

SECTION B

OUTPUTS TO CUSTOMERS

Edition 8

ANNUAL RETURN 2009-10**EDITION CHANGES – SECTION B**

Edition	Description of Change
8	<u>No Changes for Annual Return 2009-10</u>

Guidance to Scottish Water

On completion of section B, SW should ensure that no input cell is left blank. If the information is unknown or not applicable, then a zero should be entered in the cell with an appropriate CG.

**SECTION B
CHAPTER B1
RESTRICTIONS ON WATER USE**

Edition 8

SECTION B

CHAPTER B1

RESTRICTIONS ON WATER USE

To identify the population affected by restrictions on water use and their duration.

Common definitions:

Population affected is defined as the population connected to the water distribution system that are affected at any time, regardless of duration, by the relevant restriction.

Duration is defined as the duration (in weeks) of the restriction.

Hosepipe Restrictions are defined as applying to those area(s) where legal notification has been published restricting the use of hand held hosepipes. This will normally be via notifications in the Press that the use of hosepipes is banned.

Drought Orders The population affected by drought orders where drought orders under the relevant legislation have been approved as required and implemented by SW.

Sprinkler / Unattended Hosepipe Restriction are defined as applying to those area(s) where legal notification has been published restricting the use of sprinklers/unattended hosepipes. This will normally be via notifications in the Press that the use of sprinklers/unattended hosepipes is banned.

Further restrictions: The population affected by the use of standpipes shall not include areas where the use of standpipes is for reasons other than a resource shortage. When standpipes have been used for resource reasons this should be the subject of a separate report in the commentaries, providing full details of the background to the decision to use stand pipes. Where other restrictions are used these should be described in the commentary and the population affected and duration of the restrictions must be reported.

Guidance to SW

Duration of restrictions: To recognise that the duration of any restriction is also an important aspect of the service provided to customers. SW must complete a timetable of hosepipe and/or sprinkler/unattended hosepipe restrictions (format shown below). This timetable should form part of SW's commentary. This should indicate the area affected, population affected, date restriction imposed, date lifted and total duration in weeks. Example:

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Hose pipe restrictions

Area affected	XX
Population affected (000s)	xxx.x
Date imposed	dd/mm/yy
Date lifted	dd/mm/yy
Total duration (weeks)	xx

Sprinkler/unattended hose pipe restrictions

Area affected	All areas
Population affected (000s)	xxx.x
Date imposed	dd/mm/yy
Date lifted	dd/mm/yy
Total duration (weeks)	xx

Population affected: Total population affected by restrictions will be reported as a percentage of the average population. Where holiday populations are a significant increase in the average population and they have been included in the population affected, then separate calculations should be made in the commentaries using summer populations.

Records: SW should maintain adequate records to enable it to confirm restrictions imposed, the population affected, the duration of restrictions and zero returns.

SW commentary:

SW should:

- comment on significant year on year changes in reported figures;
- complete a timetable of hosepipe and/or sprinkler/unattended hosepipe restrictions in the format shown; and
- include separate calculations using summer populations where holiday populations lead to a significant increase in the average population and it has been included in the population affected.

Guidance to the Reporter (Table B1)

The Reporter is asked to comment on:

- whether methods used are appropriate to meet WICS' reporting requirements;
- whether all assumptions have been disclosed and to comment on their materiality; and

- the appropriateness of the confidence grades assigned.

**SECTION B
CHAPTER B2**

PRESSURE AND INTERRUPTIONS

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SECTION B

CHAPTER B2

PRESSURE AND INTERRUPTIONS

This table covers:

- **Properties receiving pressure/flow below the reference level**
- **Properties affected by supply interruptions**

Lines B2.1 to B2.10: Properties receiving pressure/flow below the reference level

Aim

To identify the number of properties which have received and are likely to continue to receive pressure below the reference level when demand is not abnormal.

Information to be reported

Balance Sheet: Information is to be a report in the form of a balance sheet, which identifies performance against reference level at the end of the report year as well as the reasons for changes in the reported figure during the report year. It distinguishes between those problems that have been solved as a result of action by SW and from changes that result from better information.

Common Definitions

Reference level: The reference level of service is a flow of 9l/min at a pressure of 10m head on the customer's side of the main stop tap (m.s.t).

The reference level of service must be applied on the customer's side of a meter or any other fittings which are on the customer's side of the m.s.t.

The reference level applies to a single property. Where more than one property is served by a common service pipe, the flow assumed in the reference level must be appropriately increased to take account of the total number of properties served.

For two properties, a flow of 18l/min at a pressure of 10m head on the customers' side of the m.s.t. is appropriate. For three or more properties the appropriate flow should be calculated from the standard loadings provided in BS6700 or Institute of Plumbing handbook. See below for a tabulation of minimum mains pressures for the reporting of low pressures on common services.

Surrogate for the reference level: Because of the difficulty in measuring pressure and flow at the mst, SW may measure against a surrogate reference

level. SW should use a surrogate of 15m head in the adjacent distribution main unless a different level can be shown to be suitable. In some circumstances SW may need to use a surrogate pressure greater than 15m to ensure that the reference level is supplied at the customer's side of the mst (for example in areas with small diameter or shared communication pipes).

Common supplies: Common supplies are where a communication pipe supplies more than one property. The required pressure in the adjacent water main used to estimate properties affected should exceed those given in the table in the guidance section. This table is intended to be a guide to the absolute minimum service acceptable over an hour (i.e. it is not based on an instantaneous peak flow). The calculations assume delivery of 9 l/minute upstairs to a combination tank (not in the loft) in the end property on a common service of half-inch bore. The calculations use the BS 6700 loading units (LU) basis, but at 3LUs per property (9 l/minute). The LU calculations on larger groups of properties (i.e. more than 100) give instantaneous flows of between 4 and 8 times the peak hour flow rates actually observed on local distribution systems, subject to leakage and hose pipe assumptions. Accordingly, the use of 3LUs per property is taken as an acceptable minimum.

Allowable exclusions: There are a number of circumstances under which properties identified as receiving low pressure should be excluded from the reported figure. The aim of these exclusions is to exclude properties which receive a low pressure as a result of a one-off event and which, under normal circumstances (including normal peaks in demand), will not receive pressure or flow below the reference level.

SW must maintain verifiable, auditable records of all the exclusions which they apply in order to confirm the accuracy and validity of their information.

All properties identified as having received pressure or flow below the reference level must be reported, unless it can be confirmed that they are covered by one of these exclusions.

- **Abnormal demand:** This exclusion is intended to cover abnormal peaks in demand and not the daily, weekly or monthly peaks in demand which are normally expected.
- **Planned maintenance:**
- **One-off incidents:** This exclusion covers a number of causes of low pressure:
 - mains bursts;
 - failures of SW equipment (such as PRVs or booster pumps);
 - firefighting; and
 - action by a third party.

- **Low pressure incidents of short duration:** Properties affected by low pressures which only occur for a short period, and for which there is evidence that incidents of a longer duration would not occur during the course of the year, may be excluded from the reported figures.

Where short term or intermittent logging is used, if all low pressure incidents lasting less than one hour are excluded there is a danger that properties which are actually below the reference level will be missed from the reported figures.

In this case a suitable minimum duration depends on the exact methodology used but may be 30 or even 15 minutes. If logging is carried out at times when low pressures are unlikely to be detected because demand is low, the results cannot be used to confirm zero returns.

Guidance

Surrogate for the Reference Level: Where SW chooses to report against a surrogate pressure of less than 15m, evidence must be provided that this is sufficient to provide the reference level of service for all properties taking into account the length and condition of communication pipes and head loss through any meters or other SW fittings. Any assumption made must be clearly stated in the methodology. A surrogate pressure which will only provide the reference level for average properties (i.e. for average length communication pipes in good condition with no meter fitted) is not appropriate because some properties will have communication pipes longer than average; others will be in a poor condition or have meters fitted. Allowance must be made in such instances.

If a higher surrogate is used, the assumptions should be clearly stated in the methodology.

Headline Figure: This is an estimate of the *total* number of properties in SW's area which are below the reference level. Therefore, if the reported figure is likely to represent an underestimate (or an overestimate) this must be reflected in the assessment of the reliability and accuracy of the reported information.

In practice SW will report the number of properties served by a main in which the measured pressure falls below the surrogate for the reference level (usually 15m head in the adjacent distribution main) subject to the allowable exclusions. The reported figure is not necessarily the same as the number of properties on the register, which should contain additional information and provide a wider database than a list of known problems.

The figure for the start of the report year will be the figure from the end of the previous report year and should be copied from the previous Annual Return.

The figure for the end of the report year will be calculated from the starting figure and the balance sheet information.

Estimated Figures: SW may include in their reported figures estimates for the number of properties which are below the reference level but which have not yet been specifically identified. It must be clearly stated in the commentary whether or not they include such an estimate and, if so, the number of properties involved. The basis for the estimate must be explained in the methodology.

Allowable exclusions: SW must maintain verifiable, auditable records of all the exclusions that they apply in order to confirm the accuracy and validity of its information.

All properties identified as having received pressure or flow below the reference level must be reported under DG2, unless it can be confirmed that they are covered by one of these exclusions.

- **Abnormal demand:** See separate section.
- **Planned maintenance:** SW should not report under low pressures caused by planned maintenance. It is not intended that SW identify the number of properties affected in each instance. However, SW must maintain sufficiently accurate records to verify that low pressure incidents which are excluded because of planned maintenance are actually caused by maintenance.
- **One-off incidents:** If problems of this type affect a property frequently, they cannot be classed as one-off events and further investigation will be required before they can be excluded.
- **Low pressure incidents of short duration:** Properties affected by low pressures which only occur for a short period, and for which there is evidence that incidents of a longer duration would not occur during the course of the year, may be excluded from the reported figures.

Common Services: SW should establish the numbers of properties supplied via common services from sample investigation of the distribution system. Many instances of low pressure in these situations are presently unreported. Not all of these properties have either loft tank storage or any water supply upstairs.

SW is required to report the numbers of properties on common services which have received and continue to receive pressures below the reference level, and include these in the reported numbers. The commentary **must** state the number of properties on common services which have been included in the reported figures.

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SW may use their own calculations but the required pressure in the adjacent water main used to estimate properties affected should exceed those given in the table below. This table is intended to be a guide to the absolute minimum service acceptable over an hour (i.e. it is not based on an instantaneous peak flow). The calculations assume delivery of 9 litres/minute upstairs to a combination tank (not in the loft) in the end property on a common service of half-inch bore. The calculations use the BS 6700 loading units (LU) basis, but at 3LUs per property (9 litres/minute). The LU calculations on larger groups of properties (i.e. more than 100) give instantaneous flows of between 4 and 8 times the peak hour flow rates actually observed on local distribution systems, subject to leakage and hosepipe assumptions. Accordingly, the use of 3LUs per property is taken as an acceptable minimum.

Number of properties fed from one direction on common service	Pressure required in adjacent main (m)			
	Half-inch communication pipe		Three quarter-inch communication pipe	
	Short side	Long side	Short side	Long side
2*	10	11	10	11
3	12	14	11	13
4	15	18	13	16
5	19	23	16	20
6	25	29	21	24
7	30	35	25	28
8	37	42	31	33
9	45	51	38	40
10	54	61	46	48

Note: if delivery to a loft tank is taken to be the minimum acceptable service, not less than 3 metres pressure should be added to the above tabulated values.

* The values calculated for two properties are theoretical: for delivery to a loft, the usual surrogate of 15 metres to a single property should be taken as a minimum reference level.

The section on the reference level refers to the need for SW to use a higher flow rate in the reference level for common services and sets out the criteria for determining appropriate flows in these circumstances.

These criteria are not intended to extend SW's responsibility to solving problems caused by deficiencies in customers' pipes. Its aim is to ensure that there is a proper recognition of pressure and flow problems which affect

properties sharing common services, where there is a deficiency in the part of the apparatus which is SW's responsibility (e.g. an undersized communication pipe which is unable to provide sufficient flow).

For the purpose of this indicator, properties with the common service pipes can be split into four categories:-

- SW's and customers' apparatus are adequate: no problems with pressure or flow.
- SW apparatus adequate, but customers' pipework is deficient: pressure and/or flow problems which are not reportable because SW pipes are able to provide sufficient pressure and flow to the limit of authority responsibility;
- SW apparatus is inadequate but customers' pipework is adequate: pressure and/or flow problems which are reportable because there is a deficiency in the authority's apparatus;
- both SW's and the customers' apparatus is inadequate: pressure and/or flow problems which are reportable.

Of these four categories, only the last two fall within the reportable category.

WIC recognises that in cases covered by the final category it may not always be sensible for SW to take unilateral action to solve the pressure problem unless the customer takes some action to improve their own pipework. Nevertheless, these problems must be included in the reported figure. If significant, SW should report in their commentary the number of properties which are below the reference level but which SW cannot solve because there are also defects in the customer's part of the system.

The table commentary should also state the number of properties reported due to the effect of common service pipes. SW methodologies should discuss how common service problems are identified and assessed and include reference to standard loadings.

