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## Overview of Cost Estimate application

Cost estimate tool is the one of the important tool for the community base water supply and sanitation system design. This tool is independent application and can be used for estimating cost of different structural components in the water supply scheme. The name and type of structure used in the design sheet for PipeLineDesign application, works as input for the Cost estimate tool. Default structure' s construction and fitting data are assigned for the structures output from CBWSS application and other necessary modification for each structure must be done manually.

Except some default data, the necessary input data must be given manually. The Rate entry, norms entry and others data must be according to project requirement. This cost estimate tool is capable of generating cost-estimate for the scheme or sub-project in different format. These reports can be viewed as well as exported to Excel application for printing purpose.

This tool can generate following important reports.

1. Cost of Tools
2. Rate analysis report
3. Material breakdown report for structures
4. Fitting summary for structures
5. Truck analysis
6. Transportation cost summary
7. Pipe line cost summary
8. Summary of scheme cost
9. Project cost summary
10. Slient Features

## 1.0 Running Cost Estimate application

1.1 Run PipeLineDesign.exe application by using command as below.

Start menu →  
Program Files →  
Softwel →  
CostEstimate.exe

This application has concept of project files. So to start working with this application, either you have to open new project or saved project. If you are starting a new project, then give the command to create new project as shown below (Figure 1).

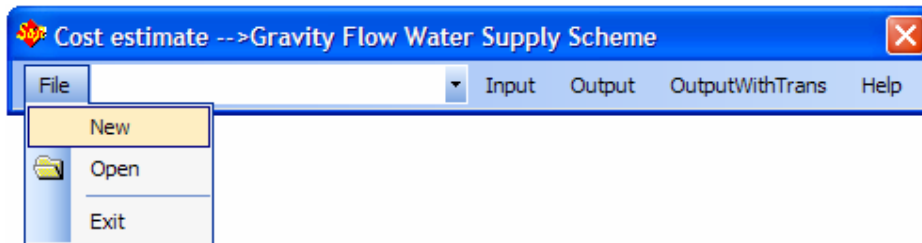


Figure 1

This command will pop up the save dialogue box as shown below (Figure 2).

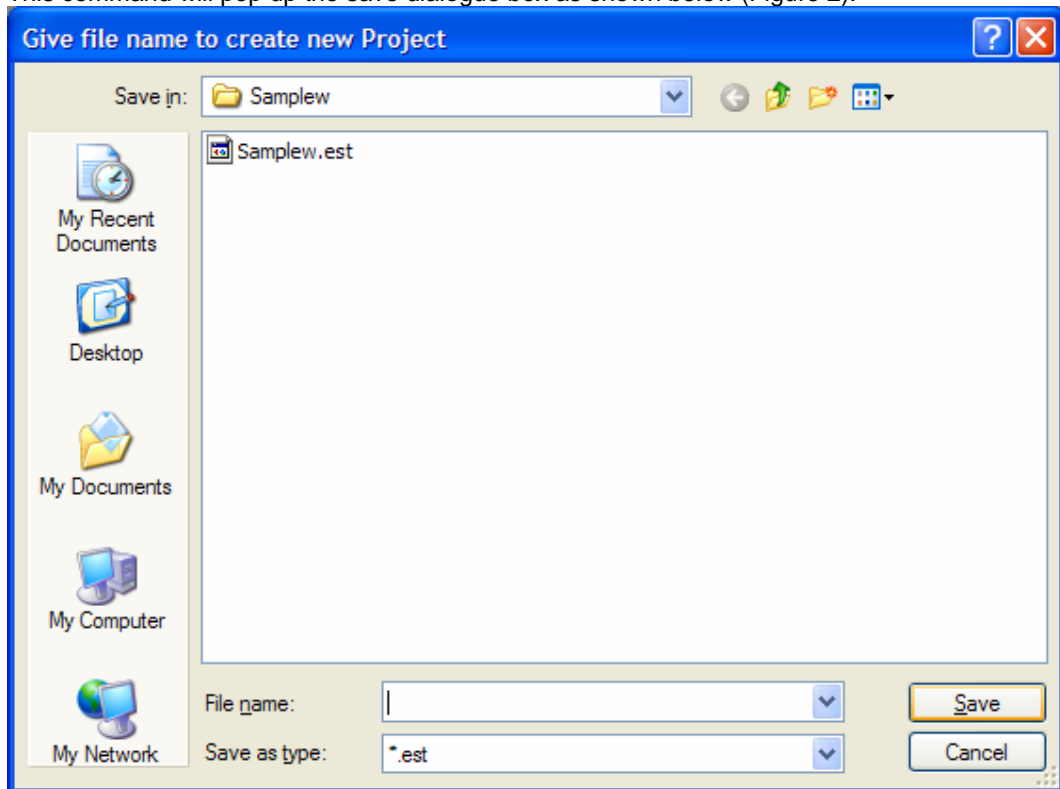


Figure 2

Now give the proper name for the project and click save button, this will create new folder with the name given at specified location. If you have project that is to be continued for further work, then open that project file containing est extension. And If the folder containing the file, contains other scheme or sub-project database file (mdb file), then they are also listed by this application in the drop down box in the application.

## 2.0 Step by Step procedure for cost-estimation

### 2.1 Data Inputs

Input data required for the cost-estimation should be entered under the following categories as shown in the figure below (Figure 3).

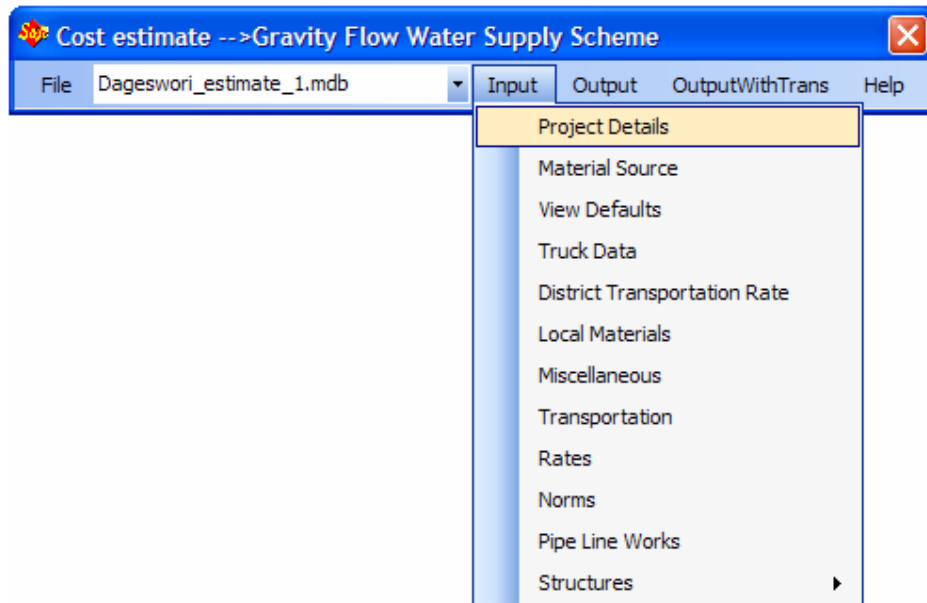


Figure 3

#### 2.1.1 Project Details:

Some project details are entered into the form as shown below.

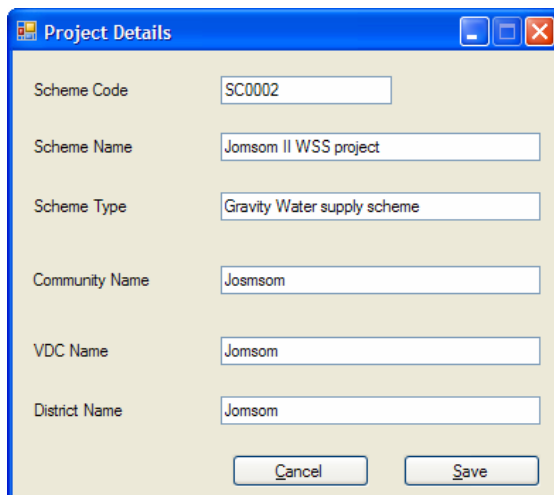


Figure 4

## 2.1.2 Material source :

The data entry form for the source and destination data is loaded by command “Material Source”. The codes for the source are listed in the combo that appears in the source-code column if you click at any cell in the column. The sources and destination are entered into the table as shown below (Figure 5). **Do not forget to enter data for the MAINSOURCE and DESTINATION.**

SourceCode	LocationName
DESTINATION	Bhaktpur
Source1	Koteshwor
Source2	Kalimati
Source3	Tripureshwor
Source4	Kritipur
MAINSOURCE	Koteshwor
Source5	Bhaktpur1

Source5 dropdown options: Source1, Source2, Source3, Source4, Source5, Source6

Buttons: Save and Exit, Save, Cancel

Figure 5

## 2.1.3 View Defaults :

Some Default data can be inspected from the command “View Defaults”. This command will pop up the form containing the default data. This form is read-only form, so you cannot edit the values in the form. A sample form is shown in the figure below (Figure 6).

