Government of Nepal
Ministry of Physical Infrastructure and Transport
Department of Roads
Maintenance Branch

ARMP software

(Version 2.2, 2017)

User's Manual

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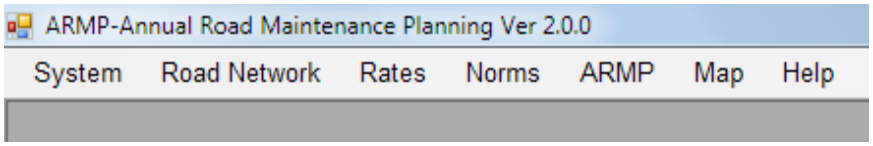
1. Menu Bar



System Allows users to create new user, change password, view users, login and logout/quit.

Road Network Allows admin users to update the road network including dynamic segmentation using pavement data (width, last resurface etc)

Rates Allows users to view routine labour rates, work item and recurrent maintenance rates.

Norms Allows users to view routine and recurrent norms.

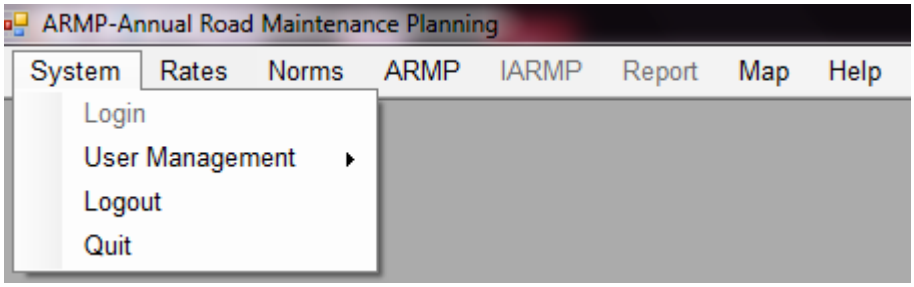
ARMP Provides users to perform the following

- To view road register
- To view details related to routine maintenance cost estimate and recurrent maintenance/periodic maintenance/specific maintenance
- To view details related to rehabilitation/reconstruction and upgradation of selected roads
- To view bridge routine details
- Select bridge for routine maintenance cost calculation, minor bridge maintenance details and its summary
- To view details related to bio-engineering, emergency maintenance , road safety and road inventory
- To view Annual Road Maintenance Summary taking into consideration a particular region/division/nation.

Map Allows users to view map of the assessed data.

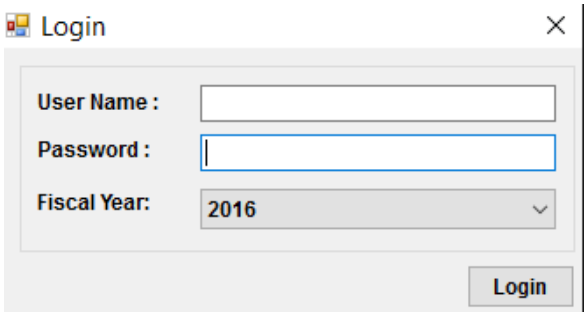
Help Provides brief detail about the software like version number etc.

2. System Menu



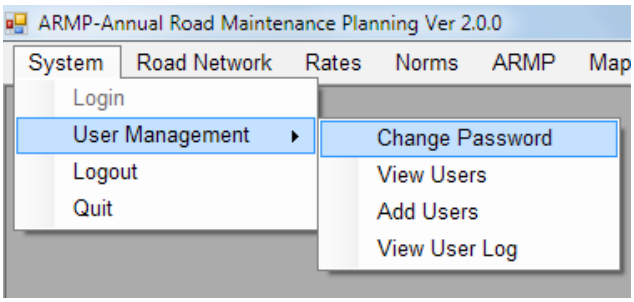
Within the system menu, users are provided with the option to login into the tool. Further, within the option of user management, one can change his/her login password. For users who login as 'Admin', they are able to view/add users. Logout/Quit options are also provided in this menu.

2.1 Login Screen



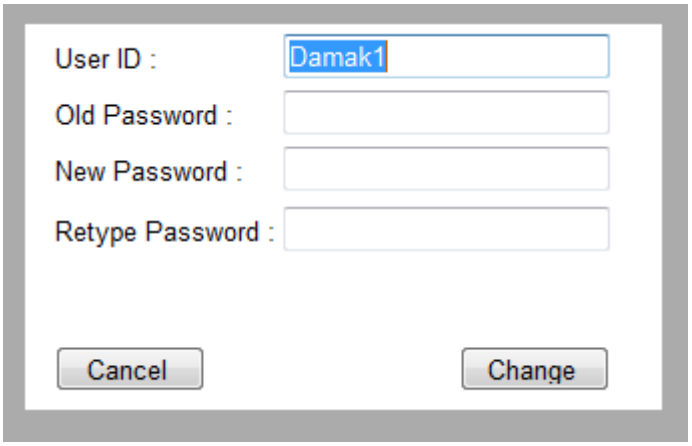
So as to prevent unauthorized access to the tool, users are supposed to login using a proper username and password. They can also choose the fiscal year, e.g. 2012 or 2013 for which the details are to be viewed.

