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-SG-53) may also need to be referred to. The standards determined by Monte Carlo modelling for discharge of >200pe need to include consideration of reactive phosphorus (RP) as well as BOD and ammonia.

Where treatment is by septic tank or the is low, a partial soakaway can be used if it is <10m from a watercourse. If the partial soakaway is >10m from a watercourse, then the discharge needs to be assessed in accordance with WAT-RM-04 and licensed as both a discharge to land and surface water.

The exact nature of the enhanced treatment depends on the particular circumstances of the discharge, such as the dilution, size of discharge, existing pressures on watercourse, other potential developments and proximity of Protected Areas.

In certain low dilution situations, there may not be a drainage solution for a discharge to a watercourse. A mound soakaway or refusal may be necessary.

For classified watercourses, discharges into areas of less than good status may be refused.

The location of the outfall pipe in the watercourse should be considered so as to ensure efficient mixing and, for primary discharges, to avoid the appearance of a visible plume of effluent downstream. If the discharge is ≤50pe domestic and from a package treatment plant (PTP) then the relevant mean standard of the PTP as determined from EN12566 Part 3 needs to match or better this.

For treatment systems not certified to EN12566 Part 3 (i.e. >50pe domestic, non-domestic or non-PTP discharges) individual plant process design is needed to determine mean standards (refer to sections 3.7 and 7.2.1).

### 5.2.2 Discharges to Coastal and Transitional Waters

These should be assessed in accordance with the details in section 6.7.2 and [WAT-RM-13: Regulation of Microbiological Discharges](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-RM-13). For sewage discharges between 15 and 100pe not impacting on Bathing/Shellfish Waters, treatment by septic tank with partial soakaway (within 10m of Mean High Water Springs) is normally acceptable for discharges to tidal waters due the large dilution available. However, there may be site-specific circumstances such as where there are cumulative impacts or issues relating to the Protected Area status which require enhanced treatment.

### 5.2.3 Discharges to Freshwater Lochs/Canals

These should be assessed in accordance with section 6.7.3.

## 5.3 Licensing the Discharge

Licence conditions must be set to protect the water environment and water users as set out in section 5.2.

Once submitted, SEPA has 4 months in which to determine a licence. During this period informal discussions may take place regarding the proposed discharge. Once the licence conditions have been drafted, then SEPA will forward a copy to the applicant for their comments prior to issuing the licence.

Where the SEPA officer requests further information [Regulation 14(1)] and considers that the discussions will extend beyond the four month statutory determination period [Regulation 17(1)(b)] then the officer should request the information in writing as part of a request for further information (Refer to [CAR Reg 14 email](https://scottishepa.sharepoint.com/:w:/r/sites/PermittingCells/Shared%20Documents/Approved%20Templates%20and%20Docs/Templates%20-%20Other%20Docs/Letters,%20Email%20Wording/CAR/CAR%20-%20Reg%2014%20(Email).docx?d=wc5b48df72e3a4a6496e8cf77c4c3aade&csf=1&web=1&e=qH6BMr) signed by SEPO/Spec 2 level or above). This effectively ‘stops the clock’ and the determination ‘clock’ will only begin again once the required information has been received or the date required for the information has passed [Regulation 17(2)(b)].

The [CAR Decision Document](https://scottishepa.sharepoint.com/:w:/r/sites/PermittingCells/Shared%20Documents/Approved%20Templates%20and%20Docs/Templates%20-%20Other%20Docs/Decision%20Docs/CAR%20-%20Decision%20Document-NEW.docx?d=w44aba6f4cd964f31abd4195c1735fa4b&csf=1&web=1&e=Qx7s2F) should be completed. This document includes details of how the licence conditions (e.g. numeric conditions) were determined. This record will prove useful in situations such as when reviewing the licence conditions, if there was an appeal against a Notice or in the event of complaints from the operator or the public regarding the licence conditions.

The discharge should be assessed in the CAR Decision Document in order to determine whether inspection or sampling is required. Refer to [DRM-G-006](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=DRM-G-006).