In addition, SW is required to estimate the number of properties on common services which may receive pressures below the reference level. This information will provide a broad indication of the scale of the potential problems yet to be investigated; it is anticipated that, upon investigation, some but not all of these estimated properties may be included on the register in future years. These estimates **must not** be included in the reported figures, but highlighted in the commentary.

Abnormal demand: Some areas are more affected by low pressures caused by occasional prolonged peaks in demand than by a few abnormal peak days each year. In such cases, instead of excluding up to five days each year, SW may choose to apply the abnormal demand exclusion over a five year period. This will allow SW to exclude from their figures properties affected by low pressures which occur on any 25 days in a rolling five year period.

For the purpose of poor pressure reporting, the 'excluded day' may be applied to SW as a whole or at the level of individual zones. However, in either case, once a property has suffered low pressures on either more than five days in one year or 25 days in five years, it must be added to the reported figures for.

SW must clearly state in its methodology which approach it has adopted in applying this exclusion, list the distribution or supply zones it has chosen and the number of days excluded. If the exclusion is applied at the level of individual zones, rather than to the authority as a whole, SW must maintain verifiable records which list the number of 'excluded days' used for each distribution zone each year.

In practice this means that where they use extensive pressure logging to determine poor pressure figures, SW may assume that up to five incidents of low pressure affecting a particular property during the report year are caused by abnormal demand without necessarily identifying the specific occasions and reasons for the abnormal demand. However, if SW chooses this method, it must include the number of properties which suffer more than five incidents of low pressure lasting more than one hour in the reported figure. If this method is used, no other allowance may be made for abnormal demand but the other exclusions still apply.

If SW chooses to use a five year rolling period it may exclude a maximum of 25 days of low pressure in the period for each property. In years where demand is normal (i.e. the exclusion is not being used), it will have to add to its figures all properties affected by relevant low pressure incidents (unless covered by one of the other exclusions).

There are two options for the application of abnormal demand exclusions:

Option 1 - During the Report Year, SW may exclude for each property up to 25 days of low pressure caused by abnormal demand in a rolling five-year period. SW should exclude from the reported figures properties which are affected by low pressure only on the days identified as "high demand" in the report year.

Option 2 - Where extensive pressure logging covering the majority of properties in the supply area is used, SW may exclude properties where logger records verify that up to five incidents of low pressure lasting more than one hour have occurred. Under this option, it is not necessary to match the low pressure incident with high demands.

Incidents of short duration: In locations where SW carries out continuous pressure logging year round, low pressure incidents of less than one hour may be excluded.

Where short term or intermittent logging is used, if all low pressure incidents lasting less than one hour are excluded there is a danger that properties

which are actually below the reference level will be missed from the poor pressure figures.

In this case a suitable minimum duration depends on the exact methodology used but may be 30 or even 15 minutes. If logging is carried out at times when low pressures are unlikely to be detected because demand is low, the results cannot be used to confirm zero returns.

Records

SW must maintain verifiable records. The aim of the records is to provide an auditable method for identifying the specific properties affected by low pressures and the cause of the low pressure.

The Poor Pressure register: As part of these records, SW must maintain a poor pressure register which should form a database of *all* properties which experience problems with pressure or flow.

It will enable the identification by address of individual properties which are below the reference level and should also contain information on, for example, complaints and the results of their investigation, problems which are attributable to customers' apparatus and properties which experience low pressure but are covered by one of the allowable exclusions.

The register must clearly identify those properties reported in line B2.9 and distinguish them from those which receive low pressure but are excluded from this line, and provide a verifiable reason for the exclusion (e.g. as abnormal demand or short duration of low pressure).

The records should include:

- the address of the property affected;
- the method of assessment;
- the cause of low pressure;
- details of incidents identified (date, time, duration, minimum pressure, and whether covered by an exclusion);
- action taken to resolve the problem (if any); and
- the name of person responsible for the information.

Properties should only be removed from the figures and the register when there is a specific and auditable reason for doing so.

Commentaries

SW should:

- comment on significant year on year changes in reported figures;

- state the number properties on common services that have been included in the reported figures;
- report in its commentary the number of common service properties which are below the reference level but SW cannot solve because there are also defects in the customer's part of the system;
- state any assumptions and estimates made in reporting the figures;
- state whether any allowance has been made for problems as yet undiscovered; and
- justify the assigned confidence grades.

Lines 11 to 25: Properties affected by supply interruptions

Aim

To identify the number of properties affected by planned and unplanned supply interruptions lasting longer than 3 hours, 6 hours, 12 hours and 24 hours.

Common Definitions

To ensure consistency of information returns the following regularly used terms are defined below:-

Duration is defined as the length of time for which customers are without a continuous supply of water. An interruption starts when water is unavailable from the first cold tap in a property and finishes when the supply is restored.

A third party is defined as anyone who does not act for, or on behalf of, SW. It therefore excludes agents, contractors and other parties acting with the authorisation of SW. This category is intended to cover damage to SW's mains or other equipment which either directly causes a loss of supply or which requires an unplanned interruption to supply to repair the damage inflicted.

Start time of incident: An interruption to supply is defined as starting as soon as water is no longer available from the first cold tap in the property. It does not necessarily commence when SW first takes action, for example, by closing a valve (the interruptions may have started some time earlier). SW is expected to ascertain the approximate time when customers first lose their supply.

In practice, it may not always be possible to determine when supply was first lost and SW may have to use the time when customers first noticed the loss

of supply. If this cannot be established, SW should use the time at which they were first notified of the interruption.

Guidance

Properties affected by interruptions: The number of properties affected by interruptions of more than 3, 6, 12 and 24 hours split into the four categories of unplanned; planned and warned; unplanned but caused by third parties; and unplanned due to overruns of planned and warned interruptions.

Interruptions should be reported under each relevant time band so that the category for interruptions exceeding:

3 hours also includes all interruptions lasting more than 6 hours;

6 hours also includes all interruptions lasting more than 12 hours; and

12 hours also includes all interruptions lasting more than 24 hours.

Each interruption should be classed as a single interruption event, and should be recorded under only one of the four categories of: unplanned or unwarned; planned and warned; unplanned third party interruptions; or unplanned or unwarned due to overruns of planned and warned interruptions.

Properties affected by more than one interruption during the report year: Properties, which are affected by more than one interruption during the report year, should be reported separately for each interruption. This means, for example, that a property affected by three supply interruptions would be reported three times, once for each interruption. Where properties are affected by repeat interruptions on the same day, these should only be counted separately where there is sufficient time (eg 1 hour) a minimum of one hour between the interruptions for the supply to be available (eg to refill storage tanks).

Third party: Unplanned and unwarned interruptions for 3, 6, 12 and 24 hours respectively due to third parties should be reported in lines 19 to 22.

Properties affected by interruptions due to electricity supply failure must not be reported under this category. Instead they must be reported as unplanned, unwarned interruptions. However, SW may report in the commentary the number of properties affected by interruptions caused by loss of electrical supply, if it is believed to be significant and to adversely affect its performance.

Major incidents: SW may report in their commentary any major incidents during the report year which it believes adversely affected its performance.

Information on the number of incidents which cause interruptions is not required.

Planned interruptions: So far as customers are concerned there is no difference between unplanned interruptions and planned but unwarned interruptions.

Records

SW must maintain verifiable records. The aim of the records is to provide an auditable method for identifying the specific properties affected by low pressures and the cause of the low pressure.

The Register: SW must maintain a register that should form a database of all properties that experience problems with pressure or flow.

It will enable the identification by address of individual properties which are below the reference level. It should also contain information on, for example, complaints and the results of their investigation, problems which are attributable to customers' apparatus and properties which experience low pressure but are covered by one of the allowable exclusions.

The register must clearly identify those properties reported and distinguish them from those that receive low pressure but are excluded, and provide a verifiable reason for the exclusion (e.g. as abnormal demand or short duration of low pressure).

The records should include:

- the address of the property affected;
- the method of assessment;
- the cause of low pressure;
- details of incidents identified (date, time, duration, minimum pressure, and whether covered by an exclusion);
- action taken to resolve the problem (if any); and
- the name of person responsible for the information.

Properties should only be removed from the reported figures and the register when there is a specific and auditable reason for doing so.

Commentaries

SW is expected to comment on significant year on year changes in reported figures.

To ensure comparability of information, SW must report in the Annual Return tables against the specified definitions, not SW's own internal standards. However, if SW wishes to report additional information on performance against alternative standards this may be included in the commentary but the alternative basis must be clearly stated. Any figures relating to the alternative standard must be clearly identified as such to avoid confusion.

SW may also identify in its commentary any properties which suffered an interruption to supply where SW considers that customers would not notice the loss of service, for example because it occurred at night.

Guidance to the Reporter (Table B2)

Guidance on Properties receiving pressure/flow below the reference level

- Confirm whether all methods used by SW are as SW has described.
- Confirm whether SW has disclosed all assumptions.
- Confirm whether the confidence grades assigned by SW reflect the methods it applies.
- Comment on the methods used by SW. In particular:
 - look carefully at any sampling techniques used by SW, confirm whether in all circumstances where sampling is used, all weaknesses have been exposed by SW; and
- Describe in detail the checks that the Reporter has carried out in order to be able to confirm and comment on each of the points set out above. Including for example how the Reporter has selected any samples for audit from the full population; quantity sampled; robustness of sample; materiality of assumptions and any weaknesses; discussions held with SW staff.

Guidance on Properties affected by supply interruptions

The Reporter should:

- confirm whether all methods used by SW are as it has described;
- confirm whether SW has disclosed all assumptions;
- confirm whether the confidence grades assigned by SW reflect the methods it applies;

- comment on the methods used SW. In particular:
 - the Reporter should look carefully at any sampling techniques used by SW, confirm whether in all circumstances where sampling is used, all weaknesses have been exposed by SW and
 - pay particular attention to SW's methodology for and the reporting of the duration of events, including intermittent events at the same location.
- Describe in detail the checks that the Reporter has carried out in order to be able to confirm and comment on each of the points set out above. Including for example how the Reporter has selected any samples for audit from the full population; quantity sampled; robustness of sample; materiality of assumptions and any weaknesses; discussions held with SW staff.

SECTION B
CHAPTER B3

SEWAGE INTERNAL FLOODING

Edition 8

SECTION B

CHAPTER B3

SEWAGE INTERNAL FLOODING

This table includes:

Annual Flooding Summary (Overloaded sewers, other causes)

These lines include properties internally flooded as a result of overloaded sewers and other causes.

Properties at Risk of Flooding

These lines cover properties at risk of internal flooding more frequently than once or twice in ten years.

Lines 1 to 12: Annual flooding summary

Aim

The aim of this section is to measure the frequency of actual internal flooding of properties from SW's sewerage system by foul water, surface water or combined sewer.

Common Definitions

Internal flooding: For the purposes of this table, *internal flooding* is defined as flooding which enters a building or passes below a suspended floor. For reporting purposes, buildings are restricted to those normally occupied and used for residential, public, commercial, business or industrial purposes.

Buildings whose prime purpose is storage or installation of domestic appliances are excluded. This exclusion encompasses both:

- detached garages (whether situated inside the boundary of the property and separated from the main building or outside the boundary but with common access as in a garage block); and
- linked detached garages (i.e. garages which are attached to a property but separated from it by an external passageway).

However, garages and cellars forming an integral part of a property are classed as part of the building and are included, even if their prime purpose is storage, etc.

Flooding Incidents: For the purpose of the annual return, a *flooding incident* is defined as an incident of internal flooding (as defined above) from a public sewer (whether foul, combined or surface water).

Overloaded Sewers: A sewer is overloaded when the flow from a storm is unable to pass through it due to a permanent problem (e.g. flat gradient, small diameter). Temporary problems such as blockages, siltation, collapses and equipment or operational failures are excluded. No account should be taken of the severity of the storm causing the incident.

Uninhabited cellars: An uninhabited cellar is defined as an integral part of a building that is at least partially below ground level. It is not used for habitation. Where such a cellar is in regular use as part of the normal living accommodation it is termed a basement and any flooding should be reported as a normal internal flooding incident.

Guidance

Flooding Incidents: All incidents of internal flooding of properties should be reported in the table under the appropriate category. The structure of the table requires that a property affected by internal flooding from overloaded sewers is categorised by frequency.

For the purpose of the Annual Return, all flooding incidents caused by the overloading of sewers (which cannot be attributed to other causes, such as blockages or collapse) must be reported under the heading of overloaded sewers. This includes flooding incidents caused by severe storms which may be outside SW's design standard for a particular sewer. Properties affected by a flooding incident should be placed into an appropriate risk category under incidents due to overloaded sewers unless there is positive identification that the finding was due to blockage, collapse or equipment failure. The commentary should state the number of 'unknown cause' properties affected by flooding incidents which have been placed in the overloaded sewer category.

Severe Weather: All flooding incidents should be reported in the appropriate category, irrespective of the severity of the storm. SW may indicate in the commentaries when flooding incidents have been due to exceptionally severe rainfall and this information will be taken into account when producing the Customer Service report. This should be supported by appropriate meteorological data. Where "Severe Weather" is used we will require an explanation in the Commentary of the weather situation, why it is so unusual and its impact

Properties experiencing repeat flooding due to other causes (line B3.7)

We are now collecting data on properties which have experienced repeat flooding due to other causes. We expect SW to keep a record of properties which have flooded more than once due to other causes.

