

**DATA ENTRY MANUAL**

**PIPES - SIMPLIFIED, SEPARATE, WITH PUMPING**

**or**

**PIPES - SIMPLIFIED, COMBINED, WITH PUMPING**

System: Wastewater

Element: Emptying and Transport

Component: Pipes - Simplified, Separate, With Pumping

or

Pipes - Simplified, Combined, With Pumping

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# INTRODUCTION

This manual is intended to assist in providing cost data for a simplified sewer system that conveys blackwater and greywater from households to a centralized or semi-centralized treatment facility and requires pumping. Simplified sewers often have smaller diameters and are laid at flatter gradients and shallower depths than conventional sewers. If the sewer conveys stormwater in addition to wastewater, it is considered a combined simplified sewer system. If not, it is considered a separate simplified sewer system. (See **INSIGHT 0.1** for the definitions of all pipe components)

All costs associated with constructing, operating, and maintaining the sewer system are included here. Costs associated with connecting households to the sewer system or the treatment plant the system discharges to are not included.

***INSIGHT 0.1***

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| **Elements and components**  An *element* is a functional step of the sanitation value chain. Elements defined by CACTUS are: containment, emptying, transport, combined emptying and transport, and treatment.  A *component* is a cluster of technologies defined by CACTUS, which provide the functionality of a single *element*, have similar characteristics and are likely to have similar cost profiles.  This manual provides instructions for providing data for a **Pipes-Simplified, separate/combined, with pumping** *component,* which falls under the **empty and transport** *element.* |

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# TAB 1:CONTEXT

Definition

The Context tab provides information that applies to all costs in the data point for which you are reporting. Enter the requested information in the light yellow boxes.

## GENERAL INFORMATION

Data to provide

* **Name of organization / business / utility / operation:** If you are entering data for a formal organization or business, enter the name here.
* **Description of organization / business / utility / operation:** Provide a brief description of your operation here. Possible examples include: ‘A utility that maintains a network of sewers and has a treatment facility.’
* **Description of sewer network:** Provide any relevant contextual information about the sewer system for which you are providing data that might impact its cost
* **Is this a separate or combined sewer system?** If the sewer system carries a combination of blackwater, greywater and stormwater, select “Combined”. If the sewer does not carry stormwater, select “Separate”
* **Year:**Enter the year that corresponds to most of the costs that you are entering. For example, if the current year is 2020 and you are entering costs based on last year’s financial records, you should enter 2019.
* **Country:** Select the country where the toilets are located from the dropdown box
* **City**: Enter the name of the city where the toilets are located

## SERVICE INFORMATION

Definition

The service information helps us determine the number of people and households who depend on the sewer system that is reported in this workbook. This information is critical for calculating CACTUS’s key metrics: the total annual cost per capita (TACC) and total annual cost per household (TACH).

Data to provide

**Primary service parameters**

There are three service parameters to enter in this section: *number of households served*, *number of people per household*, and *number of people served*.

* *Number of households served* should correspond to the number of households connected to the sewer system.
* *Number of people per household* represents the average household size in the area that is served by the sewer.
* *Number of people served* should represent the number of people served by household connections. This would normally be calculated as the number of households served multiplied by the average number of people per household.

Enter the appropriate value in the column labeled ‘Value’. If any one of the three parameters is unknown, it can be calculated from the other two.

In the column labeled ‘How value was determined’, provide any information about how you came to the value for each parameter. If you know the value within a given range, you can provide the range here and then use the average of the range in the ‘value’ column. You may also use this space to note how confident you are in the estimate provided in the ‘value’ column. You should provide your best estimate for service parameters, even if there is high uncertainty in it.

**Additional contextual information**

The final two questions can help provide more information on the service potential of the sewer system.

* *What is the volumetric capacity of the sewer system?* Enter the flow rate that the system was designed for, including the units. Most likely, this will be in L or m3 per day.
* *Is the sewer currently used* at, under*, or* over *capacity?* Sewers are not always used exactly as they were designed. If the daily wastewater flow through the system is similar to the design rate listed in the question above, select “At capacity”. If the daily flow is significantly less than the design capacity, select “Under capacity”. If the daily flow is more than the design capacity, select “Over capacity”.