## 5.4 Municipal STWs

STWs receiving effluents from a combined sewerage system are generally more complex and a separate licence template exists [CAR](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-TEMP-04) Sewage >2000 PE template (new template not currently available)

Refer to [WAT-SG-13: Municipal Sewage Treatment Works (STW)](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-SG-13) for additional guidance. This document includes guidance on flow monitoring, overflow settings and the use of instantaneous and composite standards for UWWTD qualifying discharges.

## 5.5 Upgrading of Treatment for Existing Licenced Discharges

There may be occasions when a licensed discharge is causing a significant environmental impact, requiring remedial action. Upgrading of treatment can be addressed by various means such as:

* A SEPA-initiated variation of the licence conditions to require improved treatment. This can be appealed against.
* A Notice can be served under Regulation 32 requiring specific work to be undertaken.

## 5.6 Variation of Licence Conditions

SEPA may vary or the operator may apply to vary a licence. Variations may be administrative variations (i.e. with no environmental implications) or technical variations. Refer to [WAT-RM-09: Modifications to CAR Authorisations](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-RM-09) for guidance.

# 6 Summary of Treatment Options

## 6.1 Septic Tanks

Septic tanks provide an effective form of primary treatment for sewage effluent by removing solids. However, the resultant supernatant discharged from the septic tank can be highly polluting.

Inappropriately designed or sited or poorly maintained septic tank discharges may cause local nuisance pollution and the discharges have potential to be unsightly, cause odour problems and represent a risk to health and the environment. They can also threaten microbiological standards in Bathing and Shellfish Waters and pose a risk to potable water supplies.

The cumulative effects of septic tanks may cause more serious pollution problems, especially in small watercourses.

The direct discharge of septic tank effluent to surface waters is to be discouraged, as SEPA would expect connection to sewer or where the ground conditions are suitable discharge to land. A partial soakaway (section 6.4) should normally be provided.

Useful reference sources include:

* [GPP 4 Treatment and disposal of sewage where no foul sewer is available](http://www.netregs.org.uk/library_of_topics/pollution_prevention_guides/waste__sewage_ppgs.aspx)
* [Technical Handbook](https://www.gov.scot/policies/building-standards/monitoring-improving-building-regulations/): Section 3: Environment
* The Septic Tank Guide [septic\_tank\_leaflet\_uk\_a4\_v2\_090913.pdf (sepa.org.uk)](https://www.sepa.org.uk/media/480219/septic_tank_leaflet_uk_a4_v2_090913.pdf)

## 6.2 Secondary Treatment

Where a septic tank discharge may cause an unacceptable impact, it is possible to reduce this by providing secondary treatment in the form of wetlands, reedbeds or package/mechanical treatment plants.

Package sewage treatment plant (PTP) may include biological filters (BFs), rotating biological contactors (RBCs), biological aerated filters (BAFs), activated sludge plants (ASPs), sequencing batch reactors (SBRs). The maintenance of PTPs can pose serious difficulties for discharges from domestic properties or small trade premises.

SEPA will encourage the use of passive forms of treatment such as a septic tank and bio-fibrous filters (e.g. coir) or a septic tank and constructed wetland or reedbed. These forms of treatment are also considered more sustainable as power is not usually required for their operation. Wetlands/reedbeds can be used as secondary treatment for septic tank (primary) effluent or for tertiary treatment of secondary effluent. Horizontal-flow beds can be either surface/overland flow or subsurface flow: (see [Good Building Guide 42 - Reed beds](http://www.brebookshop.com/details.jsp?id=321453)). Horizontal–flow beds are used principally to remove BOD and SS, whereas vertical-flow beds can also remove ammonia due to the better oxygen transfer achieved due to the dosing of flows. (See [Constructed Wetland Association Guidelines](https://www.constructedwetland.co.uk/media/file_uploads/CWA_Design_Guidelines_v10.pdf) for vertical flow constructed wetland). An impermeable liner for reedbed/wetland treatment systems may be required – see WAT-RM-04 for further details.