Internal and external flooding

Table B3a collects data on external flooding. For lines B3.1 to B3.12, the following rules should apply:

- All incidents of internal flooding should be recorded regardless of any previous or subsequent external flooding events.
- If a property is flooded both internally and externally during the same event, it should be recorded as an incident on table B3 only.
- If a property has mitigation which prevents an internal flooding incident but the property still floods externally this incident should be reported in table B3a line 1 however the property should still remain on the internal risk register as explained below.

See the guidance for "Properties at risk" for the treatment of properties flooding both externally and internally.

Commentaries

SW is expected to:

- comment on significant year on year changes in reported figures;
- comment on the number of properties reported under internal flooding due to overloaded sewers because no other cause has been positively identified for flooding incidents at those properties.
- state whether any allowance has been made for problems as yet undiscovered.
- include the return periods of severe weather incidents reported in line B3.4 (Number of flooding incidents attributed to severe weather) and the number of properties flooded in each incident;
- Include a table in the commentary showing the number of properties that have experienced repeat hydraulic flooding in the report year and the number of times they have flooded
- state the number of 'unknown cause' properties affected by flooding incidents which have been placed in the overloaded sewer category; and

Lines 13 to 28: Properties at risk of flooding**Aim**

To measure the risk of internal flooding of properties from the public sewerage system by foul water, surface water or combined sewage.

Risk assessment

The definition of properties at risk means that it is unlikely that properties can be removed from risk by operational improvements.

Information on properties at risk is to be reported in the form of a balance sheet, which identifies performance against the three reference levels at the end of the report year as well as the reasons for changes in the reported figures during the report year. It distinguishes between those problems that have been solved as a result of action by SW and those which come from better information. (Properties should be reported under either the 1 in 20, 1 in 10 or the 2 in 10 category.)

Common definitions

Properties at risk: These are defined as properties that have suffered or are likely to suffer internal flooding from public foul, combined or surface water sewers due to overloading of the sewerage system more frequently than the relevant period (either once in twenty years or once or twice in ten years).

Guidance

It should be noted that this measures the frequency of flooding incidents in properties and not the return period of the storm that causes the flooding.

Properties at risk of flooding will be identified by a number of methods:

- historical information on actual flooding incidents; or
- a **verified** hydraulic model. (**Verified** means that properties indicated as at risk are known to have flooded, or there is good reason to believe that unreported flooding has occurred, or changes in the network or properties draining to the system clearly put the property in the at risk category although insufficient time has elapsed for actual flooding to have arisen.)

When a previously unreported property is flooded, it should be entered onto the register under an appropriate risk category. It should normally be considered to be at risk and added to the 1 in 20 category unless:

- investigation clearly shows that it is at risk of flooding more frequently than once in ten years, then it should be added to the once in ten years category, or is at risk of flooding more frequently than twice in ten years, then it should be included in the twice in ten year category;
- the storm was exceptionally severe **and** investigation shows that it is clearly not at risk of flooding as frequently as once in twenty years and

the severity of the storm can be verified (e.g. by the Meteorological Office); or

- the cause was a blockage etc.

In all cases, the decision as to whether a property is to be reported as being at risk should be taken in the context of the aim of the indicator, as set out above.

If a problem is identified and resolved during the report year, it should be entered in the balance sheet as a new problem and as a problem resolved during the same year. (This ensures that SW is reporting the number of problems resolved by its action).

Flooding is often not reported. Therefore, when an incident is reported, SW is expected to investigate the extent of the problem and the number of surrounding properties that were affected. These should then be reported in the relevant categories (at risk and incidents). Where the cause of flooding at a property is still unknown at the time of compilation of the annual Return, then that property must be categorised as affected by internal flooding due to overloaded sewers, and placed in the appropriate risk category.

All properties which have flooded must be entered in the "At Risk" register, although those meeting the defined exclusion criteria are not reported as being at risk. Properties that have not flooded for the last 10 years should be reported in line B3.17 and SW should take action to confirm if the property is still at risk. This should include examination of the cause of the property initially being put on the register, and could include interviews with residents and hydraulic modelling.

A flooded property should appear on either the internal risk register or the external risk register, but not both. For example:

- A property that has flooded internally and subsequently floods externally should not be added to the external register but kept on the internal register. However, this property should be recorded in the annual flooding summary part of table B3a if it has flooded externally during the report year.
- A property that has only flooded externally and then floods internally should be removed from the external "at risk" register and placed on the internal "at risk" register.
- A property should not move from the internal to the external register even if it floods internally once and all subsequent flooding events are external, unless action is taken to remove the risk of internal flooding.

Mitigation: Mitigation is a temporary solution which lowers but does not eliminate the risk of a property flooding due to hydraulic overload. SW should

only install mitigation measures if the flooding is not moved to cause further problems elsewhere. If mitigation measures have to be installed to neighbouring properties to prevent them flooding as part of the overall mitigation solution and the neighbouring properties have never flooded then only the properties that have flooded should be counted in the total number of properties mitigated. A property that is on the 1 in 10 risk register should **not** be moved off the 1 in 10 register or to the lower risk category of 1 in 20 as a result of not flooding due to mitigation measures.

Where such a property is flooded as a result of failure of the mitigation, it should be reported as an overloaded sewer incident.

Movements between registers

We do not expect to see properties that have 'timed out' (i.e. (not flooded for a certain period) being added back on to the register due to reflooding. SW should use its commentary to inform us if 'timed out' properties are being added back on to the register.

Lower risk

We are collecting data on lower risk internal flooding (for properties at risk of flooding more frequently than once in twenty years but less than once in ten years). Lower risk flooding should not be included in lines B3.20 – B3.23 of table 3 to allow for comparison with previous years' data. These should be included in the commentary.

Cost calculations

For the purposes of this part of the table, 1 in 20 internal outputs should be ignored.

The problem solving costs in lines B3.24 to B3.27 should be calculated using the costs and outputs of schemes completed during the report year. If a scheme also solves external problems, the cost should be proportionally allocated. For example:

- If a scheme costs £100k and solves two internal problems and three external problems, then £40k and two outputs should be included in the average cost calculation. The external part of this cost will be used in the calculation in table B3a.

If SW wishes to re-state historical values, please give these numbers in the commentary.

Methodology statements

SW is expected to include its methodology statements with each Annual return. The statement should include

- How a property is added to the at risk register from the initial flooding incident, for example what investigation is carried out immediately after the incident, which register it goes on to.
- How properties are moved between the 1 in 10, 2 in 10 and 1 in 20 risk registers.
- Mitigation – how SW approaches mitigation, how a mitigated property is treated on the at-risk register.
- Definition of severe weather – how SW determines whether a property was flooded due to severe weather.
- If the methodology for external flooding is the same as internal flooding SW should state this. However a definition of what is counted in the ‘curtilage’, ‘highway’ and ‘other’ categories should be included.

SW commentary

SW should:

- comment on significant year on year changes in reported figures;
- state any assumptions made in reporting the figures in the balance sheets;
- comment on the reason why, and number of, individual properties, which are added and then removed from the at-risk register during the report year. For example, this might include: properties added to but subsequently removed from the at risk register in the report year due to the rainfall event associated with the flooding incident being assessed as ‘severe weather’ or; properties which are added to but subsequently removed due to SW action during the report year;
- comment on SW’s policy on provision of mitigation measures and state the number of internal or external problems where mitigation measures were installed during the report year and the total number of properties which are benefiting from mitigation at the end of the year.
- comment on progress of the programme relative to the profile of internal problems solved shown in SW’s Delivery Plan. State any reasons behind any significant variances from the assumed profile of outputs in the report year;
- provide commentary on the number of properties added to the once in twenty years "at risk" register which have not been positively identified

as being at risk of flooding less frequently than once in ten years but more frequently than once in twenty years.

- Identify the number of properties and sewer incidents caused by defects on lateral sewers (included in table B3) and indicate these in the commentary.

Records

SW must maintain verifiable records. The aim of the records is to provide an auditable method for identifying the specific properties which are affected by flooding or are at risk of experiencing flooding.

The “At Risk” Register: As part of these records SW must maintain an “At Risk” register which should form a database of all properties which experience sewer flooding. It will enable the identification by address of individual properties which are below the reference level and should also contain information on (for example) complaints and the results of their investigation, problems which are attributable to customers’ apparatus and properties which experience sewer flooding but are covered by one of the allowable exclusions.

The register must clearly identify those properties below the reference level, distinguish them from those which have flooded but are not below the reference level and provide a verifiable reason for the exclusion (e.g. flooding was a result of a blockage).

The records should include:

- date of incident;
- properties affected identified by address;
- cause of flooding (including source and reason, where known);
- action taken;
- name of persons completing the records; and
- the 'at risk' category.
- If a property on the register is not reported as being at risk then the reason should be stated, and
- if the internal and external registers are held in the same database then the problem needs to be identified as either an internal or external flooding problem.

Guidance to the Reporter (Table B3)

Guidance on Annual Flooding Summary

The Reporter is asked to comment on:

- whether methods used are appropriate to meet WICS' reporting requirements;
- whether all assumptions have been disclosed and their materiality;
- the appropriateness of the confidence grades assigned;
- the efficacy of the methodologies used and the quality of data employed by SW to identify severe weather events; and
- the quality of the data supplied for external flooding and the methodologies used to collect it.

Guidance on Properties on the At Risk Register

The Reporter is asked to comment on:

- whether methods used are appropriate to meet WICS' reporting requirements;
- whether all assumptions have been disclosed and to comment on their materiality;
- the appropriateness of the confidence grades assigned; and
- the numbers reported in the additions/removals lines in the balance including minimum design storm return periods for properties removed by SW's action;
- Whether the basis of the average cost is in line with the guidance
- If SW 'times out' properties from the register Reporters should check how many of these are being added back on to the register and comment on the reasons for this.

SECTION B
CHAPTER B3a

SEWAGE – EXTERNAL FLOODING

Edition 8

SECTION B

CHAPTER B3a

SEWAGE EXTERNAL FLOODING

This table includes:

- **Annual external flooding summary**
- **Areas on the external "At risk" register**

Lines 1 to 10: Annual external flooding summary

Aim

To measure the frequency of actual flooding of external areas from the public sewerage system by foul water, surface water or combined sewage.

Common definitions

External flooding: For the purposes of the Annual Return, external flooding is defined as flooding which is not classed as internal. For reporting purposes, external areas will be split into curtilages, highways and other external areas.

Flooding incidents: For the purpose of the Annual Return, a flooding incident is defined as an event of external flooding (as defined above) from a public sewer (whether foul, combined or surface water).

Overloaded sewers: A sewer is overloaded when the flow from a storm is unable to pass through it due to a permanent problem (e.g. flat gradient, small diameter). Temporary problems such as blockages, siltation, collapses and equipment or operational failures are excluded. No account should be taken of the severity of the storm causing the incident.

External areas at risk: These are defined as external areas that have suffered or are likely to suffer flooding from public foul, combined or surface water sewers due to overloading of the sewerage system more frequently than the relevant period (once in twenty years or once or twice in ten years).

Severe weather: All flooding incidents should be reported irrespective of the severity of the storm. SW may indicate in the commentary when flooding incidents have been due to severe rainfall and this information will be taken into account if the information is used in the Customer Service report.

Guidance for Annual flooding summary

The table requires SW to report flooding by the number of external areas and the number of incidents.

Flooded areas (line B3a.1):

For the purposes of the annual flooding summary all areas that have experienced external flooding should be reported. If a property suffers external flooding then it should be reported in this line even if on a separate occasion the property has also experienced internal flooding in the report year.

Flooding incidents (lines B3a.2 to B3.10):

All incidents of external flooding should be reported in the table under the appropriate category. A property that is flooded both internally and externally during the same event should only be recorded on the internal incident flooding summary.

For the purpose of the return, all external flooding incidents caused by the overloading of sewers (which cannot be positively attributed to other causes, such as blockage, collapse or equipment failure) must be reported under the heading of overloaded sewers. This includes flooding incidents caused by severe storms which may be outside SW's design standard for a particular sewer. The commentary should state the number of 'unknown cause' external areas affected by flooding incidents which have been placed in the overloaded sewer category.

There are three categories for the reporting of external flooding: curtilages, highways, other.

Examples of floodings within the allocations are:

- 'curtilage' - any flooding (except internal flooding) within the curtilage of a residential building – this includes detached garages, linked detached garages as these are not included in the definition of internal flooding;
- 'highways' – including footpaths; and
- 'other' - external flooding to non-residential buildings and areas eg schools, offices, commercial premises and public buildings; public open space; agricultural land; car parks.

Further guidance:

Highway flooding:

- If a road floods in two places and the contour of the road is the only reason for two patches of water, then this should be counted as one highway area flooding.

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- If a road floods in two places and the flooding is sufficiently far apart to be deemed as coming from two different hydraulic inadequacies in the network, then this should be counted as two highway area floodings.
- If a road floods at a cross roads or T junction, this should be counted as one highway area flooding.