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# TAB 2: DIRECT CAPEX

## OVERVIEW

Definition

**Direct CAPEX** includes capital investments (either purchases or long-term leases longer than one year) into physical assets that are beneficial beyond one year and that directly contribute to purchase and construction of the sewer network and accessory equipment used to transport wastewater from households/industries to the treatment facility. These investments are broken into three categories: (1) physical assets, (2) major and extraordinary repairs and (3) taxes and financing fees.

Common parameters

The following parameters to describe cost items are common throughout this tab. Any differences in these parameters seen in individual sections will be described separately in the corresponding section.

* **Cost:** Total cost for the described item.
* **Currency:** Select the appropriate currency from the drop down box which should correspond to the currency specific to that particular cost. Different costs could have different currencies depending on how your organization reports these costs.
* **Confidence in cost estimate:** Indicate how confident you are in the reported cost. Answer choices include high confidence (approximately +/-5% from reported cost), fair confidence (approximately +/-15%), and low confidence (approximately +/-50% or more).
* **Indicate if cost is incurred but not reported:** Use an X from the drop-down menu to indicate if a cost that is incurred is not reported because it is not known or otherwise missing. If the cost is not reported because it is actually not incurred for your specific component, then you do not need to indicate that it is missing. This column helps us track missing costs for later data analysis.
* **Notes:** A more detailed description of what the cost item is or how the cost was determined. Any assumptions or calculations that were made to arrive at the cost estimate should be included here.

## SECTION 1: PHYSICAL ASSETS

Definition

This section includes the costs for purchasing physical assets required to empty and transport wastewater.

Parameters

Additions and clarifications of the parameters specific to this section include:

* **Cost:** Provide the amount paid for the asset. You may enter the cost either inclusive or exclusive of taxes such as VAT. If the cost is inclusive of VAT or other taxes, indicate that in the notes column for each cost item. If the cost is exclusive of VAT or other taxes, provide the cost of those taxes separately in Section 3. Make sure to only include the taxes in one section to avoid double counting them.
* **Lifetime (years):** Indicate the estimated lifetime of the cost item in years. Estimates can be based on personal observations of asset lifetimes, estimates provided by vendors or values used for internal financial purposes. Default values are also provided in the description of each cost item below in case you are unable to determine an appropriate estimate, but a specific estimate for your component is preferred. The workbook only allows input of a single value in years. If you are working with a range, provide the average value as the lifetime, and indicate the expected range in the notes column. If possible, describe how the estimate was determined in the notes column, particularly if you use a default value.
* **Year purchased:** List the year that the item was purchased. Use an average if you are reporting on the costs of multiple items purchased over a span of multiple years.

Cost items

* **Sewer network:** Includes purchase of pipes and all civil works and construction to install them
* **Pumping station**: Includes supplies, design, construction and installation costs of pumping stations and any materials or equipment associated with them besides the pumps themselves
* **Pumps:** The cost of pumps are listed separately from the pumping stations because these are expected to be a significant expense with a different lifetime value than the rest of the pumping station. If you can report these costs separately, it is preferred to do so. If you do not know them separately, you can instead report the pump cost combined with the pump station in the row for pump station above, or you can report all costs under the sewer network.
* **Inspection chambers:** Includes the costs to purchase inspection chambers required for maintenance of the pipes, if these costs are known separately. If they are not known separately, you may report the cost as part of the overall sewer network.
* **Other physical assets:** Provide the combined cost for any other physical assets that are not included within one of the items above.
  + Use the notes column to describe the asset(s) that are included in the reported cost.
  + Use an average lifetime value if multiple items are combined, ideally weighted by the cost of each item.

Frequently asked questions

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| **1. We import specialized construction tools and equipment. Where do I report the fees associated with importation?**  *Report any customs fees or import tariffs under Section 3 (taxes and financing costs). Report the cost of purchasing the equipment and any transport, freight or shipping fees in Section 1 (physical assets) on the row for the sewer network or pumping station depending on the use of the tools and equipment.*  **2. What if I only know the total combined cost for the sewer network, pumps, pumping stations, and inspection chambers combined?**  *If you only have a total cost for all physical assets, you can report it in the row for the sewer network. Use the notes column to describe everything that is included in the cost.* |

## SECTION 2: MAJOR AND EXTRAORDINARY REPAIRS

Definition

Major and extraordinary repairs include any extensive repairs made to an asset that prolong its useful life beyond one year and have a materially significant value. Please note that if your organization reports a repair as OPEX, then you can report it as maintenance on the Direct OPEX tab rather than in this section, even if it otherwise meets the definition of a major and extraordinary repair.