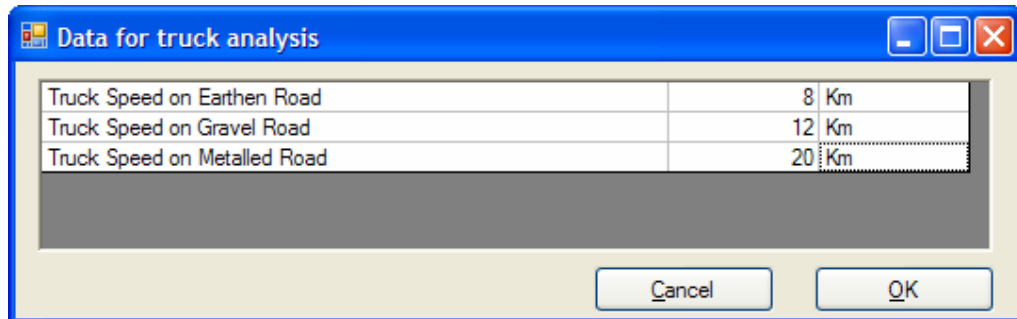
Name of Item	Value for Item
Portable weight	40
Portable distance/day	13
Source of Material	Koteshwor
Destination of Material	Bhaktpur

Buttons: Cancel

Figure 6

## 2.1.4 Truck Data:

All the data required for the truck analysis is entered into the form given below. The speed of truck required to compute truck rate Rs/Kg-km, can be entered into table below (figure 7).

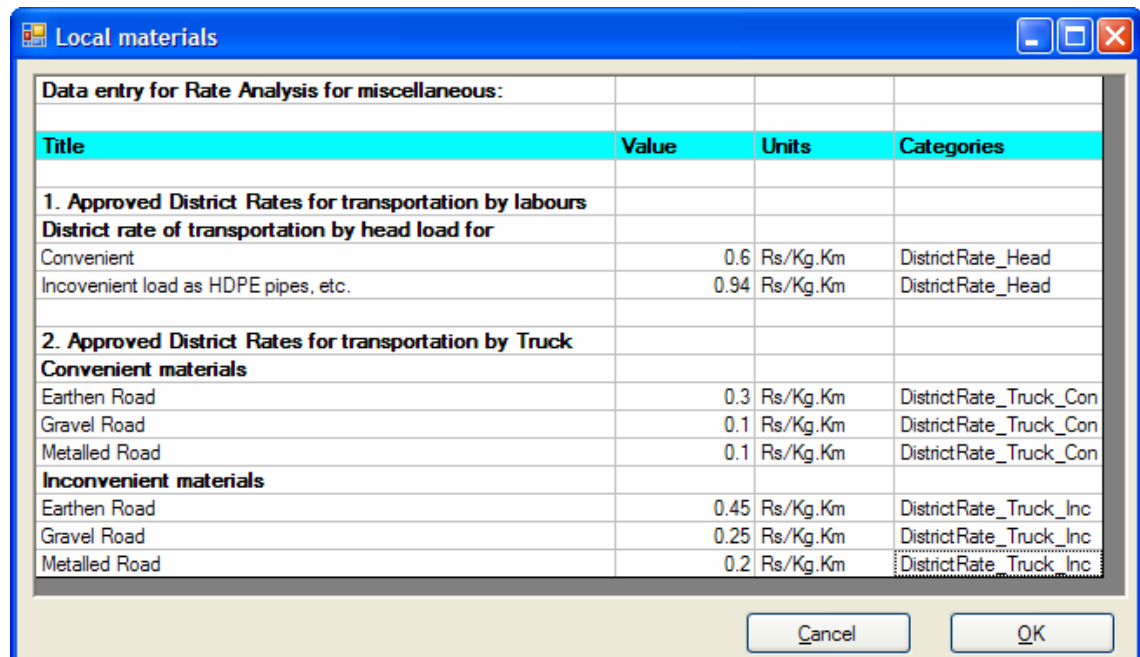


Data for truck analysis	
Truck Speed on Earthen Road	8 Km
Truck Speed on Gravel Road	12 Km
Truck Speed on Metalled Road	20 Km

Buttons: Cancel, OK

Figure 7

## 2.1.5 District Transportation Rate :



Local materials			
Data entry for Rate Analysis for miscellaneous:			
Title	Value	Units	Categories
<b>1. Approved District Rates for transportation by labours</b>			
<b>District rate of transportation by head load for</b>			
Convenient	0.6	Rs/Kg.Km	DistrictRate_Head
Inconvenient load as HDPE pipes, etc.	0.94	Rs/Kg.Km	DistrictRate_Head
<b>2. Approved District Rates for transportation by Truck</b>			
<b>Convenient materials</b>			
Earthen Road	0.3	Rs/Kg.Km	DistrictRate_Truck_Con
Gravel Road	0.1	Rs/Kg.Km	DistrictRate_Truck_Con
Metalled Road	0.1	Rs/Kg.Km	DistrictRate_Truck_Con
<b>Inconvenient materials</b>			
Earthen Road	0.45	Rs/Kg.Km	DistrictRate_Truck_Inc
Gravel Road	0.25	Rs/Kg.Km	DistrictRate_Truck_Inc
Metalled Road	0.2	Rs/Kg.Km	DistrictRate_Truck_Inc

Buttons: Cancel, OK

Figure 8

For rate analysis of Local materials, sometimes we need to transport materials by head and truck from source to destination, so we first input data for district transportation rate (Figure 8). These rates can be used in transportation of other materials also. If District Rates are not given, then just neglect this option.

## 2.1.6 Local Materials :

**Local materials**

Data entry for Rate Analysis for miscellaneous:

Title	Value	Units	Categories
<b>1. for sand collection</b>			
If sand is to be purchased, specify cost/m3		Rs/m3	Sand
Sand is available in	Myagdi		SandSource
If Head load is there specify haul distance	8	Km	SandSourceDist
<b>3. Collection of stone</b>			
If stone is to be purchased specify cost/m3		Rs/m3	Stone
Distance of quarry from site		Km	StoneSourceDist
<b>3. Aggregates</b>			
If aggregate is to be purchased, specify cost/m3		Rs/m3	Aggregates
<b>4.Sand Transportation by Truck</b>			
<b>Specify the distance</b>			
Earthen Road	5	Km	SandDist
Gravel Road	5	Km	SandDist
Metalled Road	3	Km	SandDist
<b>5.Stone Transportation by Truck</b>			
<b>Specify the distance</b>			
Earthen Road	4	Km	StoneDist
Gravel Road	6	Km	StoneDist
Metalled Road	5	Km	StoneDist

Cancel OK

Figure 9

For rate analysis of Local materials, like collection and transportation rate for 1 cum of sand from source to site, we input data in the form given above (Figure 9). Similarly data for other materials like stone and aggregates can be entered in this form.



## 2.1.7 Miscellaneous :

For some miscellaneous data entry like, VAT, Contractor's overhead, Rate/Unit Weight of HDPE etc, we can use the command given below and it will display figure as shown below (Figure 10).

Input →  
**Miscellaneous**

Name	Value	Unit
Pre-handover Training	9000	Rs
Rate/Unit Weight of HDPE	190	Rs/Kg
VAT	13	%
VMWs Training	3000	Rs

Figure 10

## 2.1.8 Transportation

Data for the medium of the transportation are entered in the form (Figure 11) displayed by the following command below.

Input →  
**Transportation**

Mode of Transportation	Source	Destination	Road Type	Distance(Km)	Rate /Quintal-Km(Rs)	LoadingRate /Kg(Rs)	UnloadingRate /Kg(Rs)
Truck	Dadeldhura	Bagarkot	Earthen	13	3.943	0.05	0.05
Porter	Bagarkot	Kanakot	Earthen	15	48	0	0

Figure 11

Enter the data as per categories of transportation like Convenient, Inconvenient and Pipes as shown in the figure above (figure 11). If the rate for truck is to be taken from the truck analysis, use the button named **"Rate per Trip for Truck"**.

The Mode of transportation, Source, Destination and Road type data is selected from the item collection of the dropdown list in the corresponding field. Once you click on any cell of the fields, you can select item inside the dropdown list.

If Truck rate is to be taken from district rate table, then click the button named **“Truck Rate From District Rate”** and if the Porter Rate is to be taken from the district rate table, then click the button named **“District Porter Rate”**.

## 2.1.9 Rates :

Click the command “Rates” under the Input menu. This command will give us a form tilted “Rate Entry form” as shown in figure (Figure 12) below. We can make several categories of the materials that we need for project. For making new category, just type the name of the category at the combo named Material Type. As shown in the figure (Figure 12), you will find the number of the default categories for the project. So if the material to be entered, falls under any of the predefined category, you can enter the material under the category, otherwise create your own new category.