## 6.3 Tertiary Treatment

Tertiary treatment of secondary treated effluent can include biological treatment to oxidise ammonia, disinfection plant or filtration plant (such as sand filters, drum filters and membrane systems) to remove fine suspended solids. Nutrient removal from effluents can also be achieved, for instance by using chemical dosing to remove phosphorous by precipitation.

## 6.4 Partial or Seasonal Soakaway

NOTE: Partial soakaways can be used for registration level discharges but for licence level, a partial soakaway can only normally be used if it is <10m from a watercourse. If the partial soakaway is >10m from a watercourse for a licence level discharge, then the discharge needs to be assessed in accordance with WAT-RM-04.

This is a hybrid option incorporating an overflow to a watercourse/loch from the highest point of the soakaway, providing the optimum disposal solution for sites where :

* Ground conditions prevent the use of a full soakaway
* Low surface water flows in summer or where a septic tank is proposed

The overflow should only operate when there is adequate dilution. Therefore, for discharges to watercourses, a good understanding of flow characteristics in the receiving watercourse is required, from local knowledge or hydrometric studies.

The most common form of soakaway is either a gravel-filled soakage pit or sub-surface irrigation system, comprising perforated/slotted pipes laid in shallow, gravel-filled trenches. Slotted corrugated field drain piping is not appropriate for use within a soakaway system given the potential for blockages to occur. Perforated/slotted rigid piping or traditional clay field tiles is preferred. The partial soakaway should be level, as far as possible, in order to maximise infiltration around the sides of the soakaway. Pipework should not be continuous across the soakaway to prevent short circuiting of effluent flows from inlet to outlet.

The size of the required partial soakaway is site specific and relates to the size of the discharge and the sensitivity of the receiving waters. Clearly there will be situations where the size of the partial soakaway will be restricted due to the area of land available and its topography. However for septic tank discharges the size of the partial soakaway should normally be a minimum of 25m2 per house and could be considerably more than this in certain situations. (25m2 typically provides 2 days storage of sewage effluent from a house). Discharges from PTPs would normally only require 10m2 partial soakaway per house due to the less polluting nature of secondary treated effluent.

If the licence has numeric conditions relating to effluent quality, these should apply at a sample point before the partial soakaway. If the conditions applied after the partial soakaway, then the impact of poor maintenance on the effluent quality would be masked by the partial soakaway itself, with a result that enforcement action would be more difficult.

## 6.5 Field Drains

Field drains (underground pipe or tiles used for draining fields) are generally suitable as a conveyance system for registration level discharges. Their use can have significant advantages in that in dry weather sewage effluent infiltrates to the ground. Licence level discharges should be assessed in accordance with WAT-RM-04. If the authorisation has numeric conditions relating to effluent quality, these should apply at a sample point before the field drain.

## 6.6 Typical Effluent Characteristics

For details of typical effluent characteristics from various treatment options refer to [WAT-SG-05: Point Source Discharge Constituents](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-SG-05).

## 6.7 Assessing Impact of the Discharge

### 6.7.1 Discharge to Watercourse

Assessment of the impact can be made by simply using the dilution available or by modelling, details of which are described in section 4.2.1 (for registrations) and section 5.2.1 (for licences). Guidance on modelling can be found in [WAT-SG-02: Modelling Continuous Discharges to Rivers](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-SG-02)**.**

### 6.7.2 Discharge to Coastal and Transitional Waters

For discharges >100pe, refer to [WAT-SG-11: Modelling Coastal and Transitional Discharges](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-SG-11) for further guidance.

The outfall should normally have the top of the pipe (soffit) located below Mean Low Water Spring (MLWS) to aid dispersion etc. But there may be situations where MLWS is a large distance across mudflats e.g. as is frequently the case in estuaries. In this case it may not be reasonable to require the construction of an outfall below MLWS, especially for a small discharge. Similar cost/benefit considerations should apply for outfalls constructed in other difficult situations such as across a very rocky shore.

The outfall should have protection against erosion of the underlying sand so as to prevent movement of the outfall pipe and premature leakage of effluent at a point above MLWS.