Parameters

The parameters in this section are the same as those in the physical assets section with one clarification:

* **Lifetime:** Here, lifetime indicates how frequently a repair is expected to be required in years.
* **Year cost was incurred:** Indicate the year when the reported cost was incurred.

Cost items

Major and extraordinary repairs should be reported according to the physical asset which requires the repair. Possible examples for each are described below:

* **Sewer network:** Replacement of large sections of pipe due to heavy traffic, cracks in manhole walls caused by ground shifting
* **Pumping station:** Major breakdown repairs at the pumping station
* **Pumps:** Replacement of significant parts
* **Inspection chambers:** Major repair of broken chambers
* **Other or combined major and extraordinary repairs:** Provide the combined cost for any major and extraordinary repairs that are not included above, or you may use this row to report the combined cost for two or more of the items above if your financial records group those costs together. Include the details of the combined items in the notes cell, and use a weighted average for the lifetime value.

Frequently asked questions

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| **How do I determine whether a cost should be classified as a major and extraordinary repair on this tab or as maintenance on the direct OPEX tab?**  *In general, if the cost of the repair is significant in relation to the overall cost of the asset, the repair extends the useful life of the asset by more than one year, and the repair occurs at a frequency of less than once per year, then it would be considered CAPEX and reported in this section as a major and extraordinary repair. However, if your organization records the cost as OPEX, then you can report it in the direct OPEX tab, regardless of whether it technically meets the definition for a major and extraordinary repair.* |

## SECTION 3: TAXES AND FINANCING FOR PHYSICAL ASSETS

Definition

Taxes and financing for physical assets include any interest paid on a loan, commissions or fees paid to a lender or bank for the financing and taxes, which might include sales tax, value added tax (VAT) and import tax.

Parameters

All parameters are described previously in the overview section.

Cost items

Where possible, taxes and financing costs should be reported for the individual physical asset for which they were incurred (i.e., Sewer network, pumps, etc separately). However, if you only know combined financing costs and taxes for all physical assets, you may report those in the rows for 'other or combined physical assets'.

For each asset, **financing costs** and **taxes** should be reported in separate rows:

* **Financing costs:** Includes the total interest plus any commissions and fees paid to a lender or bank
* **Taxes:** Examples include sales, VAT or import taxes paid for a physical asset

Frequently asked questions

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| **1.****The physical asset cost that I reported in Section 1 is inclusive of VAT. Do I need to report that cost separately in this section as well?**  *No, if the cost reported for a physical asset in Section 1 already includes VAT, you should leave the corresponding row for taxes here blank.*  **2. I received a waiver for VAT for the purchase of my equipment. How should I indicate that in my reporting?**  *This is a great example for indicating that a cost (should be) incurred but is not reported. If you received a waiver for VAT but reasonably expect that similar operators in the future would have to pay taxes on the equipment, then you should mark the cell for ‘Indicate if cost is incurred but not reported’ with an X in the taxes row for the appropriate physical asset.* |

# TAB 3: INDIRECT CAPEX

## OVERVIEW

Definition

**Indirect CAPEX** includes capital investments (either purchases or long-term leases longer than one year) into physical assets that are beneficial beyond one year and that **indirectly** support the sewer system. (Stumped? See **INSIGHT 3.1**)

***INSIGHT 3.1***

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| **Guidance for determining whether a cost is direct or indirect**  Some cost descriptions are listed on both the direct and indirect cost tabs. To determine where a specific cost should be reported, consider the following questions:   * Is the item/service/staff member used only for this service? * Is it essential to deliver the service? If we eliminate it, would we be unable to operate the service?   If the answers to the questions above are yes, then it is likely a direct cost and should be reported on this tab.  Alternatively, consider:   * Does the item/service/staff member provide core business services that indirectly support the sanitation service? * Is the item/service/staff member shared across multiple services or different business activities?   If the answers to those questions are yes, then the cost is more likely an indirect cost. |

Common parameters

The following parameters to describe cost items are common throughout this tab. Any differences in these parameters seen in individual sections will be described separately in the corresponding section.