ItemCode	Description	Unit	Rate(Rs)	UnitWt(Kg)	Cash/Kind (1/0)	Inconvenient (1/0)	Material_Source
M042	Wire mesh - 24 SWG	m <sup>2</sup>	0	0.6	1	0	0
M044	10 mmØ bar mesh (30x30 cm <sup>2</sup> )	m <sup>2</sup>	0	1.48	1	0	0
M004	Aggregate - 10 mm size	m <sup>3</sup>	2737.5	1600	1	0	0
M005	Aggregate - 20 mm size	m <sup>3</sup>	2055	1600	1	0	0
M006	Aggregate - 40 mm size	m <sup>3</sup>	2055	1600	1	0	0
M040	Aldrop set	set	0	0.4	1	0	0
M013	Bamboo	no	80	25	1	0	0
M047	Barbed wire (m)	m	0	1	1	0	0
M046	Barbed wire 10 SWG(Kg)	kg	84.5	1	1	0	0
M020	Binding wire	kg	0	1	1	0	0
M055	Bitumen paint	kg	52	1	1	0	0
M029	Bitumen washer	No.	0	0.01	1	0	0
M001	Block Stone	m <sup>3</sup>	894	2000	1	0	0
M002	Bond Stone	m <sup>3</sup>	894	2000	1	0	0
M063	Bulldog grip - 14 mmØ	set	0	0.4	1	0	0
M064	Bulldog grip - 32 mmØ	set	0	0.6	1	0	0
M014	Cement	MT	6900	1000	1	0	0
M030	CGI sheet ( 26 SWG )	m <sup>2</sup>	130.05	5.1	1	0	0
M078	CGI Sheet (22-24 SWG)	m <sup>2</sup>	0	1	1	0	0

Figure 12

For adding new material under any category, we have to use commands named “ADD” and “UPDATE”. The “ADD” command will create new row in the table for entering fresh data. Enter all the data as needed by the table. Use “Update” command to save data permanently in database. If you are sure that, you have done everything for data entry, you can click “Save and Exit” command to exit from the rate entry form.

Standard rate for the HDPE materials can be assigned according to rate per Rate/Unit Weight of HDPE data entered in the miscellaneous form (refer figure 9). Click button “Rate by HDPE unit wt” to get rate for the HDPE material. Similarly the rate for the Local materials can be assigned, if you click “Rate for Local material”. Before using this button, assure that you have entered all the data required in the form “Local materials”.

Next, the table of rate entry for different category can be exported to excel by selecting the required category and clicking the "Current" button in the frame named "Export to Excel". For example in the figure given above, if you click "Current" button, it will prompt the file name for data saving. Give the proper name for the file, then you will get the excel file with materials along with its rates. For exporting all the materials to the excel file along with material's rate, we can use the button "ALL".

## 2.1.10 Norms :

For entry of the Norms (required for the project), should be entered into the form as shown below (Figure 13). This form can be displayed by command "Norms" under the Input menu.

NormNo	Description	Unit
CBWSS05	Stone Quarrying	cum
CBWSS06	Gravel Breaking	cum
CBWSS07	Soling with stone and sand	cum
CBWSS08	Dry Stone Masonry in mud mortar	cum
CBWSS09	PCC(1:2:4)	cum
CBWSS10	Fixing M.S. Bar Reinforcement	cum
CBWSS11	Shuttering with wood	cum

Norms No.	CBWSS09	Add	Update
Description	PCC(1:2:4)		
Full Description	Plain cement concrete		
Units	cum		

Code	Name	Quantity	Units
M-01	Cement	0.32	M.T.
M-02	Sand	0.445	cum
M-05	Gravel	0.85	cum
L-1	Skilled Labour	1	md
L-3	Unskilled Labour Paid	5	md
*	Unskilled Labour Unpaid		
	Varnish		
	Water Proof Cement Paint		
	Wax Polish		
	White Cement		
	White lime		
	Wood		

Figure 13

To enter norms properly, follow the given steps listed below:

- Give the Norm No.
- Use short description for the norm.
- Enter full description for the norms item.
- Give the unit for work under the norm.

Now list the materials required for the work defined by norm, in the table at the bottom of the form. To add new material for the norm click "ADD" button at the bottom of the form. For selection of the proper material, you can use the Combo box that will display all the items entered into the rate tables. If you select any item from combo, it will generate the material-code and unit for the material selected automatically from the rate entry table. So ultimately, you have to enter only the quantity of the material that comes under the norms.

To save the norms item entered, we have to use either "ADD" button at the mid of the form or "Update" button at mid of the form. To edit the norm item already entered, you have to first click or select the item in the norm table. This action will display all the data for the norm item in the "Text boxes" and table below. Then edit the data as required and click "Update" button to save the modified norm item.

## 2.1.11 Pipe Line Works

Enter the pipe data for transmission and distribution system as required by the table given below. Give line type as 1 for transmission line and 0 for distribution line.

The screenshot shows a software window titled "Pipe Line Works". Inside, there is a table with the following columns: Pipe Code, Purpose, Soil Type, Length, Breadth, and Height. The table contains 13 rows of data. Below the table, there is a row with an asterisk (\*) in the first column, followed by empty cells for the other columns. At the bottom of the window, there are five buttons: "Import Pipe Line Data From Excel", "Prepare Construction Data", "Save and Exit", "Save", and "Cancel".

Pipe Code	Purpose	Soil Type	Length	Breadth	Height
GPM-50	1	GMS	5993	0.45	0.9
HP4-50	0	GMS	60	0.45	0.9
HP6-50	0	GMS	218	0.45	0.9
HP10-50	0	GMS	213	0.45	0.9
GPM-40	0	OS	140	0.45	0.9
HP10-50	0	OS	523	0.45	0.9
HP10-75	0	OS	35	0.45	0.9
HP6-75	0	OS	268	0.45	0.9
HP6-32	0	OS	78	0.45	0.9
HP6-125	0	OS	150	0.6	0.9
HP10-32	0	OS	90	0.45	0.9
HP10-40	0	OS	80	0.45	0.9
*					

Buttons: Import Pipe Line Data From Excel, Prepare Construction Data, Save and Exit, Save, Cancel

Figure 14

If you have design data in the pipeline design excel data file, you can import pipe data from the excel file to this form using the button named "Import Pipe line data from Excel". Once you have the data in this table, you can generate the necessary works required for pipe line works. The construction data like "Pipe line earthworks" and 'Pipe laying and joining works for different pipes can be generated by single click of the button "Prepare Construction Data". This command will append two row in the table for the structure codes and construction data to the structure data table in the name of "DL01" (for distribution line works) and "TL01" (for transmission line works).

## 2.1.12 Structures :

All the necessary structures construction data and fittings data entry is entered using command "Structures" under the input menu.

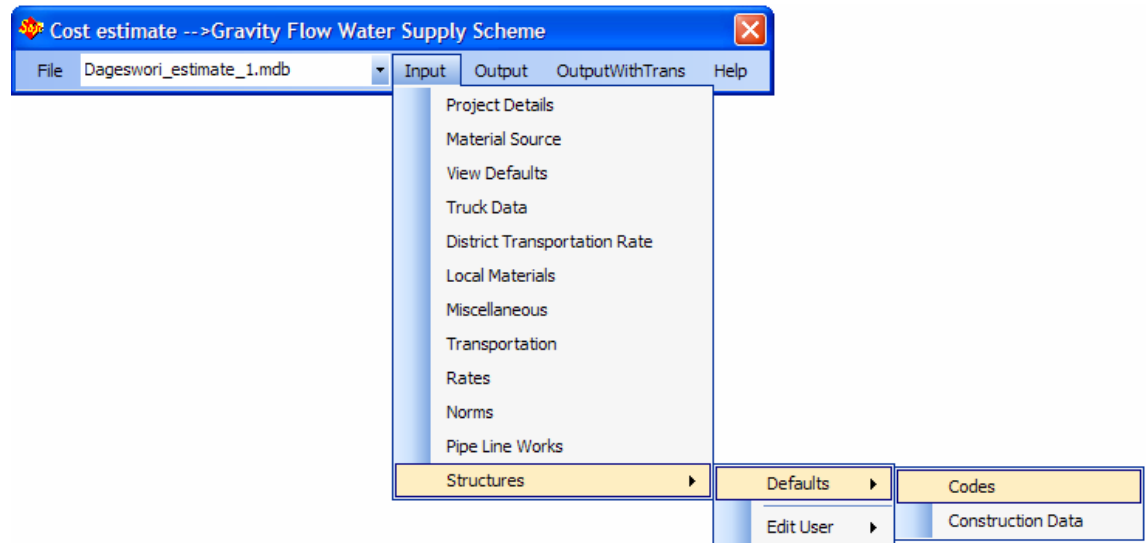


Figure 15

For the standard data entry for well known structure type, here we can use the "Default" commands. First we should make proper code for structures; codes for the structures can be entered into the form named "StructureCodes" and construction data can be entered into the next form named "Construction data of structures".

a) To enter the default codes for the structures, click Codes command and it will display the form named "StructureCodes" (Figure 16)

Menu hierarchy is as below.