'Other' flooding

- Flooding to the external area of, offices, commercial premises, public buildings, car parks and agricultural land should be counted as one area irrespective of how many patches of flood water there are, and whether the areas are split into different uses.
- Flooding to public open spaces should be judged on the use of the area. For example external flooding of a cafe outdoor eating area in a park and the surrounding parkland may be classed as 2 areas. SW should use the commentary to justify the differentiation of the areas of use.

Commentaries

SW is expected to:

- comment on significant year on year changes in reported figures;
- comment on the number of external areas reported under external flooding due to overloaded sewers because no other cause has been positively identified for flooding incidents at those external areas.
- state whether any allowance has been made for problems as yet undiscovered.
- include the return periods of severe weather incidents reported in line B3a.6 and the number of external areas flooded in each incident;
- include a table in the commentary showing the number of properties external areas that have experienced repeat hydraulic flooding in the report year and the number of times they have flooded;
- justify the differentiation of the areas of use of parkland.

Lines 11 – 25: External areas on the "At risk" register**Aim**

To measure the risk of flooding to external areas from the public sewerage system by foul water, surface water or combined sewage.

This measure already exists for internal flooding and is being extended as internal problems are alleviated and the focus turns to external flooding.

Risk assessment

The definition of external areas at risk means that it is unlikely that external areas can be removed from risk by operational improvements.

Information on external areas at risk is to be reported in the form of a balance sheet, which identifies performance against the three reference levels at the end of the report year as well as the reasons for changes in the reported figures during the report year. It distinguishes between those problems that have been solved as a result of action by SW and those which come from better information. (External areas should be reported under either in one of the 1 in 20, 1 in 10 or the 2 in 10 categories but not in more than one category.)

Guidance for at risk register

It should be noted that the 'at risk' register measures the frequency of flooding incidents at external areas and not the return period of the storm that causes the flooding.

External areas at risk of flooding will be identified by a number of methods:

- historical information on actual flooding incidents; or
- a verified hydraulic model. (Verified means that external areas indicated as at risk are known to have flooded, or there is good reason to believe that unreported flooding has occurred, or changes in the network or properties draining to the system clearly put the external area in the at risk category although insufficient time has elapsed for actual flooding to have arisen).

When a previously unreported external area is flooded, it should normally be considered to be at risk and added to the 1 in 20 category unless:

- investigation clearly shows that it is at risk of flooding more frequently than once in ten years, when it should be included in the once in ten year category;
- investigation clearly shows that it is at risk of flooding more frequently than twice in ten years, when it should be included in the twice in ten year category;
- the storm was exceptionally severe and investigation shows that it is clearly not at risk of flooding as frequently as once in twenty years and the severity of the storm can be verified (e.g. by the Meteorological Office); or

- the cause was a blockage etc.

In all cases, the decision as to whether a property is to be reported as being at risk should be taken in the context of the aim of the indicator, as set out above.

If a problem is identified and resolved during the report year, it should be entered in the balance sheet as a new problem and as a problem resolved during the same year.

Flooding is not always reported. Therefore, when an incident is reported, SW is expected to investigate the extent of the problem and the number of surrounding areas that were affected. These should then be reported in the relevant categories (at risk and incidents). Where the cause of flooding at an external area is still unknown at the time of compilation of the return, then that external area must be categorised as affected by external flooding due to overloaded sewers, and placed in the appropriate risk category.

All external areas which have flooded must be entered in the 'at risk' register, although those meeting the defined exclusion criteria are not reported as being at risk for the 'at risk' indicator.

A property should appear on either the internal risk register or the external risk register but not both. For example:

- A property that has flooded internally and subsequently floods externally should not be added to the external register but kept on the internal register. However this property should be recorded in line 1 ('areas flooded externally in the year') and line 2 ('Curtilage flooding incidents in the year') of this table.
- A property that has only flooded externally and then floods internally should be removed from the external risk register and placed on the internal risk register and reported in line 25 'moved from external to internal register'.

There must be clear and auditable links between SW registers and the 'at risk' balance sheet.

Cost calculations

The problem solving costs in lines B3a.22 to B3a.25 should be calculated using the costs and outputs of schemes completed during the report year. If a scheme also solves external problems the cost should be proportionally allocated. For example:

If a scheme costs £100k and solves 2 internal problems and 3 external problems then £60k and 3 outputs should be included in the average

cost calculation. The internal part of this cost will be used in the calculation in table B3.

Methodology statements

SW is expected to include its methodology statements with each Annual return. The statement should include:

- How an area is added to the at risk register from the initial flooding incident, for example what investigation is carried out immediately after the incident, which register it goes on to.
- How properties are moved between the 1 in 10, 2 in 10 and 1 in 20 risk registers.
- Mitigation – how SW approaches mitigation, how a mitigated property is treated on the at risk register.
- Definition of severe weather – how SW determines whether an area was flooded due to severe weather.
- If the methodology for external flooding is the same as internal flooding SW should state this. However a definition of what is counted in the 'curtilage', 'highway' and 'other' categories should be included.

Records

SW must maintain verifiable records for 'at risk'. The aim of the records is to provide an auditable method for identifying the specific external areas which are affected by flooding or are at risk of experiencing flooding.

The 'at risk' Register: As part of these records SW must maintain a 'at risk' register which should form a database of all properties and external areas which experience sewer flooding. It will enable the identification by address of individual properties and external areas which are below the reference level. It should also contain information on (for example) complaints and the results of their investigation, problems which are attributable to customers' apparatus, and properties and external areas which experience sewer flooding but are covered by one of the allowable exclusions.

The register must clearly identify those properties and external areas below the reference level, distinguish them from those which have flooded but are not below the reference level and provide a verifiable reason for the exclusion (e.g. flooding was a result of a blockage).

The records should include:

- date of incident;

- properties or external areas affected identified by address;
 - cause of flooding (including source and reason, where known);
 - action taken;
 - name of persons completing the records; and
 - the 'at risk' category.
- If the internal and external registers are held in the same database then the problem needs to be identified as an internal or external flooding problem

SW commentary

SW is expected to:

- comment on significant year on year changes in reported figures;
- state any assumptions made in reporting the figures in the balance sheets;
- state whether any allowance has been made for problems as yet undiscovered; and
- comment on the reason why, and number of, external areas, which are added and then removed from the at-risk register during the report year. For example, this might include: external areas added to but subsequently removed from the at risk register in the report year due to the rainfall event associated with the flooding incident being assessed as 'severe weather'; or external areas which are added to but subsequently removed due to SW action during the report year.

Guidance to Reporters (Table 3a)

Reporters should comment on:

- whether data collection methods used are appropriate to meet WICS' reporting requirements and clearly set out in the methodology statement;
- whether all assumptions have been disclosed and their materiality;
- the appropriateness of the confidence grades assigned;
- the efficacy of the methodologies used and the quality of data employed by companies to identify severe weather events;
- the quality of the data supplied for external flooding and the methodologies used to collect it;

- how SW is counting highway and 'other' areas;
- the numbers reported in the additions/removals lines in the balance including minimum design storm return periods for areas removed by SW action.

SECTION B
CHAPTER B4
CUSTOMER SERVICE

Edition 8

SECTION B

CHAPTER B4

CUSTOMER SERVICE

This table covers:

- **Billing / Charging / Metering Enquiries**
- **Change of Payment Method Enquiries**
- **New written complaints**
- **Telephone Contacts**
- **Private Septic Tank Emptying**

Lines 1 to 14: Response to billing contacts

Common Definitions

Billing contact: This covers any communication from a customer regarding a bill which requires a response or an action by SW and does not constitute a written complaint, which should be reported under 'complaint'. Billing contacts can be received by telephone, in writing, by electronic transmission, by personal visit or written on a piece SW correspondence, for example, a bill which is returned to SW, except where it is offensive or abusive.

Specific Definitions

Lines B4.1 to B4.7: Response to Billing / Charging / Metering Enquiries

Aim

To identify the total number of billing, charging and metering enquiries received during the report year and time taken to respond to them.
For example, contacts include:

notification of changes - to address, name, bank details etc.;

charges - reasons for increases in charges, reasons why increase is above RPI+K average, queries about standing charges, queries about Rateable Values etc.;

billing - bills not received, bill amount incorrect, receipt of duplicate bill, receipt of two separate bills (for different amounts or services) etc.;

metered accounts - delay in cancelling unmeasured bill following transfer to measured tariff, query high consumption, query receipt of estimated bills etc.;

debt recovery - Final Notice incorrectly issued or not received, Summons incorrectly issued or not received, disconnection carried out despite payment of bill or agreed arrangement etc.;

new connections - charges for rechargeable works, such as requisitions of new mains or connections, Infrastructure Charges etc.; and

other - property not occupied but still receiving bills, property not connected to mains water/sewerage but still receiving bills etc.

Lines B4.8 to B4.14: Change of Payment Method Enquiries

Aim

To identify the total number of change of payment method enquiries received during the report year and time taken to respond to them.

requests to change payment methods - to/from Direct Debit, Standing Order, instalments, budget schemes, payment cards etc.;

Where the content or tone of written communication indicates an element of dissatisfaction, however mildly worded or unjustified, it should be classified as a complaint.

Response time: This is the number of working days between receipt of a contact by SW up to and including the day of despatch of a response. For the purpose of this calculation, the day of receipt is counted as day zero and the next working day as day one.

Response: This is defined as a response to a billing contact which does one or more of the following:

- provides an explanation of SW's relevant policy or procedure and indicates why, in SW's opinion, no further action on the customer's billing contact is required; or
- results in all requested action being taken on the customer's account. The response time is to be reported from the receipt of the billing contact to the point where all requests for action by the customer have been completed even if they will be delayed e.g waiting for a weekly print run. When a telephone contact has requested a leaflet or other information the contact should be closed when the information is dispatched to the customer not when the process is initiated; or
- informs the customer of when action on his/her account will be taken if action cannot be taken immediately due to circumstances beyond SW's

control, for example when clearance is needed from a third party, such as a landlord.

Whichever type of response is dispatched it **MUST** substantively answer ALL points raised by the customer.

Holding reply: This is defined as a response to a billing contact which advises the customer that SW will need to undertake additional research or other actions before being able to respond to the customer's contact. A holding reply should include a date by which investigations or further actions will be complete and by when the customer will receive a further communication from SW. A holding reply does not close a contact.

Guidance

Billing contacts Within the output measures methodology section of the Annual Return, SW should provide a copy of any formal written procedures or guidance covering the allocation of customer contacts to customer care enquires or customer care complaints.

Please see the notes for line B4.31 for guidance on recording the number of billing complaints received by telephone. These should be included in the total billing contacts reported in line B4.1.

Waterwatch: For the avoidance of doubt the recording of billing contacts received via Waterwatch on a customer's behalf should be included.

Response time: The number of working days between receipt of a billing contact and the despatch of a response is calculated as follows:

Contact received	Friday 20 February 2009	
Response despatched	Wednesday 25 February 2009	
Total Days	20/21/22/23/24/25 February	6
Less day of receipt	20 February	1
		5
Less non-working days	21/22 February	2
Response time (working days)		3

The date of receipt of a contact is the date it arrives at SW, whether this is the usual inlet or not; it is not necessarily the date when it reaches a customer services section or the date when it is opened, both of which could be later than the date of arrival. Similarly, the date of despatch refers to the date a response is sent to the customer; it is not necessarily the date that it is printed or the date that the response leaves the customer services section, both of which could be earlier than the date of despatch.

Where billing contacts are not dealt with at the end of the period SW is to use one of the following methods:

- the contact is to be included in the total number of billing contacts received for the year in which it is received and the response time is also to be included in that year's information although it may continue into the following year; or
- the contact is to be included in the total number of billing contacts received for the year in which it is dealt with and the response time is also to be included in that year's information although it may commence in the previous year.

Whichever method is adopted, care should be taken to ensure that undercounting or double counting does not occur and that the method used is consistently applied in subsequent years. SW **MUST** state in its methodology statement which approach it has adopted.

Answering written billing contacts by telephone or by visit: Where SW uses the telephone or make a visit to respond to a written billing contact, then the date of the telephone call or visit will count as the date of response for customer care enquires purposes.

There must be an auditable record of the response made by SW to all contacts regardless of whether the response is made by telephone call, letter, visit or by taking the necessary action on the customer's account. For example a file note or a confirmatory response letter.

SW should state its policy regarding the use of responses by telephone and/or visit, and the timing of confirmatory letters in the methodology section.

SW should state how it ensures that all responses are recorded in order to maintain an auditable record.

Sampling: Where the information for this indicator is derived from a sample basis, SW **MUST** explain the:

- justification for using a sampling method rather than counting actuals (and when this method will be replaced); and
- sampling method used by SW including how the sample is selected, the size of the sample and how robust it is.

Assumptions: Any assumptions, including those which are made about the response times, for example to particular types of contacts, must clearly be stated in the commentary, together with the reasons for the assumptions.

Commentary (billing contacts)

SW should:

- comment on significant year on year changes in reported figures;
- any sampling method used by SW including how the sample is selected, the size of the sample and how robust it is, and the justification for using a sampling method rather than counting actuals (and when this method will be replaced);
- state any assumptions, including those which are made about the response times, for example to particular types of contacts, **MUST** be clearly be stated in the commentary, together with the reasons for the assumptions; and
- provide justification for the confidence grade assigned to each line.