NOTE: Engineering works below Mean High Water Spring (MHWS) such as the construction of the outfall itself may require a licence from [Marine Scotland](http://marine.gov.scot/).

### 6.7.3 Discharge to Freshwater Lochs/Canals

There is a strong presumption against a discharge to a freshwater loch and this should only be agreed if all other options have been demonstrated to be impractical. However, if a continuous discharge to a freshwater loch is the only viable option, the presumption is for secondary treatment with a partial soakaway.

In addition, a new discharge of more than 50p.e. that is into a watercourse in the vicinity of a freshwater loch should have further treatment to reduce phosphorus. For unsampled discharges, a mean licence design standard of 2mg/l total phosphorus would be appropriate.

Furthermore, in certain circumstances (e.g. Protected Areas status, areas subject to a catchment plan) SEPA may require more stringent treatment for reduction of phosphorous.

In order to determine whether the proposed discharge may cause a deterioration in status of a loch or prevent a return to good status, modelling

may be required. Refer to [WAT-RM-37: Regulation of Phosphorus Discharges to Freshwater Lochs](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-RM-37).

There is a similar presumption against a sewage discharge direct to a canal. The discharger should be advised to contact [Scottish Canals](http://www.scottishcanals.co.uk) at an early stage, as they would not normally allow a sewage discharge to a canal.

There is also a presumption against authorising sewage discharges from vessels in freshwater lochs (and also in rivers and canals).

# 7 Licence Conditions

The following licence templates should be used:

* [CAR](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-TEMP-04) Sewage 16-100 PE template
* [CAR](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-TEMP-04) Sewage 101-200 PE template
* [CAR](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-TEMP-04) Sewage 201-1999 PE template
* [CAR](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-TEMP-04) Sewage ≥2000 PE template

For more detailed guidance on licence conditions for Municipal STWs serving refer to [WAT-SG-13: Municipal Sewage Treatment Works (STW)](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-SG-13).

## 7.1 Descriptive Effluent Quality Conditions

Descriptive conditions describe the quality or impact of the effluent and are used in place of numeric limits when the risk of environmental impact is low. Although licences with no numeric limits are generally excluded from routine monitoring plans, periodic inspections may be required to ensure there is no chronic environmental impact. If routine sampling is warranted then a descriptive licence is inappropriate and two tier numeric limits must be derived.

Descriptive conditions only should be used for unsampled discharges from septic tanks.

## 7.2 Numeric Effluent Quality Conditions

### 7.2.1 Mean Design Standards for Unsampled Discharges

If descriptive conditions are not appropriate, numeric standards must be used and a mean design standard should be used for discharges that will not be routinely sampled. (For secondary treated discharges from package treatment plants serving domestic premises ≤50pe, this would be the mean standard as certified by testing to EN12566 Part 3 – refer to section 3.7).

Monte Carlo modelling produces two-tier limits and a mean. For unsampled discharges the mean should be used in the licence.

EN12566 Part 3 only applies to package treatment plants serving domestic premises up to and including 50pe. Refer to section 3.7 for other situations.

### 7.2.2 Two-Tier Numeric Standards for Sampled Discharges

Numeric two-tier effluent quality standards are used for discharges which require sampling to ensure that the discharge remains compliant and that downstream uses and water quality are not compromised. Limits are set as two-tier standards: a 95%ile lower tier and a 99, or higher, percentile as upper tier, to enable compliance assessment.

The multipliers between lower-tier and upper-tier vary according to the value of the lower-tier standard. The multipliers are larger where lower-tier standards are more stringent. This is consistent with the approach used in England and Wales. The lookup multiplier tables are provided in [Two-tier Multiplier Tables.](https://scottishepa.sharepoint.com/sites/PermittingCells/Shared%20Documents/Point%20Source/Admin%20and%20Guidance/2%20tier%20multipliers.docx)

These multipliers define standards which protect the environment as required by CAR.

There may be a limited number of circumstances where two-tier suspended solids standards may be appropriate. These may include slow deep rivers and some SACs where the designated species would be sensitive to suspended solids.