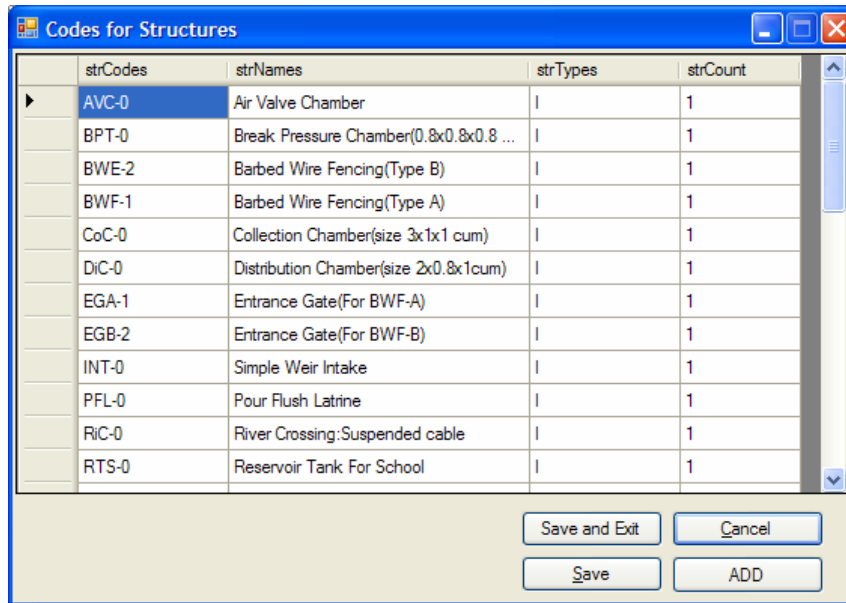
Input →  
           Structures →  
                     Defaults →  
                                 Codes

Then enter the data as required by table in the form below (Figure 17). The structure code should be given in such a way that first three characters in the code should match with the codes listed in the table given below (Figure 16).

StructureCode	StructureName	StructureType
AVC-0	Air Valve Chamber	I
BPT-0	Break Pressure Chamber(0.8x0.8x0.8 cum)	I
BWE-2	Barbed Wire Fencing(Type B)	I
BWF-1	Barbed Wire Fencing(Type A)	I
CoC-0	Collection Chamber(size 3x1x1 cum)	I
DiC-0	Distribution Chamber(size 2x0.8x1cum)	I
EGA-1	Entrance Gate(For BWF-A)	I
EGB-2	Entrance Gate(For BWF-B)	I
INT-0	Simple Weir Intake	I
PFL-0	Pour Flush Latrine	I
RiC-0	River Crossing:Suspended cable	I
RTS-0	Reservoir Tank For School	I
RVT-Ferro-01	Ferrocement Tank (1 cum)	I
RVT-Ferro-02	Ferrocement Tank(2 cum)	I
RVT-Ferro-03	Ferrocement Tank(3 cum)	I
RVT-Ferro-04	Ferrocement Tnank(4 cum)	I
RVT-Ferro-05	Ferrocement Tank(5 cum)	I
RVT-Ferro-06	Ferrocement Tank(6 cum)	I
RVT-Ferro-07	Ferrocement Tank(7 cum)	I
RVT-Ferro-08	Ferrocement Tank(8 cum)	I
RVT-Ferro-09	Ferrocement Tank(9 cum)	I
RVT-Ferro-10	Ferrocement Tank(10 cum)	I
RVT-Ferro-12	Ferrocement Tank(12 cum)	I
RVT-Ferro-14	Ferrocement Tank(14 cum)	I
RVT-Ferro-16	Ferrocement Tank(16 cum)	I
RVT-Ferro-18	Ferrocement Tank(18 cum)	I
RVT-Ferro-20	Ferrocement Tank(20 cum)	I
ScT-0	School Tank	I
SINT-01	Spring Intake(Without Valve Chamber)	I
StC-0	Stream Crossings	I
Tap-PSP-0	Public Stand Post	I
VaC-0	Valve Chamber(size1x0.6 sqm)	I
VINT-02	Spring Intake(With Valve Chamber)	I
WSL-0	Water Seal Latrine	I
WSV-0	Washout/Scour Valve	I
TL01	Transmission Line	I
DL01	Distribution Line	I

Figure 16

For entry of the data in the table you can use “ADD” button. Then enter proper codes and descriptions. When you completes entry of all data, then use button “Save” or “Save and Exit” to save your work (Refer figure 17).



strCodes	strNames	strTypes	strCount
AVC-0	Air Valve Chamber	I	1
BPT-0	Break Pressure Chamber(0.8x0.8x0.8 ...	I	1
BWE-2	Barbed Wire Fencing(Type B)	I	1
BWF-1	Barbed Wire Fencing(Type A)	I	1
CoC-0	Collection Chamber(size 3x1x1 cum)	I	1
DiC-0	Distribution Chamber(size 2x0.8x1cum)	I	1
EGA-1	Entrance Gate(For BWF-A)	I	1
EGB-2	Entrance Gate(For BWF-B)	I	1
INT-0	Simple Weir Intake	I	1
PFL-0	Pour Flush Latrine	I	1
RIC-0	River Crossing:Suspended cable	I	1
RTS-0	Reservoir Tank For School	I	1

Figure 17

b) For entry of the construction data for the structures listed in the structure code table, give the command as given below.

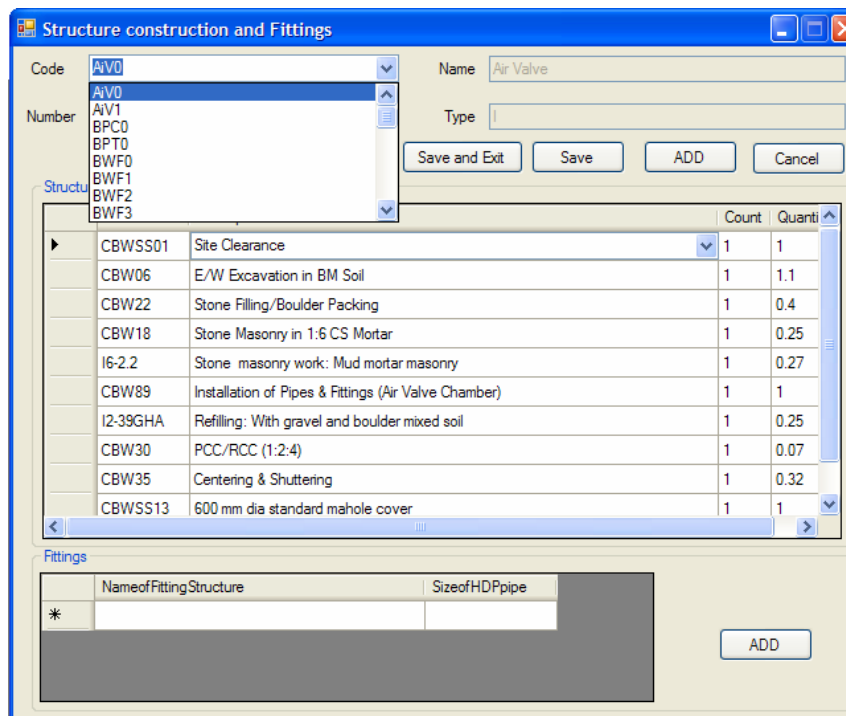
Input →

Structures →

Defaults →

Construction Data

This command gives the data entry form as shown below (Figure 18)



Code	Name	Count	Quantity
CBWSS01	Site Clearance	1	1
CBW06	E/W Excavation in BM Soil	1	1.1
CBW22	Stone Filling/Boulder Packing	1	0.4
CBW18	Stone Masonry in 1:6 CS Mortar	1	0.25
I6-2.2	Stone masonry work: Mud mortar masonry	1	0.27
CBW89	Installation of Pipes & Fittings (Air Valve Chamber)	1	1
I2-39GHA	Refilling: With gravel and boulder mixed soil	1	0.25
CBW30	PCC/RCC (1:2:4)	1	0.07
CBW35	Centering & Shuttering	1	0.32
CBWSS13	600 mm dia standard mahole cover	1	1

Figure 18

Select proper structure code from the structure drop down box and then enter all the norms items required for the construction of the structure. For adding new norm item in the construction data table, use “ADD” button. Then select the required norm item from the drop down box at the “Description” column as shown in the figure below (refer Figure 18 and 19).