Lines 15 to 21: New written complains**Aim**

To identify the total number of written complaints received during the report year and time taken to respond to them.

Common Definitions

Written complaints: This covers any written communication from a customer or a customer's representative (e.g. Citizens' Advice Bureau, solicitor) alleging that an action or inaction of SW, or a service or lack of service provided by SW or agent/contractor has fallen below his/her expectation, even if written in mild and friendly terms. This includes any expression of annoyance or dissatisfaction by the customer, or disagreement with SW. Written complaints include those made by letter, fax and electronic mail and comments written on a piece SW correspondence, for example a bill, which is then returned to SW except where it is offensive or abusive.

Petitions: If a petition is submitted to SW, it **MUST** respond to the customer who has sent in the petition. Depending on the nature of the petition, SW may also choose to respond separately to each person who has signed the petition. Each response SW makes **MUST** be reported and details of the number of petitions and the responses SW sent given in the commentary.

Exclusions: SW can exclude from the reported figures those written complaints, which are:

- anonymous;

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- about the activities of other undertakers or other utilities, for example signage around trenches;
- not about the services or functions of SW, for example complaints about executive salaries, sponsorship activities and SW advertising campaigns;
- about non-core activities, such as plumbing services, consultancies etc; and
- about recreational and amenity activities which are not defined as statutory duties for example visitor centres at SW sites, water skiing, angling etc.
- any comments that are offensive or abusive.

Response: This is defined as a response to a written complaint which does one or more of the following:

- provides an explanation of SW's relevant policy or procedure and indicates why, in SW's opinion, no further action on the customer's complaint is required; or
- informs the customer that action to resolve the complaint has been taken and identifies when the action occurred, for example flushing of mains; or
- informs the customer of when action to resolve his/her complaint will be taken if action cannot be taken immediately; for example, "programmed capital works are not scheduled until *month and year*, and should be completed by *month and year*".

Whichever type of response is dispatched it **MUST** substantively answer ALL issues /questions raised by the customer.

Holding reply: This is defined as a reply to a written complaint which advises the customer that SW need to undertake additional research or other actions before being able to respond to the customer's complaint. A holding reply should include a date by which investigations or research will be complete and by which the customer will receive further communication from SW.

Guidance

Written complaints: General statements of complaint are to be counted even though a standard type of reply may be sent. Complaints which may seem unfair or frivolous should also be reported, although further correspondence on the same subject need not be reported.

Waterwatch: For the avoidance of doubt written complaints received via the WIC or Waterwatch Scotland are to be included. In order to be consistent with the recording of complaints by customers, follow up letters from the WIC or Waterwatch Scotland actively pursuing the complaint on behalf of the customer are to be included, but follow up letters simply seeking additional information are not to be reported.

Response time: This is the number of working days between receipt of a query by SW up to and including the day of despatch of a response. For the

purpose of this calculation, the day of receipt is counted as day zero and the next working day as day one.

The despatch of a holding reply does not affect the total response time.

The number of working days between receipt of a written complaint and the despatch of a response is calculated as follows:

Contact received	Friday 20 February 2009	
Response despatched	Wednesday 25 February 2009	
Total Days	20/21/22/23/24/25 February	6
Less day of receipt	20 February	1
		5
Less non-working days	21/22 February	2
Response time (working days)		3

The date of receipt is the date that the written complaint arrives at SW, whether or not this is the usual inlet. It is not therefore necessarily the date when it reaches a customer services section or the date when it is opened, both of which could be later than the date of arrival. Similarly, the date of despatch refers to the date a response is sent to the customer. It is not necessarily the date that the response is printed or the date that the response leaves the customer services section, both of which could be earlier than the date of despatch.

Repeat contacts: Where a complaint necessitates a period of correspondence each letter from the customer is to be counted as a complaint and recorded separately.

If after a period of correspondence a contemporaneous recorded decision is made that the original complaint has been dealt with as far as SW is able any future correspondence regarding the complaint need not be reported. The number of such decisions must be recorded in the commentary.

Answering written complaints by telephone or by visit: Where SW uses the telephone or make a visit to respond to a written billing contact, then the date of the telephone call or visit will count as the date of response for reporting purposes.

Maintaining audit trails:

There **MUST** be an auditable record of response made by SW to all contacts regardless of whether the response is made by telephone call, letter, visit or by taking the necessary action on the customer's account. For example, a file note or a confirmatory response letter.

SW should state its policy regarding the use of responses by telephone and/or visit, and the timing of confirmatory letters in the methodology section. SW must state how it ensures that all responses are recorded with an auditable record.

End of year: Where written complaints are not dealt with at the end of the period, SW is to use one of the following methods:

- the complaint is to be included in the total number of complaints received for the year in which it is received and the response time is also to be included in that year's information although it may continue into the following year; or
- the complaint is to be included in the total number of complaints received for the year in which it is dealt with and the response time is also to be included in that year's information although it may commence in the previous year.

Whichever method is adopted, care should be taken to ensure that undercounting or double counting does not occur and that the method used is consistently applied in subsequent years. SW must state in its methodology statement which approach it has adopted.

Reporting complaints to/about contractors: Complaints to contractors or other agents about work being undertaken on behalf of SW must be reported under customer care complaints, even if the contractor or agent deals directly with the complaint.

Complaints about contractors or other agents must also be reported under customer care complaints, even if the complaint is referred to the contractor to resolve.

Sampling: Where the information for this indicator is derived from a sample basis SW must explain:

- the justification for using a sampling method rather than counting actuals (and when this method will be replaced); and
- the sampling method used by SW including how the sample is selected, the size of the sample and how robust it is.

Assumptions: Any assumptions, including those which are made about the response times, for example to particular types of written complaints, must be clearly stated in the methodology section.

Commentary (written complaints)

SW should provide the following information:

- any matter which might have an influence on the reported figures;
- on the number of decisions that SW considers a complaint dealt with, but may need to be revisited, if there has been no such incidents, please state this in the commentary;
- details of the number of petitions and the responses SW sent during the year;
- state any sampling method used by SW including how the sample is selected, the size of the sample and how robust it is, and the justification for using a sampling method rather than counting actuals (and when this method will be replaced); and
- provide justification for the confidence grade assigned to each line.

Lines B4.22 to 4.28: Telephone contacts (calls answered, all lines busy, calls abandoned)

Aim

The aim of the indicator is to identify the ease with which customers can make a telephone contact with SW.

Common Definitions

Exclusions: The indicator is intended to monitor incoming telephone traffic, which can be regarded as originating from SW's customer base. For example, calls from contractors, suppliers, or calls made by a SW's field operatives to SW offices are not regarded as customer contact and can be excluded from reported numbers where this is possible. In addition, there are circumstances where calls made by customers about SW's services or functions can be excluded from reported figures. These are:

- calls to organisations acting as agents for SW, e.g. local authority sewerage agencies, contractors and debt collection agencies are excluded from the measure, unless these represent a principal customer contact point with SW. As a general rule of thumb, where the number of customer calls to an individual agency or contractor is below 1% of the total number received by SW, these can be excluded from the reported figures.

However, for the avoidance of doubt, SW must report customer calls made to contractors/agents who act as an overflow or crisis management facility during peak periods, such as the billing season or major operational incidents. Similarly, companies outsourcing a key aspect of customer service (e.g. a metering programme) must report calls received by its subcontractors:

- calls to the direct lines of named individuals or specialist sections, except where the specialist section (such as Debt Recovery) specifically prints its Direct Dial numbers on SW letterhead; and
- temporary customer contact points established to meet a specific need e.g. to handle calls about a localised water incident or promotion of an authority initiative. Temporary customer contact points are defined as those telephone numbers (separate from the principal advertised customer contact point) set up to deal with a single topic which will be closed down once the issue has been resolved. SW is, however, asked to use the commentary to identify the number and the duration that each temporary customer contact point was in place.

Calls in the above categories need not be excluded if, for example, SW has one telephone number that fulfils other purposes as well as customer contact.

SW agent: An SW agent is an employee of SW (operating from a principal advertised customer contact point). Where a principal advertised customer contact point has been sub-contracted, an SW agent is the employee of the sub-contractor. For the avoidance of doubt, local authority sewerage agencies, contractors, debt collection agencies, etc. are not regarded as authority agents as they do not operate or operate from a principal advertised customer contact point.

Office hours: The indicator covers office hours only. Office hours are defined as the hours which SW's principal advertised customer contact points are available. The relevant hours should be set out in the methodology statement

Principal advertised customer contact points: For 'all lines busy and 'calls abandoned' it is not the intention to monitor all incoming telephone traffic, only that which is directed to principal advertised customer contact points.

Principal means the main contact point(s) that customers are encouraged/directed to phone.

Advertised refers to those customer contact points that appear in telephone directories, newspaper advertisements, on SW literature or are specifically printed (rather than typed) onto SW letterheads.

Configuration of telephony: SW is asked to describe in the methodology statement the number and configuration of incoming lines linked to principal advertised customer contact points; a schematic diagram should be inserted where this would be helpful.

Total calls received on customer contact lines:

This is defined as the number of calls that enter SW's telephone system on the principal advertised customer contact points, and receive a ringing tone. Calls that receive an engaged tone are not to be counted as calls received; such calls will be collected within the 'all lines busy' aspect of the indicator.

Calls intercepted by a message manager during localised incidents, such as burst mains, should be included in total calls received.

Calls answered: If SW uses recorded messages, answering machines, touch tone telephones or automatic transaction/interactive voice response systems, it should take particular care when reporting against this requirement.

- **Recorded messages - queuing:** It may be that SW employs a recorded message to advise customers that they are in a queue. Some recorded messages trip-in within a few seconds of the ringing tone being heard by the customer while others are activated later. For the purposes of the indicator the time to answer the call is taken from the time that the customer would hear the first ringing tone to the time that SW agent answers the call, **not** from or to the time customers hear the recorded message.

If customers hang up during or after hearing the recorded message advising them that they are in a queue or before SW agent answers the call then such calls are to be reported as abandoned.

- **Recorded messages - message manager:** During localised incidents, such as burst mains or boil water notices, SW may use a recorded message, e.g. via a 'message manager' system, to relay information to customers. In such circumstances each call to the recorded message is to be counted as *Calls answered*.

Some systems cannot identify between those calls that are answered by a 'message manager' system and those that are abandoned. For the purpose of this requirement SW may assume that calls entering the 'message manager' system are answered once the customer has reached the salient part of the message. For example, the 'message manager' systems trips in after 20 seconds with salient part of message reached after a further 20 seconds. Calls recorded within the system as abandoned after 40 seconds should be reported as *Calls answered*. Calls abandoned before 40 seconds would be classed as *Calls abandoned*.

- **Answering machines:** If SW uses an answering machine during busy periods and asks customers to leave their name, telephone number and reference numbers such calls are to be classed as *Calls answered*. The response time for calls to answering machines is to be taken from the customer first hearing the ringing tone to the completion of SW's recorded message.

SW should state in the methodology its policy for responding to customer messages left on answering machines. For example, SW may have indicated that they return most calls within two hours and all calls within half a working day.

If customers hang up before completion of the full recorded message then such calls are to be reported as *Calls abandoned*.

- **Touch tone telephones:** SW may employ a system which asks customers with touch tone telephones to press specified buttons to access specific authority departments/sections. As with recorded messages the time to answer the call is taken from the time that the customer would hear the first ringing tone to the time that SW agent answers the call, **not** to or from the time the recorded message is completed nor to or from the time the customer completes the action of pressing appropriate buttons.

If customers hang up during or after hearing the message but before pressing appropriate buttons, then such calls are to be reported as *Calls abandoned*.

- **Automatic transactions/interactive voice response:** SW may operate 'automatic transaction' or 'interactive voice response' systems e.g. where a customer provides a meter reading over the telephone to what is essentially an answering machine. Calls to these numbers should be classed as *Calls answered* with response times taken from the time that the customer would hear the first ringing tone to the time that the completion of the message inviting customers to leave details.

If customers hang up before completion of the message inviting them to leave, for example, a meter reading, then such calls are to be reported as *Calls abandoned*.

- **Time bands:** SW may be able to measure speed of response in five second blocks, others in 10 second blocks while a few are restricted to 15 second blocks. If SW is unable to provide directly information on calls answered within each of the required time bands may interpolate using an appropriate method. Details must be given in the methodology statement.

Average time: Average response time is likely to be a key indicator of SW performance and one which will be extensively used for comparison purposes. Where direct measurement is not possible, sampling or interpolation of data may be appropriate in deriving average response times. Again, details must be given in the methodology statement.

- **Direct measurement:** If SW uses direct measurement it should describe the system used in the methodology statement, e.g. summation of wait times for all calls divided by the total number of calls received and answered, or some other appropriate method.
- **Sampling:** If SW uses sampling techniques it should describe in the methodology statement the sampling framework, including frequency, timing and number of calls in the sample.

- **Interpolation:** If SW uses interpolation of data it should describe in the methodology statement the system used, e.g. multiplying the percentage of calls in each timeband by the mid-point of the timeband, or some other method.