Septic tanks, designed in accordance with BS EN 12566-1:2000 (applying to up to 50pe) and adequately maintained, should be capable of achieving 100/250 mg/l 2-tier standards for suspended solids (for sampled discharges). Alternative limits may be agreed with SEPA (e.g. where the septic tank serves a combined system), with the proviso that the septic tank is not overloaded and that there is no environmental impact. However irrespective of the lower tier limit, an upper tier limit of 250mg/l is always applicable.

### 7.2.3 BOD and Ammonia Standards

These standards determine the secondary treatment works performance requirements in order to achieve environmental quality standards and maintain or improve the receiving water’s classification.

### 7.2.4 Phosphorus Standards

Phosphorus standards may be required, depending on available dilution and environmental sensitivity. Phosphorus should be controlled by including reactive phosphorus (RP) or total phosphorus (TP) limits in the licence. Further guidance is provided in section 6 of [WAT-SG-13: Municipal Sewage Treatment Works (STW)](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-SG-13). The WFD environmental standards refer to levels of RP in watercourses and TP in freshwater lochs.

### 7.2.5 Priority, Dangerous Substances or Specific Pollutants

All discharges liable to contain Priority, Dangerous Substances or Specific Pollutants must have numeric or descriptive limits depending on the level of environmental risk. Refer to [Policy 61: Control of priority and dangerous substances and specific pollutants in the water environment](http://www.sepa.org.uk/library/content-search?q=policy%2061) and [WAT-SG-53: Environmental Standards for Discharges to Surface Waters](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-SG-53) for more guidance.

### 7.2.6 Suspended Solids

All sampled sewage and organic trade effluent discharges subject to secondary/tertiary treatment >2000PE should have a suspended solids standard of 100mg/l expressed as an upper-tier limit. (No exceedences of this limit are permitted i.e. not a single tier limit where exceedences permitted, as detailed in [WAT-RM-40: Assessment of Numeric Discharge Quality Conditions](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-RM-40)).

The suspended solids standard should be routinely monitored and compliance assessment undertaken where instantaneous samples are taken. Where composite samples only are taken, the instantaneous suspended solids limit will not be used for routine monitoring and will be used for enforcement purposes only.

Discharges, subject to sampling, from primary settlement or septic tank treatment require two-tier suspended solid conditions (see section 7.2.2).

### 7.2.7 pH Standards

pH standards should be included where there is a likelihood of pH fluctuations, e.g. known trade effluent inputs or tertiary treatment which may affect pH. The pH range must be set on a site specific basis. The range 5 to 9 is appropriate for discharges to freshwater with a wider range for saline waters, for example 4 to 10.

### 7.2.8 Hydrocarbon Oil

Numeric limits are only required in circumstances where a significant chronic risk exists which will require chemical monitoring. Otherwise the descriptive condition “no iridescence/sheen” should be used.

## 7.3 General Conditions

### 7.3.1 Maintenance

Conditions requiring maintenance of the treatment facility so that it operates in good working order should be included in licences. Septic tanks and primary settlement tanks should be de-sludged at appropriate intervals to prevent excessive carry-over of suspended solids – a minimum frequency of once every two years is advised. Most package sewage treatment plants require a power source and a visual or audible alarm system to notify of plant breakdown or power failure may be a licence requirement for larger discharges.

### 7.3.2 Flow Monitoring

Flow monitoring is not normally required for discharges of sewage effluent from septic tanks or small STW. Further detail can be found in WAT-SG-13.

### 7.3.3 Sampling Points

For PEs ≥200, a facility for inspecting and obtaining representative samples of the discharge is required. The sample point, at which point the effluent numeric conditions would apply, would normally be immediately after the treatment system. This ensures that the effluent produced by the septic tank or other treatment system is of the required quality. If the numeric conditions applied after a partial soakaway, the effects of a poorly maintained system would be masked by the partial soakaway itself and enforcement action could be compromised.

Details of a sampling chamber allowing easy access into the manhole to sample using a container can be found in the [Technical Handbook](https://www.gov.scot/policies/building-standards/monitoring-improving-building-regulations/): Section 3: Environment.

