

**DATA ENTRY MANUAL**

**CONTAINMENT: DIRECT**

System: Wastewater

Element: Containment

Component: Direct

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# INTRODUCTION

This manual is designed to help you report all of the costs associated with connecting a household to a sewer system, including all materials and labour required for installation and any excavation required to lay pipes. The connection of the toilet to the sewer system is considered a **direct** containment component.

***INSIGHT 0.1***

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| **Who can report costs for a direct containment component?**  In most cases this workbook should be completed by a utility or municipality responsible for the sewer system, and the costs reported should represent the actual costs for installation. If those costs are not available, the fee that a household or user pays for the connection can be used as a proxy for the actual cost, but this is not preferred as fees charged to users may be higher or lower than the actual cost of making the connection.  Costs reported here should represent the costs for a single household connection to the sewer system. |

First, download and open a clean workbook for a direct containmentcomponent. Then follow the instructions below to fill in the required data on each of the three workbook tabs: context, direct CAPEX and direct OPEX.

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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 yellow boxes.

## GENERAL INFORMATION

Data to provide

* **Name of organization / business / utility:** If you are entering data for a formal organization or business, enter the name here.
* **Description of organization / business / utility:** Provide a brief description of your operation here. Possible examples include: 'Water and sanitation utility in [Insert city, country] which provides water and sewered sanitation services’ or ‘Sanitation company that operates a conventional sewer system and wastewater treatment plant’.
* **Description of direct containment component:** Provide a description of the specific component for which you are providing data. For example, 'Average cost for one household connection to the municipality’s main conventional sewer' or ‘Average cost to connect a single household to a simplified sewer system that serves 4,000 households’.
* **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 sewer connection was installed from the drop-down box
* **City**: Enter the name of the city where the sewer connection is located

## SERVICE INFORMATION

Definition

All of the costs reported in this workbook should represent the cost of a single connection to a sewer system, and the service information should indicate the average number of people served by a single connection. This helps us calculate CACTUS’s key metrics: the total annual cost per capita (TACC) and total annual cost per household (TACH).

Data to provide

* **Number of households served**will usually be 1 unless a single sewer connection is shared by multiple households.
* **Number of people per household**should represent an average for the area that is served by the sewer system.
* **How value was determined:** Include any information about how you came to this value. 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.

# TAB 2: DIRECT CAPEX

## OVERVIEW

Definition

**Direct CAPEX** includes capital investments that are incurred less frequently than once per year and that directly contribute to establishing a connection between toilet(s) and a sewer system. These investments are broken into three categories: (1) materials and installation of sewer connection, (2) major and extraordinary repairs and (3) taxes.

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:** The cost or amount associated with one sewer connection
* **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).
* **Lifetime (years):** Indicate the frequency in years with which the cost is incurred or the item must be replaced.
* **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. Some examples are provided in the workbook. Erase these and write your own notes.

## SECTION 1: MATERIALS AND INSTALLATION OF THE SEWER CONNECTION

Definition

This section includes all costs for connecting the toilet to the main sewer line.

Parameters

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

* **Lifetime (years):** Indicate the estimated lifetime of the sewer connection in years. The same value will likely be used for all cost items in this section.
  + The workbook only allows input of a single value in years. If you know the lifetime as a range, provide the average value as the lifetime, and indicate the expected range in the notes column.
  + If you do not know the lifetime of a typical connection, use a default value of 30 years.
  + Describe how the estimate was determined in the notes column, and note if you use the default value.
  + The same lifetime value should apply to all rows in this section.
* **Year cost was incurred:** Indicate the year when the reported cost was incurred. The same value will likely be used for all cost items in this section.

Cost items

* **All materials required for a sewer connection:** Includes all necessary materials for the connection, including pipes, bends and fittings.
* **Labour:** Includes all labour for the civil works and installation of the pipes to connect a household to the sewer. Labour may also include any surveying or inspection that is required before installation. The cost may include wages paid for labour and any other costs associated with workers such as vaccinations, personal protective equipment (PPE), short-term insurance and meal or travel allowances.
* **Other or combined costs**: This row serves two different purposes.
  + First, if you only know the full cost of the connection including both materials and labour, you may report the combined cost here. Be sure to include the details of the combined items in the notes cell.
  + Second, report any additional costs that are incurred to connect to the sewer that are not included above.
  + For either case, use the notes column to describe which costs are included in the cost reported in this row.