All lines busy: All calls receiving the 'engaged' tone should be reported in this category.

Calls intercepted by a messaging service that advises a customer that SW is unable to take their call at present MUST also be reported against 'all lines busy'.

If SW is unable to measure the number of occasions when all lines are busy, but able to measure the time for which all lines are busy, it MUST use the commentary to report the actual time when all lines are busy. SW must also use the commentary to explain the reason why it is unable to meet this reporting requirement and when it will be able to. SW is to assign a nominal time value of 2 seconds for each call and divide the length of time all lines are busy by the specified number of seconds per call. This will give a number to be included in this category. Details should be given in the methodology statement.

Calls abandoned: All calls that are abandoned, including those abandoned within ten seconds, are to be reported. If SW is able to differentiate between calls abandoned within ten seconds and over ten seconds it is asked to use the commentary to report the former figure; this will be used to consider whether the indicator will be extended in future years.

IF SW uses automation of any sort, it should take particular care when reporting against this indicator. The guiding principle is that a call should be classed as abandoned if the customer hangs up before their call is answered by an agent or before they reach the salient part of any message. The following is a list of examples and is not intended to cover all circumstances.

- **Recorded messages - queuing:** where callers hang up during or after hearing the recorded message advising them that they are in a queue, and before SW answers the call;
- **Recorded messages - 'message manager':** where callers hang up before reaching the salient part of the recorded message;
- **Answering machines:** where callers hang up before the completion of SW's recorded message;
- **Touch tone telephones:** where callers hang up during or after hearing the message but before pressing appropriate buttons;

- **Touch tone telephones:** where callers hang up after pressing the appropriate buttons, but before their call has been substantively answered (whether by an agent of SW or by listening to a message, and reaching the salient part of the message);
- **Automatic transactions/interactive voice response systems:** where callers hang up before completion of the message inviting customers to leave, for example, a meter reading.
- **Automated payment lines:** where callers hang up before they start the payment transaction

Line B4.29: Telephone contact (telephone complaints)

Aim

To identify the total number of complaints received by telephone during the report year. The definition of telephone complaints that appears below is consistent with that used for written complaints.

Common definitions

Telephone complaints: This covers any telephone call from a customer or a customer's representative (e.g. Citizens' Advice Bureau, solicitor) alleging that an action or inaction of SW, or a service or lack of service provided SW or agent/contractor has fallen below his/her expectation.

General statements of complaint are to be counted. Customers may complain unfairly or unjustifiably; nevertheless-such calls are to be classed as complaints. Some complaints may be frivolous or vexatious; nevertheless these should be reported, although SW may take a contemporaneous decision that further calls on the same subject need not be reported.

Waterwatch: For the avoidance of doubt complaints received via Waterwatch are to be included. Follow up phone calls from the Waterwatch actively pursuing the complaint on behalf of the customer are to be included, but follow up calls simply seeking additional information are not to be reported.

Exclusions: SW can exclude from the reported figures those telephoned complaints which are:

- anonymous;
- about the activities of other undertakers or other utilities, for example signage around trenches;
- not about the services or functions of SW, for example complaints about executive salaries, sponsorship activities and SW advertising campaigns;
- about non-appointed activities, such as plumbing services;

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- about recreational and amenity activities which are not defined as statutory duties, for example visitor centres at SW sites, water skiing, angling etc.; and
- in response to customer satisfaction survey questionnaires/cards (such complaints could be said to have been initiated by SW and would not have arisen but for a prompt by SW).

Reporting complaints to/about contractors: Telephone complaints to contractors or other agents about work being undertaken on behalf of SW MUST be reported, even if the contractor or agent deals directly with the complaint.

Complaints *about* contractors or other agents MUST also be reported, even if the complaint is referred to the contractor to resolve.

Sampling: Where the information for this indicator is derived from a sample basis, SW MUST explain:

- the justification for using a sampling method rather than counting actuals (and when this method will be replaced); and
- the sampling method used by SW including how the sample is selected, the size of the sample and how robust it is.

Assumptions: Any assumptions, including those which are made about the response times, for example to particular types of telephone complaints, MUST be clearly stated in the methodology section.

Commentaries (Telephone contacts)

SW should use the commentary to provide the following information:

- Identify whether there have been any temporary customer contact points in place, how long they were in place for and how many calls they received.
- Describe in the methodology statement the number and configuration of incoming lines linked to principal advertised customer contact points; a schematic diagram should be inserted where this would be helpful. SW should also identify the telephone numbers and locations against which it is reporting.
- For total calls received on customer contact lines, all lines busy and calls abandoned the reporting should be on office hours only. Office hours are defined as the hours that SW's principal advertised customer contact points are open. The relevant hours should be set out in the methodology statement.

- If SW has an IVR system, it must report in as much detail as possible on the number of abandoned calls and where in the system the caller has abandoned.
- state any sampling method used by SW including how the sample is selected, the size of the sample and how robust it is, and the justification for using a sampling method rather than counting actuals (and when this method will be replaced); and
- provide justification for confidence grade assigned to each line.

Lines B4.30 to B4.40: Septic Tank Emptying

Aim

The aim of the indicator is to assess the numbers of septic tanks emptying requests and the response time to these requests.

Guidance to the Reporter (Table B4)

Guidance on Response to billing contacts

The Reporter should:

- Confirm whether all methods used by SW are as it has described.
- Confirm whether SW has disclosed all assumptions.
- Confirm whether the confidence grades assigned by SW reflect the methods it applies.
- Comment on the methods used by SW. In particular:
 - Reporters should look carefully at any sampling techniques used by SW; confirm whether in all circumstances where sampling is used, all weaknesses have been exposed by SW.
 - The methods used to identify billing contacts from all customer contacts.
 - The methods used to ensure contacts are substantively answered before closure.
- Describe in detail the checks that the Reporter has carried out in order to be able to confirm and comment on each of the points set out above. Including for example how the Reporter has selected any samples for

audit from the full sample; quantity sampled; robustness of sample; materiality of assumptions and any weaknesses; discussions held with SW staff.

Guidance on Response to written complaints

The Reporter should:

- Confirm or otherwise that all methods used by SW are as it has described.
- Confirm whether SW has disclosed all assumptions.
- Confirm whether the confidence grades assigned by SW reflect the methods it applies.
- Comment on the methods used by SW. In particular:
 - the Reporter should look carefully at any sampling techniques used by SW, confirm that in all circumstances where sampling is used, all weaknesses have been exposed by SW;
 - the methods used to identify complaints from all customer contacts; and
 - the methods used to ensure contacts are substantively answered before closure.
- Describe in detail the checks that the Reporter has carried out in order to be able to confirm and comment on each of the points set out above. Including for example how the Reporter has selected any samples for audit from the full population; quantity sampled; robustness of sample; materiality of assumptions and any weaknesses; discussions held with SW staff.

Guidance on Telephone Contacts

The Reporter should:

- confirm whether all methods used by SW are as it has described;
- confirm whether SW has disclosed all assumptions;
- confirm whether the confidence grades assigned by SW reflect the methods it applies;
- comment on the methods used SW. In particular:

- the Reporter should look carefully at any sampling techniques used by SW , confirm that all circumstances where sampling is used and all weaknesses have been exposed by SW .
- The Reporter should describe in detail the checks that they have carried out in order to be able to confirm and comment on each of the points set out above, including for example how the Reporter has selected any samples for audit from the full sample; quantity sampled; robustness of sample; materiality of assumptions and any weaknesses; discussions held with SW staff.

For calls abandoned in particular, the Reporter is asked to:

- Confirm whether SW can capture all abandoned calls. In particular, if SW uses an IVR system, is it able to capture callers who abandon their call between choosing an option within the IVR and having their call substantively answered, either by an agent or by completing an automated transaction/listening to the salient part of an automated message.
- If SW is not able to capture and report all abandoned calls, provide/confirm an estimate of the number that are missed. If SW can only capture abandoned calls at certain points within an IVR system, please confirm SW's description of which are captured and which are not.
- Confirm whether the confidence grade reflects SW's ability to capture abandoned calls correctly.

**SECTION B
CHAPTER B7**

CUSTOMER CARE – GMS PERFORMANCE

SECTION B

CHAPTER B7

CUSTOMER CARE - GMS

The first eight blocks refer to the following Guaranteed Minimum Standards which were introduced on 1 October 2000;

SW will:

- Give you **48 hours notice of a planned interruption** likely to last more than four hours and **restore your supply at a stated time**;
- **Restore your supply within 12 hours** of an unplanned interruption (48 hours for a trunk main);
- Clean up the mess, and **refund your full Annual Sewerage Charge** for each incident (up to £1000) (for business customers this excludes any trade effluent charges) following sewer flooding in your premises;
- **Respond fully in writing to a written complaint, or to a telephone complaint**, where a written response is requested **within 10 working days**;
- Respond to your request to **change your method of payment within 5 working days**, and to **other billing queries within 10 working days** (*where they bill you directly*);
- **Keep appointments with you** for a morning or afternoon and **within a specified two hour time band** if you request this. (*Unless the appointment is cancelled at least 24 hours in advance*)

If SW fails to meet these standards it will compensate the customer with a token payment of £20, except in the event of sewer flooding when the annual sewerage charge will be refunded (up to £1000 and excluding trade effluent charges).

Definitions are expanded in the 'Glossary of Definitions' provided to SW with the Customer Service Performance Reporting requirement.

Appointments

An arrangement, made at least 24 hours in advance, to meet a customer or attend premises, at either customer or SW's request, on a mutually agreed day, specifying am or pm, or within a two hour time band if the customer requests this. SW is expected to be 'reasonable' in agreeing the date/ time with the customer. This includes what may be considered 'operational appointments' for septic tank emptying, delivery of bottled water, etc or business to business meetings such as regular key account manager

meetings with an organisation (although of course we would ordinarily expect SW's staff to keep such appointments as a matter of courtesy to the customer). Appointments can be disregarded if they are cancelled/ delayed at least 24 hours in advance. This is in addition to any other service standards which may apply.

Appointment GMS compensation is payable if the appointment is not kept (or cancelled/ delayed at least 24 hours in advance), an appointment will not be considered to be kept if the appropriate am / pm or two hour time band is not adhered to.

Block 9 of this table refers to ex-gratia or 'goodwill' payments made by SW's outside or over and above GMS failure payments to customers who have experienced poor service or suffered inconvenience which may not be covered by Guaranteed Minimum Standards. This system is often used to cover problems of minor damage. This does not include insurance claims. From October 1 2000 a minimum payment of £20 was established.

The remaining five blocks refer to the following Guaranteed Minimum Standards which were introduced on April 2004 but operated informally by SW before commencement of new standards.

SW should report its performance against the standards in place at the time under review. SW should state clearly in the commentary what the standards reported against are and when they applied.

Payments include the following:

- any cheques made payable to the customer and sent directly to him/her, or to a third party acting on behalf of the customer;
- any cheques or credits paid to a third party on behalf of the customer, for example where a customer nominates a charity to receive the payment; and
- any credits made to customers' accounts

Guidance to the Reporter (Table B7)

The Reporter is asked to comment on:

- whether methods used are appropriate to meet WICS' reporting requirements;
- whether all assumptions have been disclosed and to comment on their materiality;
- the appropriateness of the confidence grades assigned; and
- whether any sampling techniques have been used, and their statistical representativeness.

Where automatic payments are made, please comment on any inconsistency between the number of automatic payments made and the number of failures to meet the standard.

**SECTION B
CHAPTER B8
OTHER SERVICE INDICATORS – WATER AND
SEWERAGE SERVICE**

Edition 8

SECTION B

CHAPTER B8

OTHER SERVICE INDICATORS – WATER AND SEWERAGE SERVICE

This table covers the following serviceability indicators:

- **Water distribution indicator**
- **Water treatment works indicators**
- **Sewerage service indicators**
- **Sewage treatment works – BOD/SS/NH3 indicators**

Lines B8.1: Mains bursts

Commentary

SW should comment on the proportion of bursts found by proactive methods, such as active leakage control.

Lines B8.2 – B8.9: Water Treatment Works (Turbidity)

Guidance

Reporting is for the calendar year 2009 to align with DWQR reporting. SW is required to analyse turbidity results for each operational water treatment works that produced water for drinking purposes in the calendar year and determine 95 percentile values. SW should identify and report number of works and their aggregated output (Ml/d) over the calendar year where the 95 percentile is greater than or equal to 0.5 Nephelometric Turbidity Unit (NTU) in lines B8.2 and B8.3 and less than 0.5 NTU in lines B8.4 and B8.5. This requires an off-line calculation and the procedure is set out in Appendix A to this chapter (methodology and calculations). It is expected that turbidity will be monitored at least weekly.

SW is required to note that the methodology requires the exclusion of works where there are long gaps in the data, the removal of 'non-routine' samples and samples extra to the regular sampling interval. For some works, this may mean that there is insufficient data to calculate a 95 percentile figure (refer Appendix A). We recognise that some works are fully operational but not in supply for part of the year, creating long gaps in turbidity data. To avoid excluding these works, data gaps due to a works not being in supply should be ignored.