If the discharge is to be routinely monitored, the site will require a health and safety risk assessment. For new developments, where the sampling point has not yet been constructed, the requirement for safe access should be discussed with the discharger prior to the licence being granted.

## 7.4 Other Considerations

### 7.4.1 Ownership / Discharges from Multiple Dwellings

SEPA’s preference is for a single treatment system shared by a number of properties rather than individual systems provided for each dwelling.

Performance of a single plant is normally more consistent because of better balanced flows and loads, monitoring and enforcement by SEPA is simpler and the shared treatment facility is cheaper to install for the discharger. For licensed discharges, the ‘authorised person’ is responsible for ensuring compliance with the licence conditions.

For sewage registrations a single treatment system is also preferred. Should a registered sewage discharge require enforcement action, measures such as serving an enforcement notice on all operators (i.e. all householders discharging) or escalation to a licence can be taken.

(This contrasts with the previous position SEPA took under COPA where individual systems were preferred due to concerns regarding enforcement).

For further information, refer to [WAT-PS-06-01: Multiple Ownership Operators - Authorising Existing and New Activities](http://www.sepa.org.uk/regulations/water/guidance/#PS).

### 7.4.2 Surface Water

Surface water from hardstanding and paved and roofed areas etc must be excluded from a STW or septic tank to avoid hydraulic overloading during rainfall and possible impacts on the treatment process and discharge quality. Where a significant input of surface water is unavoidable, the use of a Dry Weather Flow condition may be appropriate.

### 7.4.3 Non-Domestic Effluent

Non-domestic sewage inputs to a STW or septic tank can adversely affect performance. For instance, commercial kitchen waste from hotels and restaurants with a high fat and grease content can cause blockages. The provision of grease traps, separate treatment/disposal options for waste fat needs to be agreed with the discharger. Further information regarding factors affecting small STWs can be found in the latest version of [Flows and Loads](http://www.britishwater.co.uk/document/search.aspx)..

### 7.4.4 Flow Variations at Package Treatment Plants

Flow variations affecting effluent quality may occur due to:

* Seasonal factors or
* Variations in influent pumping.

### **Seasonal flow variations**

Seasonal flow variations may be most marked at camping and caravan sites (where the whole site may close for the winter) and to a lesser extent at STWs serving hotels and chalets/holiday properties. These variations can be addressed by installing two or more units to operate in parallel, so that more units can be operated as the loads increase, and also by recirculating the effluent so that the medium is kept wet with a viable population of bacteria. For sites receiving no flow for part of the year, consideration should be given to reseeding the plant.

### **Flow Variations due to pumped influents**

Effluent quality at treatment works receiving pumped influent can be adversely affected by flow variations. Therefore flow balancing may require to be considered.

### 7.4.5 Connection to the Public Sewer

Where appropriate, reference should be made to [WAT-PS-06-08: Policy and Supporting Guidance on Provision of Waste Water Drainage in Settlements](http://www.sepa.org.uk/regulations/water/pollution-control/pollution-control-guidance/) which sets out SEPA's policy principles on the provision of waste water.