NormNo	Descriptions	Count	Quantity
CBWSS01	Site Clearance	1	1
CBW06	E/W Excavation in BM Soil	1	1.1
CBW22	Stone Filling/Boulder Packing	1	0.4
CBW18	Stone Masonry in 1:6 CS Mortar	1	0.25
I6-2.2	Stone masonry work: Mud mortar masonry	1	0.27
CBW89	Installation of Pipes & Fittings (Air Valve Chamber)	1	1
I2-39GHA	Refilling: With gravel and boulder mixed soil	1	0.25
CBW30	PCC/RCC (1:2:4)	1	0.07
CBW35	PCC/RCC (1:2:4)	1	0.32
CBWSS13	Pipe Laying : Rcc Pipes: 40 cm dia. pipe	1	1
	Pipe Laying: HDP pipes and fittings for 1m: 40&50 mm O.D. pipes		
	Pipe Laying: Rcc Pipes : 70 cm dia. pipe		
	Pipe Laying: Rcc Pipes: 15 cm dia. pipe		
	Pipe Laying: Rcc Pipes: 30 cm dia. pipe		
	Pipe Laying: Rcc Pipes: 60 cm dia. pipe		
	Pipe Laying: CI pipes and fittings: Lead and flanged joint: 100mm(4")		

Figure19

c) To calculate the cost of the structures required for the scheme, we have to enter all the necessary structures data using command as given below (Figure 20).

1. Input →  
Structures →  
Edit User  
→ Codes

Figure 20



This command will pop up the form shown in the figure 21 and according to the condition you can make your own structure listing with proper codes as you entered in the default structure codes.

strCodes	strNames	strTypes	strCount
INT-01	Simple weir intake	I	1
CoC-01	Collection Chamber	I	1
BWF-1	Brabed wire fencing Type A	I	1
EGA-1	Entrance Gate for BWF-1	I	1
RVT-Ferro-20	Ferro Cement storage tank (20 cum)	I	1
RCC-Tank	RCC tank (50 cum)	I	1
VaC-01	Valve Chamber (size 1 x 0.6 m)	I	1
SCC-01	Suspended Cable crossing	I	1
StC-0	Stream Crossing	I	1
Tap-Psp01	Public Stand post	I	1
RTS-01	Reservoir tank for school	I	1
WSV-01	Washout Valve	I	1

Buttons: Overwrite for selected Structure, Overwrite for all structures with Defaults, Import From Excel, Save and Exit, Cancel, Save, ADD

Figure 21

Enter all the structures required for the scheme as in the above figure. If you have pipeline design excel data file, then you can use the button named "Import from Excel" to append all structures used in the pipeline design. After entering all the structure codes, then we can get default data for these structures by clicking either "Overwrite for selected Structure" or "Overwrite for all structures with Defaults".

1. To edit the default construction data for the structure, we can use the command given below

**Input → Structures → Edit User → Construction Data**

This command will bring the form (Figure 22) titled "Structure Construction and Fittings" at the top of the screen.

Structure construction and Fittings

Code: CoC-01 Name: Collection Chamber

Number: 1 Type: I

Buttons: Save and Exit, Save, ADD, Cancel

Structure construction Norm Items

NormNo	Descriptions	Count	Quantity
1_8	Site clearance	1	6
2_12	Earthwork in excavation for drain & pipeline trench, ditch cutting in hard soil	1	7.41
6_5	Dry Stone Soling (Stone filling in foundation)	1	1.11
7_2GHA	Plain Cement concrete (1:2:4) work in foundation	1	1.571
6_1.2	Stone (rubble) masonry work in 1:4 c-s mortar	1	4.53
8_2KA	Centering & shuttering for floors and slab	1	3.81
7_5	Steel Reinforcement	1	29.19
12_1GA	12.5 mm thick cement plaster in 1:4 c-s	1	15.18
14_5	3 mm thick cement punning in 1:1 c-s	1	11.7
18_3	Supply and Installation of standard man hole cover (600x600sqmm)	1	2

Fittings

Name of Fitting Structure	Size of G/pipe
Inlet	40
Outlet	40
Overflow	50
Washout	50
*	

Buttons: Assign Defaults Fitting Component, ADD

Figure 22

This command will allow you to modify default data for structure and append some new data to structure. Similarly, here we can define the size of the fittings. If you make any changes in the fitting types then use button "Assign Defaults Fitting Component" to generate default fitting data for the structures.

3. To edit the fittings assign by default data option, we have to use the command given below.

Input →  
 Structures →  
 Edit User  
 → Fittings

This command will bring the form for fitting edit at the top of the screen (Refer Figure 23)

Fittings required for Structure

Structure

INT-01

Fittings at

Outlet

GI pipe size(mm)

80

Save and Exit

Cancel

Save

ADD

	FittingName	FittingRequired	Quantity	Count	Units
▶	GI HDP FLANGE	GI-HDP flange set (80x90 mmØ)	1	1	set
	GI Nipple	GI-HDP flange set (100x125 mmØ)	1	2	no
	GI Strainer	GI-HDP flange set (125x140 mmØ)	1	1	no
	GI REDUCER	GI-HDP flange set (40x50 mmØ)	1	1	no
	GI Union	GI-HDP flange set (50x63 mmØ)	1	2	no
	GM Gate Valve	GI-HDP flange set (65x75 mmØ)	1	1	no
	GI PIPE	GI-HDP flange set (80x90 mmØ)	1.5	1	m
*					

Figure 23

If you have to enter extra fittings, you can use “ADD” button to append blank row and enter the necessary fittings data. Then Save the data entered. As the form is interactive, you can play with the buttons to enter the required fittings.

## 2.2 Data Output

Data output menu are as follows as listed in the figure (Figure 24) below.

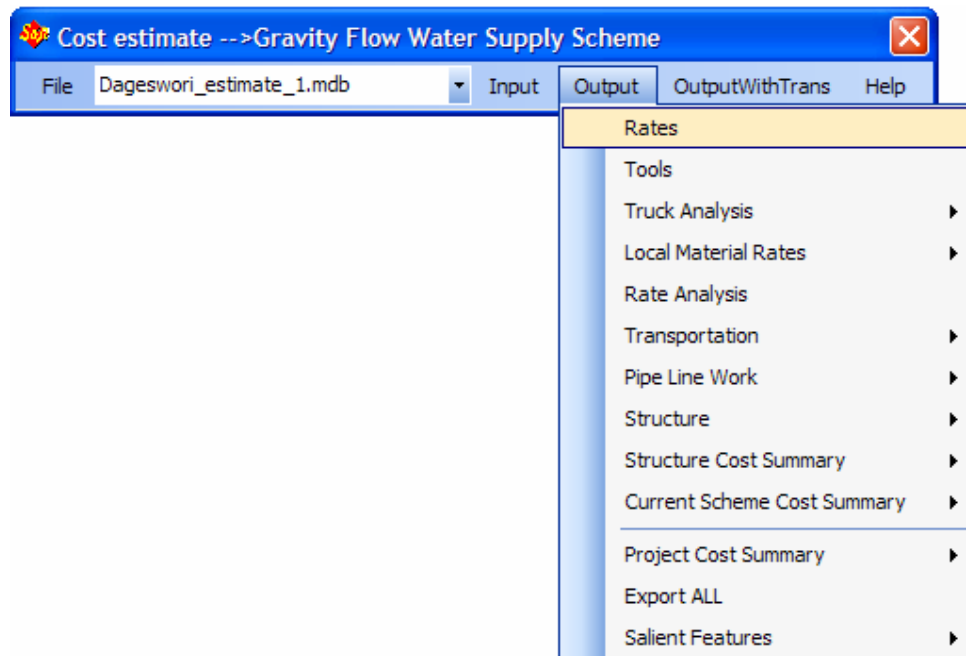


Figure 24

### 2.2.1 Rate

Rates entered for the material used in the project can be obtained by using command given below.