Report in lines B8.6 and B8.7 works where turbidity is not recorded or cannot be reported, and their aggregate output.

The 0.5 NTU threshold is not a surrogate for a Prescribed Concentration or Value (PCV). SW is to provide an assessment of the results and its

expectations, above and below 0.5NTU based on the type and quality of source waters, treatment processes and recording procedures.

Commentary

SW should:

- explain the reasons for the figure in lines B8.6 and B8.7; in particular where works are operated for less than the whole year and whether this has affected the figures in lines B8.2-B8.5 significantly; and
- when appropriate, also comment on performance on the calendar year to date, to further inform trend assessment.

SW is encouraged to make similar analyses of performance in relation to other key determinands to aid demonstration of performance of works in this group and describe any such progress in its commentary.

Lines B8.10 to B8.19: Sewerage service indicators

This table covers sewerage service and performance indicators.

This table also splits out repairs to sewer collapses into rising main and gravity sewer repairs. Rising mains are pipes that carry sewage by pumping under pressure or under suction (for example where sewage is moved under vacuum) from a powered asset (for example a pumping station).

Equipment failures: SW should collate its data under hierarchical and process headings to facilitate reporting to a changed definition. For example, pumping station failure, a subset of all equipment failures should be collated separately.

Commentary

SW should comment on:

- where there is a difference between the total number intermittent discharges given for the report year and for the previous year, and this difference cannot wholly be accounted for by improvement works i.e. capital schemes (e.g. where the change is partly or completely due to better information), then a breakdown detailing how the difference is made up should be given;
- SW is expected to comment on significant year on year changes in their reported figures. SW should also record the location, date and time of gravity sewer collapses, rising main breaks, blockages and equipment failures with a view to this information being used for spatial analysis and an update of their underground asset management plan.

- SW should state what historical data it has on sewer blockages, and indicate whether it will be able to provide data suitable for trend analysis. If SW is content to provide this in this Annual Return then it should do so, otherwise it should say when sufficiently reliable data could be made available.
- SW should clearly explain what it is reporting as 'equipment failure'.
- SW should explain in its commentary what kind of repairs it includes and what it excludes, on each line together with as much detail as they have to quantify this.
- SW should include in the table blockages and sewer collapses on sewer laterals but state these numbers in the commentary.

Lines B8.20 to B8.37: Sewage Treatment Works (BOD, SS and NH₃)

Guidance

Note: This indicators includes PFI performance.

The three blocks cover:

- Sewage treatment works – BOD performance (lines B8.20 to B8.25)
- Sewage treatment works – SS performance (lines B8.26 to B8.31)
- Sewage treatment works - NH₃ performance (lines B8.32 to B8.37)

These 3 blocks cover the performance against the most common consent standards, biochemical oxygen demand (BOD), suspended solids (SS) and ammonia (NH₃). The measures of predicted performance reported are the proportion (percentage) of sewage treatment works which are **predicted to not have** statutory sampled values in each of these three categories, called events where:

- a) Maximum value more than twice the consent value;
- b) 95 percentile is greater than the consent value; and
- c) Mean value is more than half the consent value.

The **not have** phrase means that higher values indicate better performance than lower values.

Rather than report performance of the past calendar year, SW is asked to report a predicted performance for the current calendar year, based on the past three years' performance. This requires a repetitive sequence of offline calculations to predict the proportion of 'no events' and the procedure is set out in Appendix B (methodology and calculations).

SW should report its numbers and those which are excluded from the calculations, recognising that not all sewage treatment works have numeric BOD, SS or NH₃ consents.

SW must note that aggregate level statistics are not the sum of the individual works band values and need to be compiled separately as outlined in Appendix B to this section.

Commentary

- SW should comment on its expectations and influences on performance in particular to the event categories, the use of three years' data and the reporting of predicted performance rather than actual.
- The analysis is normalised on current consent standards applying. SW should report on changes to the standards and whether it has a material impact on the results in its commentary.
- It is recognised that results are influenced by operational factors. SW is encouraged to position itself to identify operational costs at works level, and to report such progress in its commentary.

Guidance to Reporters (Table B8)

- **Guidance on Water treatment works turbidity**

The Reporter is asked to review the calculations undertaken by SW. The review should include adherence to the methodology, assumptions made and calculations produced. The Reporter is asked to confirm or otherwise whether the results produced are realistic and justifiable.

The Reporter should:

- identify which works did not produce water throughout the year and check that these results are appropriately included;
- check SW's exclusion of non-routine samples and review the exclusion of works on the basis of insufficient data or gaps in the data, to ensure that the criteria have been correctly applied;
- challenge data that is included or excluded, and comment on whether the procedure for exclusion of samples has had a material effect on the results, and
- comment on SW proposals regarding any other performance indicators for this group of assets.

Guidance on Sewerage service

The Reporter should:

- confirm the number of intermittent discharges which have been improved .
- Investigate and comment on the integrity of the data capture and retrieval systems for determining the split between rising mains and gravity sewer collapses and confirm relevant confidence grades.
- Confirm that the sum of rising main breaks and gravity sewer collapses is equal to the total number of sewer collapses implied by Line B8.10.
- On blockages, to check SW systems and report on its ability to provide historic data, so as to establish a trend.
- On equipment failures comment on SW's interpretation of 'equipment failure' and whether the trend in such numbers gives a good indication of the service capability of these assets. Also to comment on advantages and disadvantages for monitoring performance of 'equipment' with non-infrastructure maintenance.
- Review the nature of inclusions and exclusions and confirm that the data reported aligns with SW's statement and what greater clarity in definitions might be helpful to assist in consistent reporting with companies in England and Wales.

Guidance on Sewage treatment works indicators

The Reporter should:

- review the calculations undertaken by SW including adherence to the methodology, assumptions made and calculations produced;
- challenge the results produced by SW to satisfy themselves that they are realistic and justifiable, and that the definitions have been interpreted correctly and adhered to;
- assess whether consent value changes have been applied correctly in the methodology;
- verify that where systems and procedures are in place for the collection and recording of works operating costs at works level they are "fit for purpose";
- comment on the collection and recording of works operating costs; and
- comment on SW's proposals regarding any other performance indicators proposed for this group of assets.

APPENDIX A

Methodology and calculations

Water treatment works – turbidity

Introduction

SW is required to report the number of treatment works whose 95 percentile turbidity values exceed a 0.5 NTU threshold in the reporting year. This information is required to enable us to identify trends which may indicate declining asset condition at treatment works. For consistency, SW should adopt the following procedures for selecting data and calculating the 95 percentile for each works.

1. Select data

SW must analyse turbidity results for the reporting year for each operational works. It is expected that turbidity will be monitored at least weekly and, in most cases, at least twice a week.

2. Calculate 95 percentile values for each treatment works

Methodology:

- 1) Assemble data for the relevant treatment works and calendar year being reported.
- 2) Order by date and time.
 - Recording of time is not mandatory but, if available, times should be included.
 - If date and time are not available continue at step 6.
- 3) Calculate the time interval between one sample and the previous one to the nearest day.
 - For the first sample, the time interval should be the time elapsed since the year start.
 - For the last sample, the time interval should be the time to the year end.
- 4) Check for long gaps in the data.
 - Identify periods when the works was not in supply, and the time (weeks) not in supply.
 - If the maximum time interval is less than or equal to 28 days, proceed.
 - If the maximum time interval exceeds 28 days, check whether this corresponds to a period when the works was not in supply. If it does not so correspond, stop. Report “Gap in data too long”.
 - If the works was in supply for eleven months or less, check whether the maximum time interval is less than or equal to 28 days less one per

four weeks not in supply. If it does exceed this adjustment to the maximum interval, stop. Report “Gap in data too long”.

- Exclude works where the maximum time interval exceeds 28 days, except where this corresponds to when the works was not in supply and the adjusted maximum time interval is not exceeded.

5) Remove ‘non-routine’ samples

- ‘Non-routine’ samples are those carried out as part of special investigations.
- If ‘non-routine’ samples are not known they must be removed from the data in the following way:
- Define the frequency of sampling (weekly, twice weekly periods etc). This may be known or estimated by dividing the total number of samples by 52 and rounding to the nearest integer greater or equal to 1.
- Define ‘weeks’ (periods) from the start of the year in appropriate blocks (seven days for period = week) as shown below, with the 31st December being included in the preceding week. (The ‘week’ referred to here is the average interval between samples. This period may be a week, a half-week, a day, etc., depending on the sampling frequency).

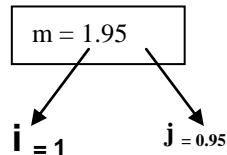
Week number	Dates (inclusive)
1	1 st to 7 th January
2	8 th to 14 th January
...	...
9	26 th February to 4 th March (Inc. 29 th February if appropriate)
...	...
21	21 st to 27 th May
...	...
52	24 th to 31 st December

- Assign the appropriate week (period) number to each sample
 - Discard the samples extra to the regular sampling interval (in this case a week) from each week (period), latest first, so that the maximum number of samples in any week (period) is the sampling frequency.
- 6) Check for an adequate number of data points.
- If the number of samples is less than 29, stop and report: “Not enough samples at works”.

7) Calculate 95 percentiles for works with sufficient numbers of samples and no long data gaps.

- Put the data in descending order: V_1 (max), V_2 , V_3 etc.
- Calculate $m = 0.05 * (\text{number of samples} + 1)$
- Split m : $m = i + j$ where i is an integer and $0 \leq j < 1$

$$95\%ile = \{(1-j) * V_i\} + \{j * V_{i+1}\}$$



3. Worked example

Consider the data for a works outlined in table A.1. The works was in supply for the whole year. Applying the methodology shows that the maximum time difference between samples is 27 days, which is just acceptable. The total number of samples is 53, which suggests a weekly sampling regime. To get one sample per week remove the samples in bold in table A.1 from the data set. Assigning weeks to each of the samples does this.

Table A.1 Example works turbidity data

Date	Values (NTU)	Time interval between samples	Week number
02/01/99	0.3	2	1
03/01/99	<0.2	1	1
05/01/99	<0.2	2	1
10/01/99	<0.2	5	2
18/01/99	0.4	8	3
25/01/99	0.4	7	4
08/02/99	0.2	14	6
15/02/99	<0.2	7	7
22/02/99	0.2	7	8
15/03/99	<0.2	21	11
22/03/99	<0.2	7	12
29/03/99	0.3	7	13
01/04/99	0.3	3	13
04/04/99	<0.2	3	14
08/04/99	0.3	4	14
19/04/99	<0.2	11	16
26/04/99	<0.2	7	17
07/05/99	0.3	11	19
17/05/99	0.2	10	20
24/05/99	<0.2	7	21
27/05/99	<0.2	3	21
29/05/99	<0.2	2	22
09/06/99	0.3	11	23
14/06/99	0.3	5	24
21/06/99	0.3	7	25
28/06/99	0.3	7	26
30/06/99	0.3	2	26
06/07/99	<0.2	6	27
09/07/99	0.3	3	28
13/07/99	0.4	4	28
19/07/99	0.3	6	29
20/07/99	0.4	1	29
26/07/99	0.4	6	30
27/07/99	0.3	1	30
02/08/99	<0.2	6	31
03/08/99	<0.2	1	31

Date	Values (NTU)	Time interval between samples	Week number
07/08/99	0.2	4	32
16/08/99	0.3	9	33
17/08/99	0.4	1	33
23/08/99	<0.2	6	34
25/08/99	0.2	2	34
29/08/99	0.4	4	35
08/09/99	0.3	10	36
13/09/99	0.3	5	37
17/09/99	0.3	4	38
21/09/99	0.2	4	38
22/09/99	0.3	1	38
27/09/99	0.2	5	39
05/10/99	<0.2	8	40
01/11/99	0.4	27	44
08/11/99	0.2	7	45
04/12/99	<0.2	26	49
07/12/99	0.4	24	49

The remaining 38 data points are shown in descending order in table A.2. Since there are more than 29 samples the percentile can be calculated:

- Data in descending order and labelled V_1 (max), V_2 , V_3 etc is shown in table A.2
- $m = 0.05 * (\text{number of samples} + 1) = 0.05 * (38 + 1) = 1.95$
- Splitting m : $m = i + j$ where i is an integer and $0 \leq j < 1$ is achieved by setting $i = 1$ and $j = 0.95$
- So the 95%ile is $\{(1 - j) * V_1\} + \{j * V_{i+1}\} = \{(1 - 0.95) * 0.4\} + \{0.95 * 0.4\} = 0.4$

Table A.2 Example turbidity data, after processing and sorted in descending order

Date	Value (NTU)	V_i
18/01/99	0.4	V_1
25/01/99	0.4	V_2
26/07/99	0.4	V_3
29/08/99	0.4	V_4
01/11/99	0.4	V_5

$$V_i = V_1$$

$$V_{i+1} = V_2$$

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Date	Value (NTU)	V₁
02/01/99	0.3	V ₆
29/03/99	0.3	V ₇
07/05/99	0.3	V ₈
09/06/99	0.3	V ₉
14/06/99	0.3	V ₁₀
21/06/99	0.3	V ₁₁
28/06/99	0.3	V ₁₂
09/07/99	0.3	V ₁₃
19/07/99	0.3	V ₁₄
16/08/99	0.3	V ₁₅
08/09/99	0.3	V ₁₆
13/09/99	0.3	V ₁₇
17/09/99	0.3	V ₁₈
08/02/99	0.2	V ₁₉
22/02/99	0.2	V ₂₀
17/05/99	0.2	V ₂₁
07/08/99	0.2	V ₂₂
27/09/99	0.2	V ₂₃
08/11/99	0.2	V ₂₄
10/01/99	<0.2	V ₂₅
15/02/99	<0.2	V ₂₆
15/03/99	<0.2	V ₂₇
22/03/99	<0.2	V ₂₈
04/04/99	<0.2	V ₂₉
19/04/99	<0.2	V ₃₀
26/04/99	<0.2	V ₃₁
24/05/99	<0.2	V ₃₂
29/05/99	<0.2	V ₃₃
06/07/99	<0.2	V ₃₄
02/08/99	<0.2	V ₃₅
23/08/99	<0.2	V ₃₆
05/10/99	<0.2	V ₃₇
04/12/99	<0.2	V ₃₈

4. Aggregate results

Allocate works into the relevant category for lines B8.2 to B8.7. Report numbers of works and their aggregated output for each of lines B8.2 to B8.7.