# 8 References

## 8.1 Key References

* [WAT-RM-02: Regulation of Licence-level Engineering Activities](https://www.sepa.org.uk/regulations/water/engineering/engineering-guidance/" \l "regulatory)
* [WAT-RM-04: Regulation of Indirect Sewage Discharges to Groundwater](https://www.sepa.org.uk/regulations/water/pollution-control/pollution-control-guidance/)
* [WAT-RM-09: Modifications to CAR Authorisations](https://www.sepa.org.uk/regulations/water/guidance/)
* [WAT-RM-13: Regulation of Microbiological Discharges](https://www.sepa.org.uk/regulations/water/pollution-control/pollution-control-guidance/)
* [WAT-RM-20: Advertising and Consultation](https://www.sepa.org.uk/regulations/water/guidance/)
* [WAT-RM-21: Allocation of Capacity and Protection of the Water Environment](https://www.sepa.org.uk/regulations/water/pollution-control/pollution-control-guidance/)
* [WAT-RM-22: Managing Refusals and Appeals](https://www.sepa.org.uk/regulations/water/guidance/)
* [WAT-RM-37: Regulation of Phosphorus Discharges to Freshwater Lochs](https://www.sepa.org.uk/regulations/water/pollution-control/pollution-control-guidance/)
* [WAT-RM-40: Assessment of Numeric Discharge Quality Conditions](https://www.sepa.org.uk/regulations/water/pollution-control/pollution-control-guidance/) (for CAR, UWWTD, IPC and PPC Compliance) [Ex-*Compliance Assessment Scheme*]
* [WAT-SG-02: Modelling Continuous Discharges to Rivers](https://www.sepa.org.uk/regulations/water/pollution-control/pollution-control-guidance/)
* [WAT-SG-05: Point Source Discharge Constituents](https://www.sepa.org.uk/regulations/water/pollution-control/pollution-control-guidance/)
* [WAT-SG-11: Modelling Coastal and Transitional Discharges](https://www.sepa.org.uk/regulations/water/pollution-control/pollution-control-guidance/)
* [WAT-SG-13: Municipal Sewage Treatment Works (STW)](https://www.sepa.org.uk/regulations/water/pollution-control/pollution-control-guidance/)
* [WAT-SG-28: Good Practice Guide - Intakes & Outfalls](http://www.sepa.org.uk/water/water_regulation/guidance/engineering.aspx)
* [WAT-SG-53: Environmental Standards for Discharges to Surface Waters](https://www.sepa.org.uk/regulations/water/pollution-control/pollution-control-guidance/)
* [WAT-SG-79: Priority Hazardous Substances Licence Reviews - Guidance](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=WAT-SG-79)

## 8.2 Policy Statements

* [WAT-PS-06-01: Multiple Ownership Operators - Authorising Existing and New Activities](http://www.sepa.org.uk/regulations/water/guidance/#PS)
* [WAT-PS-06-08: Policy and Supporting Guidance on Provision of Waste Water Drainage in Settlements](http://www.sepa.org.uk/regulations/water/pollution-control/pollution-control-guidance/)
* [WAT-PS-08-01: Untreated Sewage Discharges](http://www.sepa.org.uk/regulations/water/pollution-control/pollution-control-guidance/)

## 8.3 Letters and Templates

* Notification of Registration [CAR-R – New Sewage Template](https://scottishepa.sharepoint.com/sites/PermittingCells/Shared%20Documents/Approved%20Templates%20and%20Docs/Templates%20-%20Permits/CAR-PS/CAR-R%20-%20New%20Sewage%20Template.docx?web=1)
* [CAR Reg 14 email](https://scottishepa.sharepoint.com/:w:/r/sites/PermittingCells/Shared%20Documents/Approved%20Templates%20and%20Docs/Templates%20-%20Other%20Docs/Letters,%20Email%20Wording/CAR/CAR%20-%20Reg%2014%20(Email).docx?d=wc5b48df72e3a4a6496e8cf77c4c3aade&csf=1&web=1&e=qH6BMr)
* [CAR-R – Existing Septic Tank Template](https://scottishepa.sharepoint.com/sites/PermittingCells/Shared%20Documents/Approved%20Templates%20and%20Docs/Templates%20-%20Permits/CAR-PS/CAR-R%20-%20Existing%20Septic%20Tanks%20Template.docx?web=1)
* [CAR Sewage 16-100 PE template](https://scottishepa.sharepoint.com/:w:/r/sites/PermittingCells/Shared%20Documents/Approved%20Templates%20and%20Docs/Templates%20-%20Permits/CAR-PS/CAR%20Sewage%2016-100%20PE%20template.docx?d=wfee2c2629db442cfbb0c56fa2e2dd686&csf=1&web=1&e=L3bxHV)
* [CAR Sewage 101-200 PE template](https://scottishepa.sharepoint.com/:w:/r/sites/PermittingCells/Shared%20Documents/Approved%20Templates%20and%20Docs/Templates%20-%20Permits/CAR-PS/CAR%20Sewage%20101-200%20PE%20template.docx?d=w1a20d2bf5a354ff193c836998b8b0708&csf=1&web=1&e=p7waSj)
* [CAR Sewage 201-1999 PE template](https://scottishepa.sharepoint.com/:w:/r/sites/PermittingCells/Shared%20Documents/Approved%20Templates%20and%20Docs/Templates%20-%20Permits/CAR-PS/CAR%20Sewage%20201-1999%20PE%20%20template.docx?d=wde23487bb6b24f8895c863c0bfc23f29&csf=1&web=1&e=GMEhjk)