2.2 User Management



By clicking on the user management sub menu, the user is provided with four options- change password, view users, add users and view user log.

2.3 Change Password

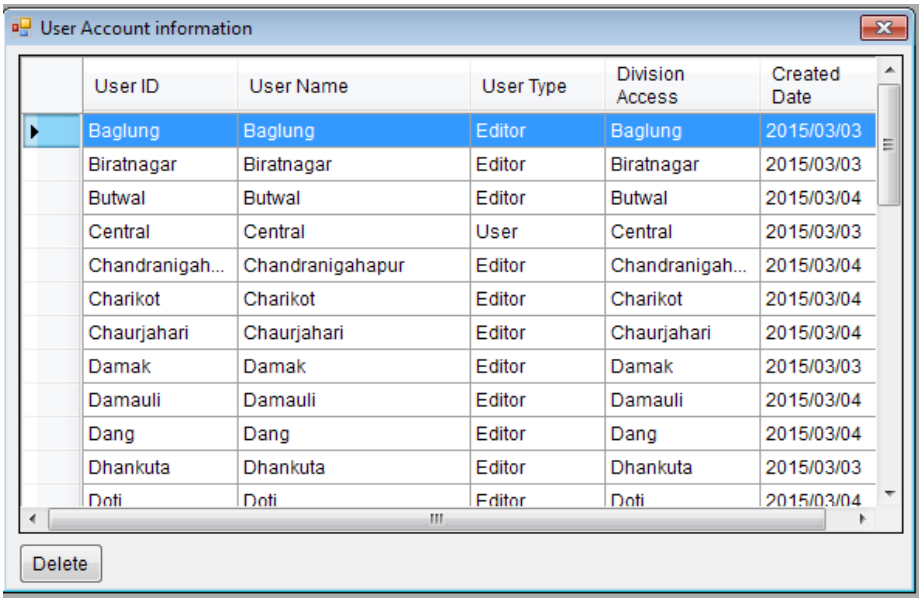


To change the password, details such as user id, old password and new password are to be entered and 'Change' button is to be pressed for successfully changing the password.

2.4 View Users (For Admin Only)

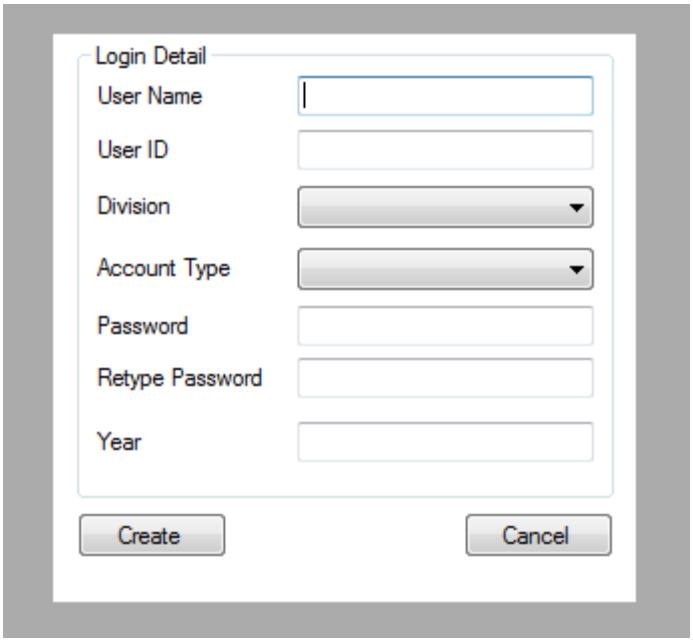
For users with 'Admin' rights, it is possible to view all the users who are currently using the system. To view the same, view users' option within the user management sub-menu is to be selected.

Admin users are able to view details such as name of the user, user id, login type (Editor/Admin/User) and the date on which the account was created.



2.5 Add Users Sub Menu(For Admin Only)

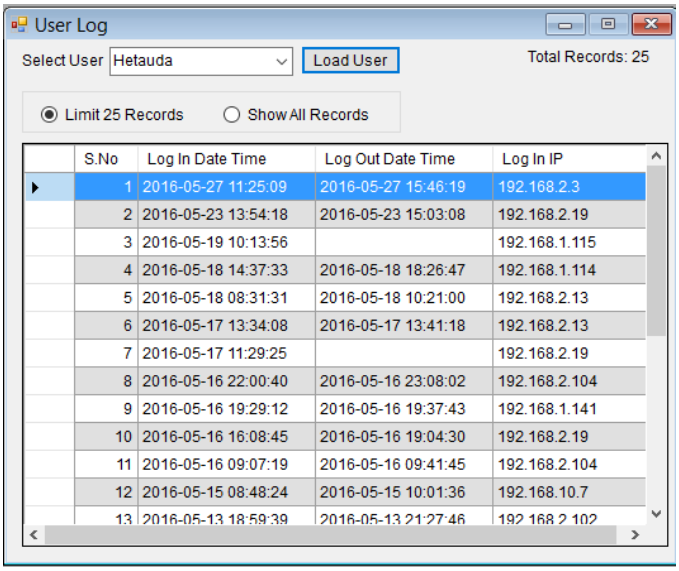
Admin users are able to add new users by selecting the 'Add Users' option within the user management sub menu.