**Output → Rates**

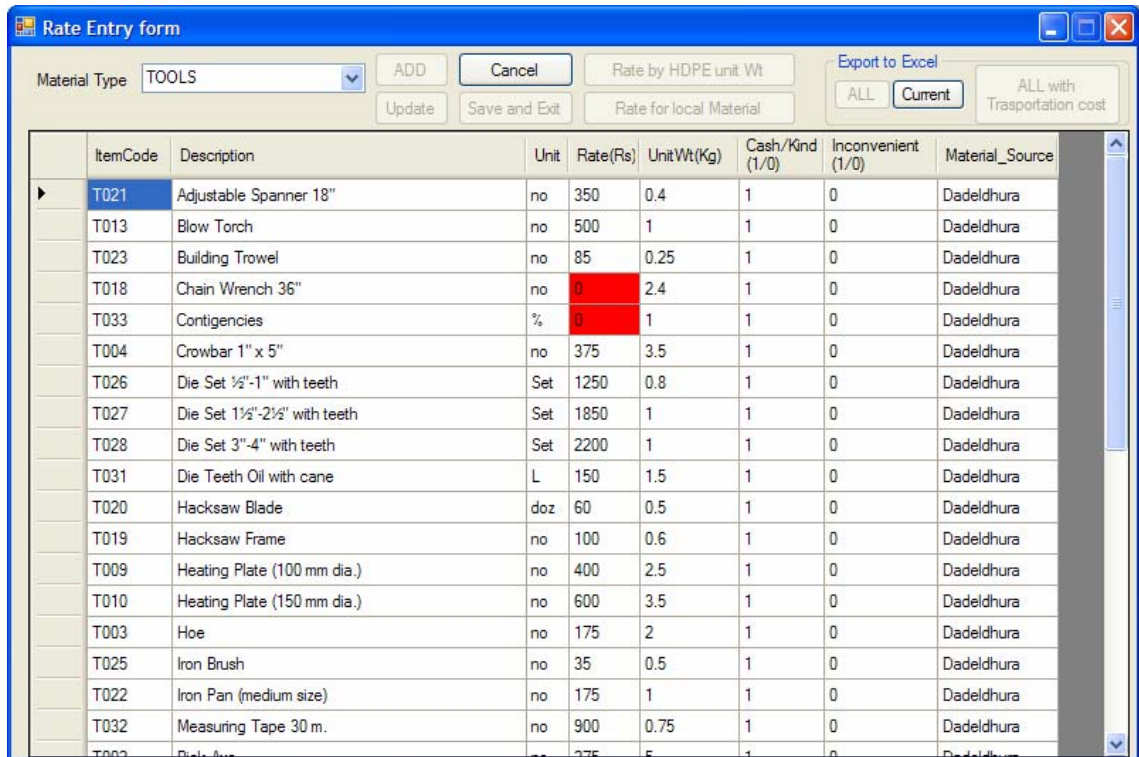
ItemCode	Description	Unit	Rate(Rs)	UnitWt(Kg)	Cash/Kind (1/0)	Inconvenient (1/0)	Material_Source
M004	Aggregate - 10 mm size	m³	857	1600	1	0	Dadeldhura
M005	Aggregate - 20 mm size	m³	857	1600	1	0	Dadeldhura
M006	Aggregate - 40 mm size	m³	857	1600	1	0	Dadeldhura
M040	Aldrop set	set	180	0.4	1	0	Dadeldhura
M013	Bamboo	no	158	25	1	0	Dadeldhura
M046	Barbed wire 10 SWG(Kg)	kg	67	1	1	1	Dadeldhura
M020	Binding wire	kg	66	1	1	0	Dadeldhura
M055	Bitumen paint	kg	60	1	1	0	Dadeldhura
M029	Bitumen washer	No.	0.3	0.01	1	0	Dadeldhura
M001	Block Stone	m³	400	2000	1	0	Dadeldhura
M002	Bond Stone	m³	400	2000	1	0	Dadeldhura
M063	Bulldog grip - 14 mmØ	set	0	0.4	1	0	Dadeldhura
M064	Bulldog grip - 32 mmØ	set	0	0.6	1	0	Dadeldhura
M014	Cement	MT	9600	1000	1	0	Dadeldhura
M030	CGI sheet ( 26 SWG )	m²	243	5.1	1	0	Dadeldhura
M078	CGI Sheet (22-24 SWG)	m²	0	1	1	0	Dadeldhura
M043	Chicken wire mesh	m²	100	0.4	1	0	Dadeldhura
M007	Coarse Sand	m³	2857	1450	1	0	Dadeldhura
M051	Distance marker	no	115	1	1	0	Dadeldhura

Figure 25

## 2.2.2 Tools

Rates entered for the Tools used in the project can be obtained by using command given below. Click "Current" button under frame "Export to Excel" to get data in excel file.

Output →  
Tools



The screenshot shows a software window titled "Rate Entry form". It has a menu bar with "File", "Edit", "View", and "Help". Below the menu bar, there are several buttons: "ADD", "Cancel", "Update", "Save and Exit", "Rate by HDPE unit Wt", "Rate for local Material", "Export to Excel", "ALL", "Current", and "ALL with Transportation cost". The "Material Type" is set to "TOOLS". The main area is a table with the following columns: ItemCode, Description, Unit, Rate(Rs), Unit Wt(Kg), Cash/Kind (1/0), Inconvenient (1/0), and Material\_Source. The table contains 20 rows of data for various tools.

ItemCode	Description	Unit	Rate(Rs)	Unit Wt(Kg)	Cash/Kind (1/0)	Inconvenient (1/0)	Material_Source
T021	Adjustable Spanner 18"	no	350	0.4	1	0	Dadeldhura
T013	Blow Torch	no	500	1	1	0	Dadeldhura
T023	Building Trowel	no	85	0.25	1	0	Dadeldhura
T018	Chain Wrench 36"	no	0	2.4	1	0	Dadeldhura
T033	Contigencies	%	0	1	1	0	Dadeldhura
T004	Crowbar 1" x 5"	no	375	3.5	1	0	Dadeldhura
T026	Die Set 1/2"-1" with teeth	Set	1250	0.8	1	0	Dadeldhura
T027	Die Set 1 1/2"-2 1/2" with teeth	Set	1850	1	1	0	Dadeldhura
T028	Die Set 3"-4" with teeth	Set	2200	1	1	0	Dadeldhura
T031	Die Teeth Oil with cane	L	150	1.5	1	0	Dadeldhura
T020	Hacksaw Blade	doz	60	0.5	1	0	Dadeldhura
T019	Hacksaw Frame	no	100	0.6	1	0	Dadeldhura
T009	Heating Plate (100 mm dia.)	no	400	2.5	1	0	Dadeldhura
T010	Heating Plate (150 mm dia.)	no	600	3.5	1	0	Dadeldhura
T003	Hoe	no	175	2	1	0	Dadeldhura
T025	Iron Brush	no	35	0.5	1	0	Dadeldhura
T022	Iron Pan (medium size)	no	175	1	1	0	Dadeldhura
T032	Measuring Tape 30 m.	no	900	0.75	1	0	Dadeldhura
T002	Pick Axe	no	375	5	1	0	Dadeldhura

Figure 26

## 2.2.3 Local Materials Rate

Cost of local material per cubic meter can be obtained by issuing following command given below. Before issuing this command, please confirm that you have entered the necessary data for local materials rate analysis.

Output →  
Local Material Rates

This command generates the rate analysis report for the local materials like sand, stone, aggregates etc. Rate for the items used in the local material rate analysis are either according to district rates or according to local material recruitment standards.

MiscRateAnalysis_Report		
<b>Rate of some local materials</b>		
<b>Analysis for Sand collection and transportation for 1 cum</b>		
Distance From site to Myagdi	8 Km	
Labour Required for collection, screening and stacking of river sand	3.75 nos	
Labour required for transportation upto 13 km by headload	36.25 nos	
Hence, Labour Required for transportation	22.31 nos	
Total labour required to collect and transport 1 cum of sand upto site=	26.06 nos	
<b>Transportation by truck</b>		
Earthen Road	5 Km	
Gravel Road	5 Km	
Metalled Road	3 Km	
Total truck transportation cost	3335.00 Rs	
Rate of 1 cum of sand at site (transportation cost + collection or purch	7113.37 Rs	
<b>Analysis for Stone collection and transportation for 1 cum</b>		
Distance of quarry from site	Km	
Labour Required for collection and stacking of 1 m3 of stone	1.4 nos	
Cost of labour for collection and stacking of 1 m3 of stone	203.00 Rs	
Cost of transportation of 1 m3 of stone up to site	0.00 Rs	
<b>Transportation by truck</b>		
Earthen Road	4 Km	
Gravel Road	6 Km	
Metalled Road	5 Km	
Total truck transportation cost	4600.00 Rs	
Rate of 1 cum of stone at site (transportation cost + collection or purch	4803.00 Rs	

Figure 27

## 2.2.4 Truck Analysis

Cost of truck per hour and rate per Kg-Km for different materials used in the project can be either viewed or exported to excel by using the command below.

Output →

Truck Analysis → View / Export

Truck Analysis Report					
<b>Hence total expenses in the transportation</b>				768.81	Rs/Hour
Using the formula , the rate of transportation comes to be : ( 2x distance/truck speed+0.75) x total expence /6000					
					Rs/Km.Quintal
Type of Road	Distance	Time(Hr)	Convenient	Inconvenient	
Earthen Road	15.00	4.50	0.58	0.87	
Metalled Road	365.00	37.25	4.77	7.16	
Earthen Road	18.00	5.25	0.67	1.01	
Gravel Road	5.00	1.58	0.20	0.30	
Metalled Road	20.00	2.75	0.35	0.53	
Earthen Road	13.00	4.00	0.51	0.77	

Figure 28

## 2.2.5 Rate Analysis

Unit rate calculation of the norm item entered into the norms table can be done by command Rate Analysis under the Output menu.