* [CAR Sewage ≥2000 PE template (new template not currently available)](https://scottishepa.sharepoint.com/:f:/r/sites/PermittingCells/Shared%20Documents/Approved%20Templates%20and%20Docs/Templates%20-%20Permits/CAR-PS?csf=1&web=1&e=Scc9hx)
* [CAR Decision Document](https://scottishepa.sharepoint.com/:w:/r/sites/PermittingCells/Shared%20Documents/Approved%20Templates%20and%20Docs/Templates%20-%20Other%20Docs/Decision%20Docs/CAR%20-%20Decision%20Document-NEW.docx?d=w44aba6f4cd964f31abd4195c1735fa4b&csf=1&web=1&e=Qx7s2F)

## 8.4 Other Documents

* [CAR Application Forms](http://www.sepa.org.uk/regulations/authorisations-and-permits/application-forms/#Water) including Guidance for Applicants (www.sepa.org.uk)
* [Monte-Carlo Mass Balance](http://sepa-app-spt02/InformaticsHub/App/Open/35-Monte%20Carlo%20Mass%20Balance%20Spotfire%20Tool) guidance and tool, SEPA Informatics Hub
* [WAT-SG-90 Application of environmental standards in assessing risks to river and loch Natura 2000 interests.](https://www.sepa.org.uk/regulations/water/guidance/" \l "PS)
* [DRM-G-006](http://stir-app-qpl01/QPulseDocumentService/Documents.svc/documents/active/attachment?number=DRM-G-006) DREAM Hazard and Risk Assessment Guidance: Compliance Monitoring (Inspection, Sampling & Data Returns)
* GPP4 Treatment and disposal of sewage where no foul sewer is available NetRegs (www.netregs.org.uk)
* [Policy 61: Control of priority and dangerous substances and specific pollutants in the water environment](http://www.sepa.org.uk/library/content-search?q=policy%2061) SEPA (www.sepa.org.uk)
* [Two-tier Multiplier Tables](http://intranet/regulatory-services/national-regulatory-services/river-basin-management-planning/supporting-information/two-tier-multiplier-tables/) SEPA Intranet

## 8.5 External Links

* [Flows and Loads](http://www.britishwater.co.uk/Search/Default.aspx?q=flows+and+loads) British Water Code of Practice ([www.britishwater.co.uk/](http://www.britishwater.co.uk/))

* [British Water Codes of Practice](https://www.britishwater.co.uk/Publications/codes-of-practice.aspx)
* [Good Building Guide 42: Reed beds](http://www.brebookshop.com/details.jsp?id=321453) ID321453 (www.brebookshop.com)
* [Constructed Wetland Association Guidelines](https://www.constructedwetland.co.uk/media/file_uploads/CWA_Design_Guidelines_v10.pdf) for Vertical Flow Constructed Wetlands
* [Marine Scotland](http://marine.gov.scot/) (marine.gov.scot/)
* Scottish Canals (www.scottishcanals.co.uk)
* [Technical Handbook](https://www.gov.scot/policies/building-standards/monitoring-improving-building-regulations/): Section 3: Environment (www.scotland.gokv.uk/)
* EN 12566 Part 3: Small wastewater treatment systems for up to 50 PT. Packaged and/or site assembled domestic wastewater treatment plants

- End of Document -

1. Standard under the sink system is expected to able to provide a 3 log removal of pathogens. [↑](#footnote-ref-2)