* **Cost:** Total cost for the described item that is incurred by the operation or business
* **Fraction applied to shared costs:** The fraction of the reported total cost that should be applied to this component, which should be generated using the methodology described in the Appendix. The fraction should be entered as a decimal equal to or between 0 and 1. (Stumped? See **INSIGHT 3.2**)
* **Currency:** Select the appropriate currency from the drop down box which should correspond to the currency specific to that particular cost. Different costs could have different currencies depending on how your organization reports these costs.
* **Confidence in cost estimate:** Indicate how confident you are in the reported cost. Answer choices include high confidence (approximately +/-5% from reported cost), fair confidence (approximately +/-15%), and low confidence (approximately +/-50% or more).
* **Indicate if cost is incurred but not reported:** Use an X from the drop-down menu to indicate if a cost that is incurred is not reported because it is not known or otherwise missing. If the cost is not reported because it is actually not incurred for your specific component, then you do not need to indicate that it is missing. This column helps us track missing costs for later data analysis.
* **Notes:** A more detailed description of what the cost item is or how the cost was determined. Any assumptions or calculations that were made to arrive at the cost estimate should be included here.

***INSIGHT 3.2***

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| **Cost allocation between shared costs**  Indirect costs are often shared between multiple products or services that are offered by a business. For example, if your utility provides both sewerage and drinking water, then indirect costs such as your office rent and finance team salaries are likely shared between three different services—the sewer system (which is reported in this workbook), wastewater treatment (which can be reported in a separate workbook), and drinking water treatment and distribution (which are not reported to CACTUS in any workbook). For each cost item provided in this tab, report the total cost that is incurred by your organization and then determine the fraction of the total cost that should be applied to the sewer system using the methodology described in the Appendix. |

## SECTION 1: PHYSICAL ASSETS

Definition

This section includes the purchase cost for physical assets that indirectly support the sewer system.

Parameters

Additions and clarifications of the parameters specific to this section include:

* **Cost:** Total cost for the described item. You may enter the cost either inclusive or exclusive of taxes such as VAT. If the cost is inclusive of VAT or other taxes, indicate that in the notes column for each cost item. If the cost is exclusive of VAT or other taxes, provide the cost of those taxes separately in Section 3. Make sure to only include the taxes in one section to avoid double counting them.
* **Lifetime (years):** Indicate the estimated lifetime of the physical asset in years. Estimates can be based on personal observations of asset lifetimes, estimates provided by vendors or values used for internal financial purposes. The workbook only allows input of a single value in years. If you are working with a range, provide the average value as the lifetime, and indicate the expected range in the notes column.
* **Year purchased:** List the year that the item was purchased. Use an average if you are reporting on the costs of multiple assets purchased over a span of multiple years, for example if you are reporting the cost for 5 vehicles that were purchased between 2018 and 2021.

Cost items

* **Land for office:** Includes the costs associated with purchasing or long-term leasing the land on which your office is built.
  + A long-term lease means that you pay for the lease at a frequency of less than once per year, for example if you pay upfront for a 25-year lease on the land.
  + If you are entering the cost of a long-term lease, report the frequency of payment as the lifetime. If you are reporting the cost for purchased land, use a default lifetime value of 100 years.
  + This cost typically only applies if you have built your own office. If you purchased or rent an office, it will be reported as 'purchase, construction or long-term lease of an office building' below (if a long-term lease with payment frequency less than once per year) or in the indirect OPEX tab.
* **Purchase, construction or long-term lease of an office building:** Includes all costs associated with purchasing, constructing or long-term leasing the office building.
  + For construction, the cost should include all labour and materials.
  + A long-term lease means that you pay for the lease at a frequency of less than once per year. If you rent your office and pay rent monthly or annually, the cost should be reported on the indirect OPEX tab.
  + If you are entering the cost of a long-term lease, report the frequency of payment as the lifetime. If you are reporting the cost for a purchased or constructed office building, use a default lifetime value of 40 years.
* **Office equipment:** Includes the costs associated with purchasing all equipment to be used in the office that are replaced at a frequency of less than once per year. This includes furniture, computers and all other electronic equipment used in the office.
  + The lifetime and year purchased should be averages of the multiple items included in this row. Ideally the average would be weighted based on the relative cost of each included item.
  + Use the notes column to describe specifically which items are included.
* **General use vehicles:** Includes the combined cost for purchase of any vehicles used for general, sales and administrative purposes.
  + Note that these do not include vehicles used for transportation of waste. If a vehicle is sometimes used for both, list it in the direct CAPEX tab.
* **Other or combined physical assets:** Provide the combined cost for any physical assets that are not explicitly listed above, or you may use this row to report the combined cost for two or more of the items above if your financial records group those costs together. Use the notes column to provide more details about the items accounted for in the cost. For the lifetime of combined costs, use the average lifetime of the items, weighted by the individual item costs.