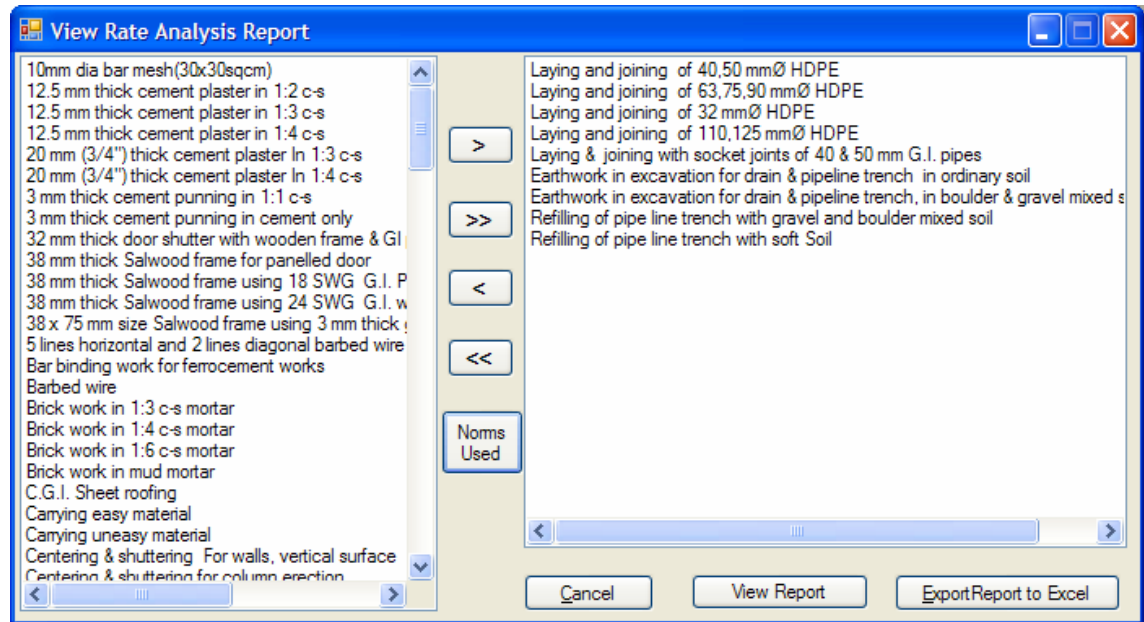


Figure 29

Select all the norms items (at the left side) to be analyzed and forward these selected item to the analysis list (at the right side) using button ">". The report of the analysis can be either viewed or exported to the Excel application. To view the report click the button named "View Report". The report view will be as shown in the figure (Figure 30) below.

The analysis will be resulted into the material break down of the each norms items and the calculation of the unit rate of the each norm item.

Rate analysis for different items						
Description of Work	Analyzed for	Labour(A)	Man/days	Rate(Rs)	Amount(Rs)	Materials(B)
		Category				Type
Barbed Wire Fencing (L=12m)	1	Skilled Labour	3.521	210	739.41	Rebar (6mm)
		Unskilled Labour Unpaid	1.431	100	143.1	Angle Pole
		Unskilled Labour Paid	9.49	100	949	Barbed Wire
						MS grill Gate
						Enamel Paint

Figure 30

To export the rate analysis report to excel, click the button named "Export Report to Excel". This command will pop up the file save dialog box. Give the proper file name to save the report. The save action will save data into the excel format in the given file name. So that you can open the rate analysis report in the "Excel" application and print the data in required format.

If you want to process only the norms items used in the structures of the scheme, then you can click button "Norms used" to forward the norms used in the structure to the list at right side.



## 2.2.6 Transportation

Transportation cost for the project can be obtained by the command given below.

Output →

Transportation → View / Export

Transportation_Cost							
SN	Mode of Transportation	Source	Destination	Road Type	Distance	Rate/Kg	Amount(Rs)
<b>Transportation by Truck/Tractors</b>							
<b>Transportation of Convenient Materials</b>							
1	Truck	Dadeldhura	Bagarkot	Earthen	13.00	0.61	8568.59
2	Porter	Bagarkot	Kanakot	Earthen	15.00	7.20	100709.84
<b>Total Cost of transportation for Convenient Ma</b>							<b>109278.43</b>
<b>Transportation of InConvenient Materials</b>							
1	Porter	Dadeldhura	Bagarkot	Gravel	5.00	2.98	1522.98
2	Truck	Bagarkot	Kanakot	Metalled	20.00	0.53	269.81
<b>Total Cost of transportation for InConvenient I</b>							<b>1792.79</b>
<b>Transportation of Pipes</b>							
1	Porter	Kanakot	Gula, Rupal	Earthen	15.00	8.91	124551.81
2	Truck	Nepalgunj	Dadeldhura	Metalled	365.00	7.26	101547.57
3	Truck	Dadeldhura	Bagarkot	Earthen	18.00	1.01	14111.75
<b>Total Cost of transportation for Pipes</b>							<b>240211.12</b>

Figure 31

The output can be either viewed or exported to “Excel” application.

## 2.2.7 Pipe Line works

Total cost of earthwork, laying and jointing of pipe line in the Transmission and distribution can be either view or exported to excel by using the command below.

Output →

Pipe Line Works → View / Export

PipeFitting_Summary						
SN	Description	Quantity	Units	Count	Rate(Rs)	Amount(Rs)
<b>Abstract cost of pipe line works</b>						
<b>Transmission line</b>						
1	Earthwork in excavation for drain & pipeline trench in or	1515.51	m3	1	149.35	226341.43
2	Refilling of pipe line trench with soft Soil	1515.51	m3	1	74.68	113170.71
3	Laying and jointing of 20, 25 mmØ HDPE	580.00	m	1	0.81	471.93
4	Laying and jointing of 32 mmØ HDPE	1016.00	m	1	0.96	977.71
5	Laying and jointing of 40,50 mmØ HDPE	4017.00	m	1	1.14	4592.41
6	Laying & jointing with socket joints of 25 & 32 mm G.I. pi	3053.00	m	1	19.99	61031.23
<b>Sub total</b>						<b>406585.41</b>
<b>Distribution line</b>						
1	Earthwork in excavation for drain & pipeline trench in or	689.58	m3	1	149.35	102988.78
2	Refilling of pipe line trench with soft Soil	689.58	m3	1	74.68	51494.39
3	Laying and jointing of 20, 25 mmØ HDPE	1150.00	m	1	0.81	935.72
4	Laying and jointing of 32 mmØ HDPE	1312.00	m	1	0.96	1262.55
5	Laying and jointing of 40,50 mmØ HDPE	92.00	m	1	1.14	105.18
<b>Sub total</b>						<b>156786.62</b>
<b>Grand Total</b>						

Figure 32



## 2.2.8 Structures

Output for the structure can be obtained in the different format and these different formats are resulted from different commands shown below in the figure (Figure 33).

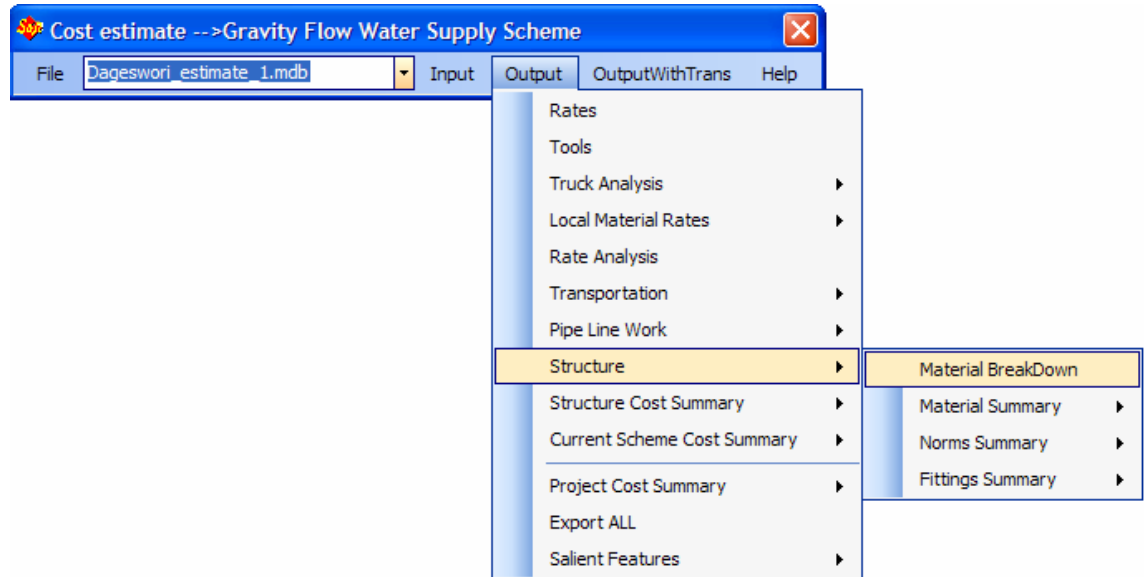


Figure 33

### 2.2.2.1 Viewing or Exporting the Structural Material breakdown to Excel File

Click “Material BreakDown” menu (refer Figure 33). This command will pop up the form (Figure 34) showing a list containing all the structures used in the current project. The reports for the material breakdown can be either viewed or exported to the “Excel”. For viewing the material breakdown report click the buttons either “Selected” or “ALL” inside frame named “View reports”. Similarly to export the report to excel, click either “Selected” or “ALL” button inside the frame named “Export to Excel”. To export data to excel follow steps given below.