Appendix B

Methodology and calculations

Sewage treatment works BOD, SS & NH₃ performance

Introduction

Three new indicators have been developed to enhance the existing “pass ~ fail” indicator for sewage treatment works by providing a measure of works performance measured in terms of the prevailing works consent values. The requirement is to report the three indicator values for each of three determinands (BOD, SS and NH₃).

Description

Three indicator values are to be reported at aggregate level for works in 4 size bands. The indicators provide a prediction of the proportion of sewage treatment works for which a defined “event” will not occur in the current calendar year based on their performance over the previous 3 years. Three “events” are specified:

Event	Distribution characteristic of m / c
A	Maximum value > 2.0
B	95%tile (Normal) > 1.0
C	Mean value > 0.5

where ‘m’ is a determinand measurement and ‘c’ is the prevailing consent for that determinand. Using the ratio m/c enables changes in the consent to be taken into account, so that we have an analysis ‘normalised’ to prevailing consents.

Data recording – sewage treatment works

1. It is suggested that the total asset stock of sewage treatment works is segregated into 6 bands according to the population equivalent served. Record the number of works in each band:

	Band 1	Band 2	Band 3	Band 4	Band 5	Band 6
Population equivalent served	< 250	250 to 500	500 to 2,000	2,000 to 10,000	10,000 to 25,000	> 25,000
Kg load BOD ₅ /day	<=15	>15 <=30	>30 <=120	>120 <=600	>600 <=1,500	>1,500

- Record the legal consent value for each works and any changes throughout the year.
- Record sanitary determinand compliance data (BOD, SS and NH₃) for all works in bands 3-6.
- For the purposes of future analysis it is suggested that an accounting system should be put in place (where none currently exists) and data collection progressed to record the operating costs associated with the management of each of SW’s works.
- Note that reporting is at aggregate level only (size band 3 and above). SW may find it useful to continue collecting individual band performance data for its own benefit and information.

Procedure for calculating sewage treatment works performance statistics

The off-line calculations are repetitive to generate data for each block (BOD, SS and NH₃), each line (population banding) and each works to report on event categories a, b, c.

For each works the following procedure generates in a series of steps to:

- Calculate maximum value, 95 percentile and mean values for each of the past three years' results, normalised to the prevailing consents (step 5);
- Whether the works is in either of the three event categories for each year (step 6);
- The average number of times it was in each category over last three years; and
- The probability of the works not being in each category (that is, predicted to have zero events) in the next year (that is, the current calendar year) based on the last three years, and based on an assumed poisson distribution.

The probability results for all the works in the relevant reporting cell are added and converted to a percentage for reporting in columns 2, 3 and 4.

It is suggested that the calculations are made as follows:

In the calculations the following convention for identifying years is:

Current year:	y + 1
Calendar year just ended:	y
2 years ago:	y-1
3 years ago	y-2

The forecast is being made for the current calendar year, ignoring any results in the current year.

Step 1: Repeat steps 2 to 9 then 10, 11, and 12 for each sewage treatment works in size bands 3 and above.

Step 2: Repeat steps 3 to 9 for each determinand D (\equiv BOD, SS, NH₃) and for each treatment works within SW level works-band 'B'

Step 3: For each of the years y, y-1, and y-2: assemble the set of yearly measurements (typically monthly) made of each determinand D. Exclude works with five or less measurements in the year.

This gives three sets of '(n \geq 6)' values $\{m_1..m_n\}$.

Step 4: Divide each sample value by its prevailing **consent** value to give $\{m_1^*..m_n^*\}$. This normalises the analysis.

Step 5: For the set of values $\{m_1^*..m_n^*\}$ calculate for each year:

- **Sample maximum:** $\max = \max(m_1^*..m_n^*)$
- **Sample mean:** $\bar{m} = \frac{1}{n} \sum_{i=1}^n m_i^*$
- **Sample standard deviation:** $s = \sqrt{\frac{1}{n-1} \sum_{i=1}^n (m_i^* - \bar{m})^2}$
- **Sample 95%tile** = $\bar{m} + 1.64485 \times s$

Step 6: For current year (y) data, let V1(y) = 1 if sample max > 2.0 and V1(y) = 0 otherwise; (category 'a' event)

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let $V2(y) = 1$ if sample 95%tile > 1.0 and $V2(y) = 0$ otherwise; (category 'b' event)

let $V3(y) = 1$ if sample "MEAN" > 0.5 and $V3(y) = 0$ otherwise; (category 'c' event)

Similarly calculate $V1(y-1)$, $V1(y-2)$,

Similarly calculate $V2(y-1)$, $V2(y-2)$,

Similarly calculate $V3(y-1)$, $V3(y-2)$,

Step 7: Calculate $r_{V_1} = \frac{V_1(y) + V_1(y-1) + V_1(y-2)}{3}$

and probability, $p(\text{no event in } (y+1); V_1 = 0) = \exp(-r_{V_1})$ (category 'a' event)

Step 8: Repeat step 6 with V_2 to give

probability, $p(\text{no event in } (y+1); V_2 = 0) = \exp(-r_{V_2})$ (category 'b' event)

Step 9: Repeat step 6 with V_3 to give

probability, $p(\text{no event in } (y+1); V_3 = 0) = \exp(-r_{V_3})$ (category 'c' event)

Aggregate level statistics:

Note that the aggregate level statistics are those for size bands 3 to 6 taken as a single group. The respective total number of works (N_{works}) is entered in table 16b, column 1, lines 1, 4 and 7. For line 7 the total relates only to those works with ammonia consents.

Step 10: **Report** indicator category 'a' event {entered in column 2} for SW in aggregate is defined as the expected percentage of 'no events' of V_1 for all STWs:

$$I_a = 100 \times [\text{sum of all values of } p(\text{no event in } (y+1); V_1 = 0)] / N_{\text{works}}$$

Step 11: **Report** indicator category 'b' event {entered in column 3} for SW in aggregate is defined as the expected percentage of 'no events' of V_2 for all STWs:

$$I_b = 100 \times [\text{sum of all values of } p(\text{no event in } (y+1); V_2 = 0)] / N_{\text{works}}$$

Step 12: **Report** indicator category 'c' event {entered in column 4} for SW in aggregate is defined as the expected percentage of 'no events' of V_3 for all STWs:

$$I_c = 100 \times [\text{sum of all values of } p(\text{no event in } (y+1); V_3 = 0)] / N_{\text{works}}$$

SW should report in the commentary how many works do not have three sets of data with 12 or more samples reported for each report year.

Expectations on enumeration

In step 10 of the procedure we ask SW to report the indicator of the category 'a' event {entered in column 2} which is the expected percentage of 'no events' of V_1 for ' N_{works} ':

$$I_a = 100 \times [\text{sum of all values of } p(\text{no event in } (y+1); V_1 = 0)] / N_{\text{works}}$$

And similarly in steps 11, 12, for the 'b' and 'c' events and steps 13, 14 and 16 for the 'a', 'b' and 'c' events at aggregate level.

We confirm that the figure in the square brackets is the sum of the probabilities for each works calculated in step 7 (and similarly steps 8 and 9).

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Noting that there are just four possible values for the probability of no event forecast for the next year (i.e. current calendar year) of any one works, that is when rv values are such that:

Works that have had a category 'a' event in each of the last 3 years, thus $rv = (1 + 1 + 1) / 3 = 1$;

Works that have had had a category 'a' event in two of the last 3 years, thus $rv = (0 + 1 + 1) / 3 = 2/3$;

Works that have had a category 'a' event in one of the last 3 years, thus $rv = (0 + 0 + 1) / 3 = 1/3$;

Works that have not had a category 'a' event in last 3 years, thus $rv = (0 + 0 + 0) / 3 = 0$.

And respectively $\exp(-rv)$ [also written e^{-rv}] values of probability of now event are therefore:

$\exp(-1)$	=	0.368
$\exp(-2/3)$	=	0.513
$\exp(-1/3)$	=	0.717
$\exp(0)$	=	1.000

The figure reported from step 10 into table 16b, a percentage figure, is thus one hundred times the sum of the relevant values for each works in the group, divided by the number (N_{works}) of works in the group. Taking the trivial example, where (for example) there were five works in the group, and, for convenience of illustration they respectively had performed across the range including, (for example, two works with no events in the last 3 years), the report figure is calculated thus:

Works1	probability of no event	= 0.368	corresponds to 3 events in last 3 years
Works 2	probability of no event	= 0.513	corresponds to 2 events in last 3 years
Works 3	probability of no event	= 0.717	corresponds to 1 events in last 3 years
Works 4	probability of no event	= 1.000	corresponds to 0 events in last 3 years
Works 5	probability of no event	= <u>1.000</u>	corresponds to 0 events in last 3 years
Sum of all values		= 3.598	
Number of works, ' N_{works} '		= 5	
Probability for group of no event (in current year)		= 0.720	
Multiply by 100, and report		= 72.0 %	

This answer is to be interpreted as the percentage of works where no event is forecast for the current calendar year and reported in column 2 in table 16b. SW should check that it has included works where the probability is less than 1 (for example works 1, 2 and 3 in the illustration) and their respective probabilities in the summation.

SECTION B
CHAPTER B9 (a,b,c)
SECURITY OF SUPPLY INDEX

Edition 8

SECTION B

CHAPTER B9

SECURITY OF SUPPLY INDEX

Guidance

The security of supply index describes SW planned and reference levels of service for average demand in a dry year. SW should submit the index using dry year average demand in the table.

SW may consider that critical period conditions are an important driver of its water resource planning. If SW believes that critical period conditions are a key aspect of the security of supply we also expect it to complete the information based on critical period conditions.

SW commentary

The guidance for calculating the security of supply index is set out in Ofwat's RD 03/02.

There are many elements of the security of supply index calculation that are common between companies' water resource plan updates in England and Wales. There should be consistency for the following:

Water resource zones, water available for use and target headroom.

SW should follow all existing guidelines for water resource planning (provided by SEPA) for the following: water available for use and reporting year distribution input.

Bulk supply imports and exports should be based on a dry year, and should be the maximum amounts that SW may request under their contracts or be obliged to supply.

Water available for use should be calculated to a common reference level of service used in the Environment Agency's '1997 Reassessment of Water Company Yields'. If SW is not able to replicate precisely the reference level of service, it should estimate yields as closely in line with the reference level of service as possible and should set out any assumptions clearly in the commentary.

SW should:

- confirm that it has applied a dry year adjustment factor to reported distribution input to derive dry year distribution input, and explain the basis of that factor.

Guidance for Reporters

The Reporter should ensure that SW has followed the guidance for calculating the security of supply index as set out in Ofwat's RD 03/02.

There are many elements of the security of supply index calculation that are between companies' water resource plan updates in England and Wales.

The Reporter should ensure that there has been consistency for the following:

- Water resource zones,
- water available for use,
- reporting year distribution input; and
- target headroom.

Where there is a difference between the figures used in the water resource plan updates and those used to calculate the index, the Reporter should ask SW to explain why.

The Reporter should ensure that SW has followed all existing guidelines for water resource planning (provided by SEPA) for the following: water available for use and reporting year distribution input. Where these elements are not consistent with the Agency's definitions, the Reporter should ask SW to explain why.

Bulk supply imports and exports should be based on a dry year (or critical period if relevant), and should be the maximum amounts that SW may request under its contracts or be obliged to supply. The Reporter should ensure that SW has followed this definition.

Water available for use should be calculated to a common reference level of service used in the Environment Agency's '1997 Reassessment of Water Company Yields'. SW may not be able to replicate precisely the reference level of service. The Reporter should comment on the consistency between the reference level of service used to calculate the index and that used in the '1997 Reassessment of Water Company Yields', explaining any discrepancy.

We require SW to explain any difference between the ratio of dry year to normal year distribution input used in their water resource plans and the ratio applied to adjust reporting year distribution input to get to dry year distribution input when calculating the index. Where there is a discrepancy, the Reporter should comment on SW's explanation.