## SECTION 2: MAJOR AND EXTRAORDINARY REPAIRS

Definition

Major and extraordinary repairs include any extensive repairs made to an asset that prolong its useful life beyond one year and have a materially significant value.

Parameters

The parameters in this section are the same as those in the physical assets section with one clarification:

* **Lifetime:** Here, lifetime indicates how frequently a repair is expected to be required in years. For example, if your vehicles require a significant repair such as replacing the brakes every three years, the lifetime would be 3.
* **Year cost was incurred:** Indicate the year when the reported cost was incurred.

Cost items

Major and extraordinary repairs should be reported according to the physical asset which requires the repair.

* **Land for office:** Possible examples include excavation to improve stormwater drainage on the property or an overhaul of the property landscaping
* **Office building:** Possible examples include renovation of the office building or construction of a new staff kitchen
* **Office equipment:** A possible example is upgrading the CPUs of office computers
* **General use vehicles:** Possible examples include replacing the vehicle brakes, transmission, or engine
* **Other or combined major and extraordinary repairs:** Use this row for any major and extraordinary repairs required for any other physical assets that you reported in the previous section or to report the combined cost of major and extraordinary repairs for multiple assets. Use the notes column to provide more details about the repair that is accounted for in the cost. For the lifetime of combined items, use an average lifetime, ideally weighted by the cost of each item.

## SECTION 3: TAXES AND FINANCING FOR PHYSICAL ASSETS

Definition

Taxes and financing for physical assets include any interest paid on a loan, commissions or fees paid to a lender or bank for the financing and taxes, which might include sales tax, value added tax (VAT) and import tax. Only taxes that are incurred from the purchase or initial lease transaction should be reported here. Annual taxes such as property taxes should be reported on the indirect OPEX tab.

Parameters

All parameters are described previously in the overview section.

Cost items

Where possible, taxes and financing costs should be reported for the individual physical asset for which they were incurred. However, if you only know combined financing costs and taxes for all indirect physical assets, you may report those in the rows for 'other or combined physical assets'. You may also use the row for 'other or combined physical assets' if you reported the cost of a physical asset in the 'other' row in the previous sections of this tab.

For each asset, **financing costs** and **taxes** should be reported in separate rows:

* **Financing costs:** Includes the total interest plus any commissions and fees paid to a lender or bank
* **Taxes:** Examples include sales, VAT or import taxes paid for a physical asset

## SECTION 4: PROFESSIONAL DEVELOPMENT AND TRAINING

Definition

This section includes expenses incurred for one-time or infrequent staff trainings.

Parameters

* **Lifetime (years):** For a routinely held training (e.g., one that is held every two years), indicate the estimated frequency of the training in years. For a training that was held once when the company or service provider first began operations and is not expected to ever be repeated, you may enter a lifetime of 100 years.
* **Year cost was incurred:** Indicate the year when the reported cost was incurred.

Cost items

* **One-time of infrequent staff training expenses**: Examples include single trainings that are held when a company or service provider first begins operations but that are not expected to be repeated or large trainings that are held routinely at a frequency less than once per year.

## SECTION 5: OTHER INDIRECT CAPEX

Any other capital investment into physical assets that occurs at a frequency of less than once per year, is needed to provide the core business activities that support the sewer network, and does not fit into any of the other sections on this tab can be reported here. If there are multiple items that meet this description, the costs should be combined to report as a single item. Use the notes column to describe what the item(s) are.

# TAB 4: DIRECT OPEX

## OVERVIEW

Definition

**Direct OPEX** includes all operational costs that directly contribute to operation and maintenance of the sewer network. (Stumped on the difference between direct and indirect costs? See **INSIGHT 3.1** for the indirect CAPEX tab)

Common parameters

The following parameters to describe cost items are common throughout this tab:

* **Annual cost:** The cost incurred for each item over the course of a year
* **Currency:** Select the appropriate currency from the drop down box which should correspond to the currency specific to that particular cost. Different costs could have different currencies depending on how your organization reports these costs.
* **Confidence in cost estimate:** Indicate how confident you are in the reported cost. Answer choices include high confidence (approximately +/-5% from reported cost), fair confidence (approximately +/-15%), and low confidence (approximately +/-50% or more).
* **Indicate if cost is incurred but not reported:** Use an X from the drop-down menu to indicate if a cost that is incurred is not reported because it is not known or otherwise missing. If the cost is not reported because it is actually not incurred for your specific component, then you do not need to indicate that it is missing. This column helps us track missing costs for later data analysis.
* **Notes:** A more detailed description of what the cost item is or how the cost was determined. Any assumptions or calculations that were made to arrive at the cost estimate should be included here.