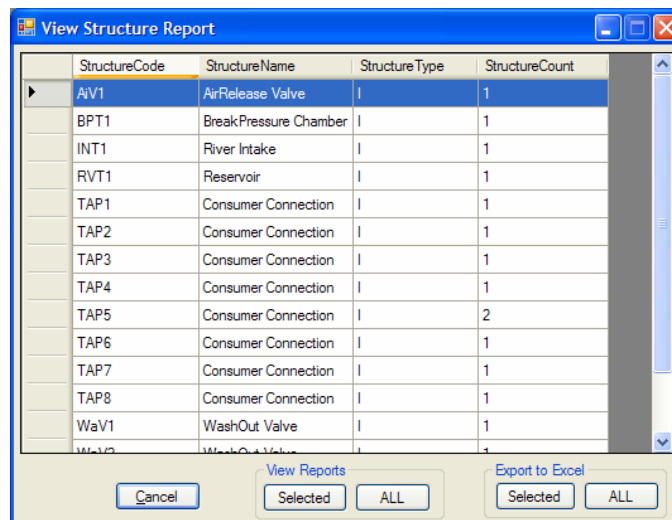


Figure 34

- a) Click “Selected” or “ALL” button as in the figure (Figure 35).

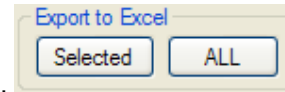


Figure 35

- b) This will pop up save dialog box (Figure 36) for entering the file name for saving data.

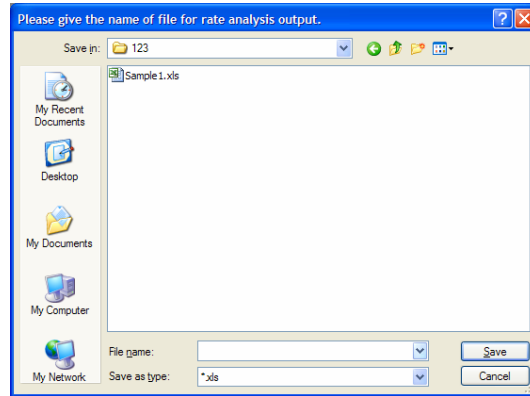


Figure 36

Now give proper file name in the “File name” field (say “MaterialBreakDown”). Please wait for few minutes while it completes the generation of the excel file containing the material breakdown data. When the processing completes, “Process completion message box is displayed”. Then you can open the excel file to view the result of material breakdown command and print that data as required. You can view each structure in individual sheet in the excel as shown in the figure tips.

TAP1	INT1	RVT1	BPT1	AIV1	StructuresMaterialBreakdown

Figure 37

## **2.2.9 Other Outputs**

Similarly different output for the different summary about the cost-estimate of the project can be obtained by using the different commands given under the output menu. They can be summarized as given below.

1. Structure-wise material summary
2. Structure-wise norms summary
3. Structure-wise fittings summary
4. Summary of the structure cost
5. Cost summary of the scheme
6. Project cost summary → Gives summary of all sub-projects that is included inside the current project folder. For using this command, we should confirm that the rates of all materials in the different schemes are same.
7. Export all data to excel → This command will generate all type of the cost summary required for the projects. (Except the Rate tables, Project cost summary and Salient Features).
8. Salient Features → To generate the salient feature report of the scheme, we should assure that the pipe line design file related to this scheme is opened and active. So that it can obtain necessary information from the design data file.

(Refer figure 33)

## **2.3 Data Output with Transportation Cost**

The steps for generating output with transportation cost are same as for the Output commands. But only difference is the way of issuing command and the arrangement of outputs. The necessary output with transportation cost can be obtained by help of following menu shown below.

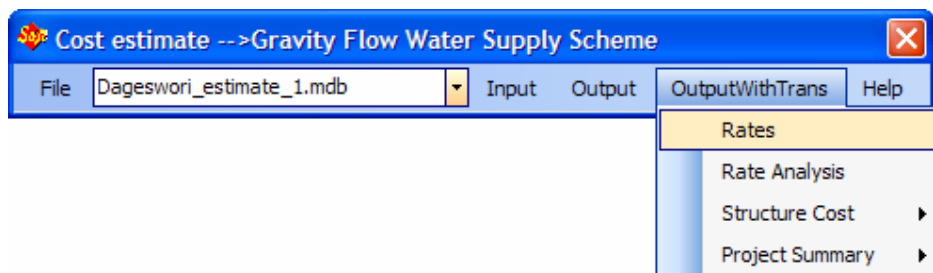


Figure 38

## 2.4 About

This menu shows the name of the project for which this application is developed and a list of software development team with various personnel related to the CBWSSP.

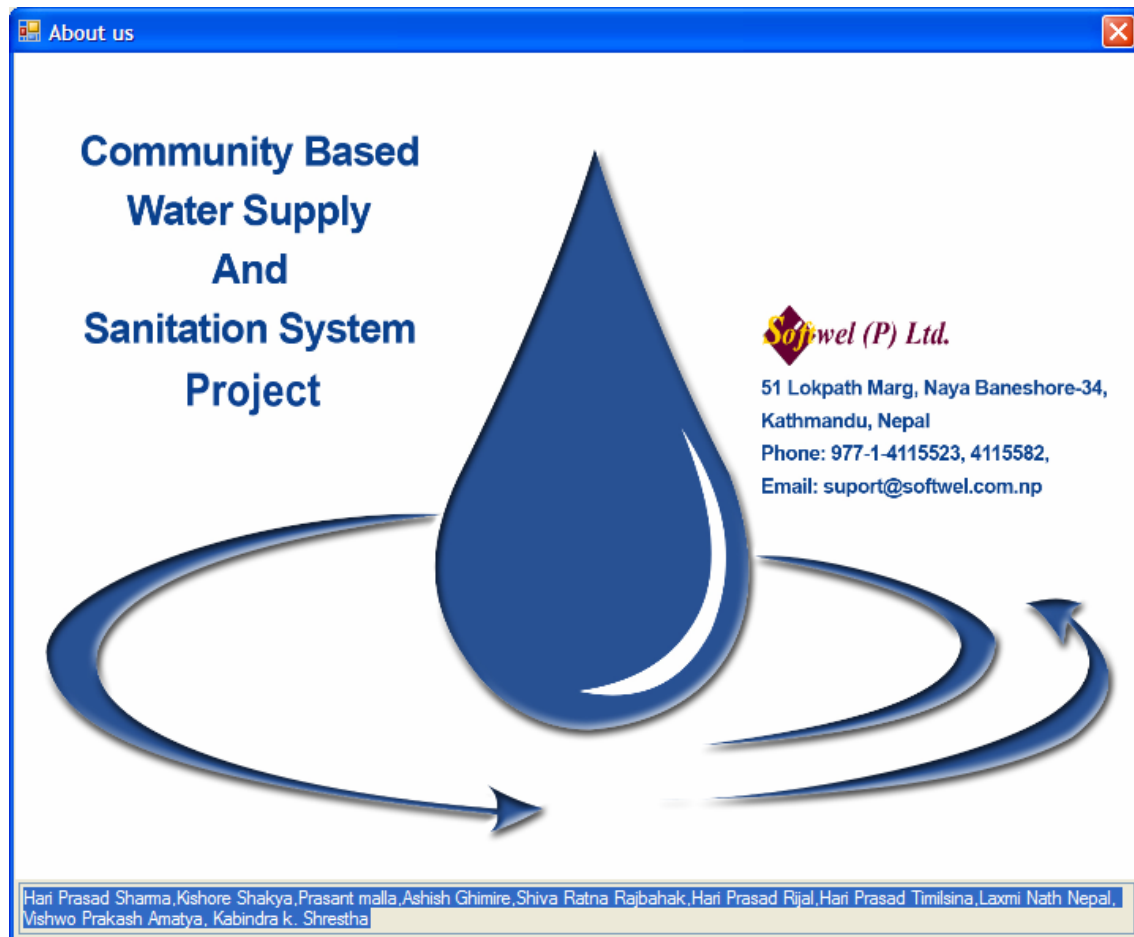


Figure 39