Frequently asked questions

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| **1. As a utility, we charge a standard connection fee of about 100 USD per household. However, the entire cost of materials and labour for the connection only adds up to 70 USD. The remaining 30 USD is used to offset costs for maintenance and operation of the sewer system. Which cost should we report?**  *Report the actual cost that is incurred specifically to construct and install the connection, which, in this case, is 70 USD.*  **2. I do not know the actual cost of connecting a household to the sewer because our finance records do not include those details, but I do know the fee that we charge users as a connection fee. What should I report?**  *Although the actual cost incurred is preferred, if you only know the fee charged to households, you may report that as the total cost for the connection in the row for “Other or combined costs” and explain the nature of the cost in the notes column.*  **3. I am reporting on data collected from households, and they only know the fee that they are charged for the sewer installation. How should I report those costs?**  *Similar to the question above, report the fee paid by households in the row for “Other or combined costs”, and use the notes column to explain that the reported cost is based on the fee charged to households for a sewer connection.* |

## 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. For example, if a pipe is usually replaced after 10 years, the lifetime would be 10.
* **Year cost was incurred:** Indicate the year when the reported cost was incurred

Cost items

Examples of major and extraordinary repairs include replacing the pipe that connects to the main sewer line, a major repair that is needed to unclog the pipe, and replacement of fittings that requires excavation. Two rows are provided for reporting major and extraordinary repairs in case multiple repairs with different costs and different lifetimes should be reported. For each repair reported, **erase** the red text for the item name that currently says “Major and extraordinary repair (1)” or “Major and extraordinary repair (2)”, and replace it with a short description of the maintenance that is performed.

Frequently asked questions

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| **1.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 maintenance section on the OPEX tab, regardless of whether it technically meets the definition for a major and extraordinary repair.*  **2. Should I report costs incurred for repairing the main sewer line as a major and extraordinary repair?**  *Costs for repair of the pipe(s) that connect households to the main sewer line can be reported here. Any repairs to the main sewer system should instead be reported in the appropriate emptying and transport workbook.* |

## SECTION 5: TAXES

Definition

Taxes include sales tax, value added tax (VAT) and import tax that might be paid for materials required to install the sewer connection.

Parameters

All parameters are described previously in the overview section.

Cost items

There is only one row in this section, which can be used to report the sum of all taxes paid for materials and labour required to connect a household to the sewer system.

Frequently asked questions

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| **The purchase 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.* |

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# TAB 3: DIRECT OPEX

## OVERVIEW

Definition

**Direct OPEX** includes costs required to operate or maintain the sewer connection.

Common parameters

The following parameters to describe cost items are common in both sections of 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.

## SECTION 1: MAINTENANCE

Definition

This section includes all routine maintenance performed at least once per year. This section should not include any major and extraordinary repairs that were already reported in the direct CAPEX tab.

Parameters

All parameters are described previously in the overview section.

Cost items

There are two rows provided to report different expenses that are incurred to maintain the connection to the sewer system. Examples for maintenance costs that are incurred might include routine cleaning of the pipes or leak testing. To report a maintenance cost, **erase** the red text for the item name that currently says “Sewer connection maintenance (1)” or “Sewer connection maintenance (2)”, and replace it with a short description of the maintenance that is performed.

## SECTION 2: CONSUMABLES

Definition

This section includes the annual cost incurred for any materials used on the sewer connection or supplies that are routinely replaced.

Parameters

All parameters are described previously in the overview section.

Cost items

There are two rows provided to report consumable expenses. Examples for consumables that might be purchased include chemicals that are routinely flushed in the toilet to clean out the pipes. To report a consumable cost, **erase** the red text for the item name that currently says “Consumable (1)” or “Consumable (2)”, and replace it with a short description of the consumable that is purchased.

Frequently asked questions

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| **1. We use a chemical additive to decrease accumulation of solid sludge in the sewer connection, but we only need to add it once every two years. Should I report the cost for those chemicals here?**  *No, if the chemical is used less frequently than once per year, it should be reported in the major and extraordinary repairs section of the direct CAPEX tab with a lifetime of two years.*  **2. Should water that is consumed for flushing the toilet be reported in this section?**  *We have made the decision to exclude the cost of flush water from wastewater components for many reasons, including (1) we generally expect the utility to report on the cost for connecting a household to the sewer, and the utility does not incur the cost of flush water and (2) the cost of flush water is highly variable depending on cost of water, volume used, and whether fresh or greywater is used for flushing.* |