***INSIGHT 4.1***

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| **Revenue streams or fees paid between different sanitation actors**  In order to reduce variability caused by differences in organization and structure of different sanitation systems, the CACTUS method assumes that all elements of the sanitation value chain are operated by a single virtual operator. While this rarely occurs in real life, the important practical implication of this assumption is that any financial transactions between sanitation actors are not included in cost reporting. For example, any tariffs that a utility charges to households for use of the sewer system are not reported in this workbook. |

## SECTION 1: STAFF COSTS

Definition

This section covers all costs for staff who directly provide operation and maintenance services for the sewer system.

Parameters

* The parameters in this section are the same as those in the overview section.

Cost items

* **All wages and salaries for staff directly responsible for this component**: Combined salaries for all staff who provide operational support, maintenance, inspection, or supervision of the sewer network and pumping stations
* **Staff insurance:** Includes costs for all insurances and other similar items. Examples include health insurance, disability insurance, workers’ compensation and social security if those are not previously included in the reported salary.
* **Staff vaccinations:** Includes annual costs associated with vaccinations and other annual or routine health checks provided by the employer
* **Other or combined staff costs:** If you incur and staff costs that do not match the descriptions for one of the above types, you can enter it here, or you may use this row to report the combined cost for two or more of the items above if your financial records group those costs together. In the notes, describe the costs that are included.

Frequently asked questions

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| **We have staff members who provide maintenance for both the sewer network and a wastewater treatment plant. How do I report their salaries and other expenses?**  *All costs for operating the wastewater treatment plant should be reported in a separate workbook for the appropriate wastewater treatment component. If staff salaries cover operation of both the sewer network and the treatment plant, then you can estimate the fraction of the total salary cost that should be reported here based on the approximate fraction of time that employees spend working on the sewer network versus the treatment plant. You may also use the Appendix, which provides guidance on allocating shared indirect costs, for ideas about how to determine the appropriate portion of the total salaries to report here.* |

## SECTION 2: EQUIPMENT, LAND AND BUILDINGS

Definition

This section includes all direct annual costs incurred for equipment, land and buildings, which can include routine maintenance, rent, or replacement of items if done on a routine basis. Any costs already reported for equipment, land and buildings in the direct CAPEX tab should not be repeated here.

Parameters

All parameters are described previously in the overview section.

Cost items

* **Sewer network and pump maintenance:** Includes routine maintenance performed on the sewer network and pumps, such as removing clogs, repairing broken pipes and joints and maintaining the pumps
* **Inspection chamber maintenance:** Includes maintenance performed on the inspection chambers if this cost is known separately from maintenance on the rest of the sewer network. If it is not known separately, report it combined in the row above.
* **Pumping stations:** Includes rent or maintenance costs for the pumping stations
* **Other operational costs for equipment:** If you pay any operational expenses (rent, routine replacement or routine maintenance) for equipment that are not included above, you may enter them here. In the notes column, describe the cost types that are covered.
* **Other operational costs for land:** If you pay any additional operational expenses for land that is directly used for the sewer network and is not included above, you may enter it here. Use the notes column to describe how the land is used and what the cost covers.
* **Other operational costs for buildings:** If you pay any operational expenses for buildings that are directly used for the sewer network and are not included above, you may enter them here. Use the notes column to describe how the buildings are used and what the cost covers.

## SECTION 3: CONSUMABLES

Definition

This section includes annual costs paid for items that are regularly consumed and replaced and that directly contribute to the maintenance of the sewer network and pumping station, such as oil and grease for pumps at the pumping station.

Parameters

All parameters are described previously in the overview section.

Cost items

* **Personal protective equipment (PPE) for technical personnel**: Includes boots, overalls, reflective vests, safety glasses, gloves and any other protective gear used by the technical personnel
* **Electricity:** Includes the cost of electricity used to run the pumping station and pumps. This does not include electricity used at an office or wastewater treatment plant.
* **Fuel:** Includes fuel used for pumps or generators at the pumping stations
* **Lubricant**: Includes oil, pipe grease and other similar products used for pumps and other motorized equipment
* **Other or combined consumables**: Provide the combined cost for any consumables that are not explicitly listed above, or you may use this row to report the combined cost for two or more of the items above if your financial records group those costs together. Use the notes column to provide more details about the items accounted for in the cost.

## SECTION 4: SERVICES

Definition

This section includes annual costs paid for professional services that are essential to operate and maintain the sewer network.

### 

Parameters

All parameters are described previously in the overview section.

Cost items

* **Maintenance services:** Any maintenance services that are paid to a third party can be provided here if they were not already included in the equipment operating expenses above.
* **Other services**: If you pay for any services that are not explicitly included above, you may provide those costs here. This might include insurance that you consider a direct expense or software licenses that are required to monitor the sewer network.

## SECTION 5: ADMINISTRATIVE CHARGES AND PERMITS

Definition

This section includes annual costs paid for administrative charges and permits that are considered direct operating expenses, such as an annual permit required to manage waste. There is only one row in this section, which can be used to report the combined cost for all costs that match this description. Use the notes column to describe the costs that are covered.

# TAB 5: INDIRECT OPEX

## OVERVIEW

Definition

**Indirect OPEX** consists of routine expense items or operational costs that **indirectly** support the sewer system. These are most often costs that support core business activities. (Stumped on the difference between direct and indirect costs? See **INSIGHT 3.1** for the indirect CAPEX tab)

Common parameters

The following parameters to describe cost items are common throughout this tab. Any differences in these parameters seen in individual sections will be described separately in the corresponding section.

* **Annual cost:** The cost incurred for each item over the course of a year
* **Fraction applied to shared costs:** The fraction of the reported cost that should be applied to this component, which should be generated using the cost allocation methodology described in the Appendix. The fraction should be entered as a decimal equal to or between 0 and 1. (Stumped? See **INSIGHT 3.2** for the indirect CAPEX tab)
* **Currency:** Select the appropriate currency from the drop down box which should correspond to the currency specific to that particular cost. Different costs could have different currencies depending on how your organization reports these costs.
* **Confidence in cost estimate:** Indicate how confident you are in the reported cost. Answer choices include high confidence (approximately +/-5% from reported cost), fair confidence (approximately +/-15%), and low confidence (approximately +/-50% or more).
* **Indicate if cost is incurred but not reported:** Use an X from the drop-down menu to indicate if a cost that is incurred is not reported because it is not known or otherwise missing. If the cost is not reported because it is actually not incurred for your specific component, then you do not need to indicate that it is missing. This column helps us track missing costs for later data analysis.
* **Notes:** A more detailed description of what the cost item is or how the cost was determined. Any assumptions or calculations that were made to arrive at the cost estimate should be included here.

## SECTION 1: SALARIES

Definition

This section includes the salaries or wages paid to staff who indirectly support the sewer system through core business activities.

Parameters

The parameters in this section are the same as those in the overview section.

Cost items

* **Sales and marketing staff:** Includes salaries paid for the sales and marketing team
* **Customer support and call centre staff:** Includes salaries paid for staff who provide customer support or staff a call centre to field requests from customers and schedule services
* **All other or combined indirect staff:** Includes combined salaries for any other office personnel (e.g., human resources, IT, accounting, finance, government relations and others), executives or other staff (e.g., government relations, research and development, external relations) who indirectly support the activities reported in this workbook. If it is simpler to combine sales, marketing, customer support and call centre staff here with the others, you may do so. Use the notes column to provide details about the type and number of staff if possible.

## SECTION 2: OTHER EXPENSES FOR INDIRECT STAFF

Definition

This section includes the annual expenses that are incurred on behalf of all indirect staff for items such as insurance and vaccinations that are not included in salaries. Note that the costs reported here should only reflect those incurred for indirect staff as similar costs for direct staff are reported elsewhere.

Parameters

All parameters are described previously in the overview section.

Cost items

* **Insurance:** Includes the combined costs for all insurances and other similar items. Examples include health insurance, disability insurance, workers’ compensation and social security if those are not previously included in the reported salary.
* **Annual vaccinations**: Includes annual costs associated with vaccinations and other annual or routine health checks provided for indirect staff
* **Other or combined staff expenses**: Provide the combined cost for any expenses that are not explicitly described above, or you may use this row to report the combined cost for two or more of the items above if your financial records group those costs together. Be sure to include the details of the included items in the notes cell.

## SECTION 3: PROFESSIONAL DEVELOPMENT AND TRAINING

Definition

This section includes all annual expenses incurred for professional development and staff training.

Parameters

All parameters are described previously in the overview section.

Cost items

* **All annual professional development and staff training**: Includes orientations, safety trainings, staff certification programs, and any annual staff development funds provided by the employer.

## SECTION 4: EQUIPMENT, LAND AND BUILDINGS

Definition

This section includes all indirect costs incurred for equipment, land and buildings. Costs can include routine maintenance, rent, or replacement of times if done on a routine basis.

Parameters

All parameters are described previously in the overview section.

Cost items

* **Office building:** Includes the office building rent if the building is not fully owned or long-term leased and any operational expenses for upkeep of the office that are not included elsewhere
* **Land:** Includes all rent or other operational expenses for land. This might be used if you pay rent specifically for the land that the office is built on, separate from the office itself. If there are multiple pieces of land that you incur annual costs for, you should enter the combined cost for all land here.
* **Office equipment:** Includes rent, maintenance, upkeep or routine replacement for office equipment such as computers, phones, desks, and chairs
* **Vehicles:** Includes rent, maintenance and upkeep on general use vehicles. These are vehicles used for general staff transportation and should not include any vehicles used directly for transportation of waste.
* **Other operational costs for buildings:** Include the combined cost for any annual expenses paid for buildings that should be classified as an indirect expense and are not the office building. This might include storage buildings or a warehouse.
* **Other or combined operational costs for equipment:** Include the combined cost for any annual expenses for equipment that were not included in the lines for office equipment or vehicles above.

## SECTION 5: CONSUMABLES

Definition

This section includes annual costs for items that are regularly consumed and replaced and that are considered indirect costs.

Parameters

All parameters are described previously in the overview section.

* **Utility expenses:**Includes utility expenses paid for the office such as water, electricity and internet. Input the cumulative utility expenses in this row and indicate the utilities that are included in the notes column.
* **Office supplies:** Includes any expenses associated with regularly purchasing consumables used in the office or to produce marketing materials such as paper, printer ink, pens, whiteboard markers, etc.
* **Fuel for general use vehicles:** Includes total annual expenditures on fuel for general use vehicles. Any fuel purchased for vehicles that directly provide waste transportation services, such as trucks used to transport waste to disposal or treatment, should not be reported here.
* **Other or combined consumable expenses:** Provide the combined cost for any consumables that are not explicitly described above, or you may use this row to report the combined cost for two or more of the items above if your financial records group those costs together. Be sure to include the details of the included items in the notes cell.

## SECTION 6: SERVICES

Definition

This section includes fees paid for professional services that support the sewer system.

Parameters

All parameters are described previously in the overview section.

Cost items

* **Insurance:** Includes any insurance fees paid that are considered indirect expenses, excluding the insurance payments for employees which are included as staff expenses. Examples of insurance include fire insurance for the office building and liability insurance for the business.
* **Legal:** Includes fees paid to legal advisors for any legal processes required to operate the organization
* **Financial:** Includes any fees associated with financial advisory services received. Note that financing costs, such as interest on loans, are not included in this section.
* **Marketing:** Includes any fees paid for marketing services that are not already included as office supplies. This might include fees paid for radio advertisements or fees paid to a professional marketing firm.
* **Consulting or advisory:** Includes any fees associated with professional advisory or consulting services that are not considered financial, legal or marketing
* **Other or combined services:** Provide the combined cost for any professional services that are not explicitly listed above, or you may use this row to report the combined cost for two or more of the items above if your financial records group those costs together. Be sure to include the details of the included items in the notes cell.

## SECTION 7: ADMINISTRATIVE FEES, TAXES AND FINANCING

Definition

This section includes annual costs for licenses, permits, taxes, and financing charges that are not already accounted for in one of the CAPEX tabs.

Parameters

All parameters are described previously in the overview section.

Cost items

* **All administrative charges and permits considered indirect operating expenses:** Includes any administrative fees, licenses (including software licenses and general business licenses) and professional memberships for employees or for the organization
* **Annual taxes:** Includes any taxes paid annually that are not included elsewhere, such as property tax or income tax for a business
* **Annual financing charges:** Includes annual financing charges that are not already accounted for in one of the CAPEX tabs