To add new users, a number of details are to be provided such as user name, user id, division (Eastern/Central/Western/Mid-Western/Bhaktapur/Dhankuta etc), account type (user/admin/editor), password and the current year.

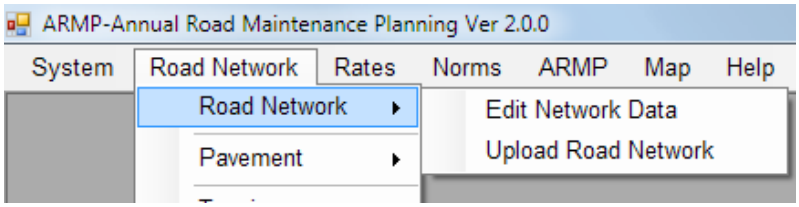
2.6 View User Log (For Admin Only)

For users with 'Admin' rights, it is possible to view log of all the users including login time, logout time and the user's IP address using the system.



S.No	Log In Date Time	Log Out Date Time	Log In IP
1	2016-05-27 11:25:09	2016-05-27 15:46:19	192.168.2.3
2	2016-05-23 13:54:18	2016-05-23 15:03:08	192.168.2.19
3	2016-05-19 10:13:56		192.168.1.115
4	2016-05-18 14:37:33	2016-05-18 18:26:47	192.168.1.114
5	2016-05-18 08:31:31	2016-05-18 10:21:00	192.168.2.13
6	2016-05-17 13:34:08	2016-05-17 13:41:18	192.168.2.13
7	2016-05-17 11:29:25		192.168.2.19
8	2016-05-16 22:00:40	2016-05-16 23:08:02	192.168.2.104
9	2016-05-16 19:29:12	2016-05-16 19:37:43	192.168.1.141
10	2016-05-16 16:08:45	2016-05-16 19:04:30	192.168.2.19
11	2016-05-16 09:07:19	2016-05-16 09:41:45	192.168.2.104
12	2016-05-15 08:48:24	2016-05-15 10:01:36	192.168.10.7
13	2016-05-13 18:59:39	2016-05-13 21:27:46	192.168.2.102

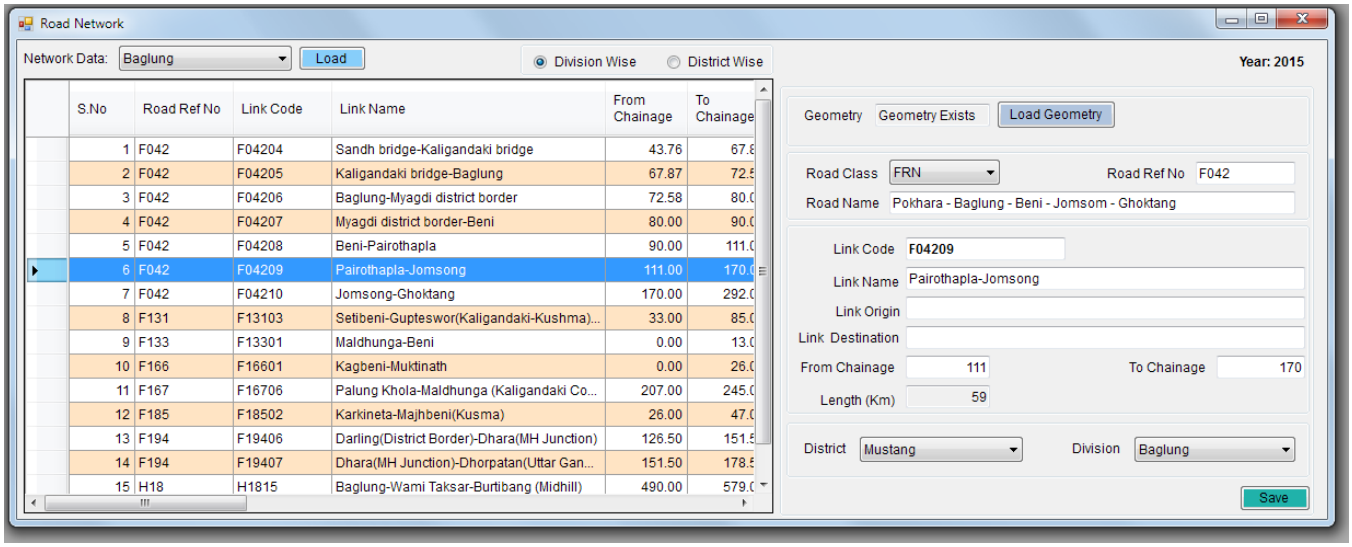
3. Road Network



The road network menu provides access to edit the network data including uploading of the road geometry using shape files. It also provides tools for creating sections within link with chainages for the various pavement types, resurfacing/construction dates and the road condition (IRI, SDI) and the traffic data.

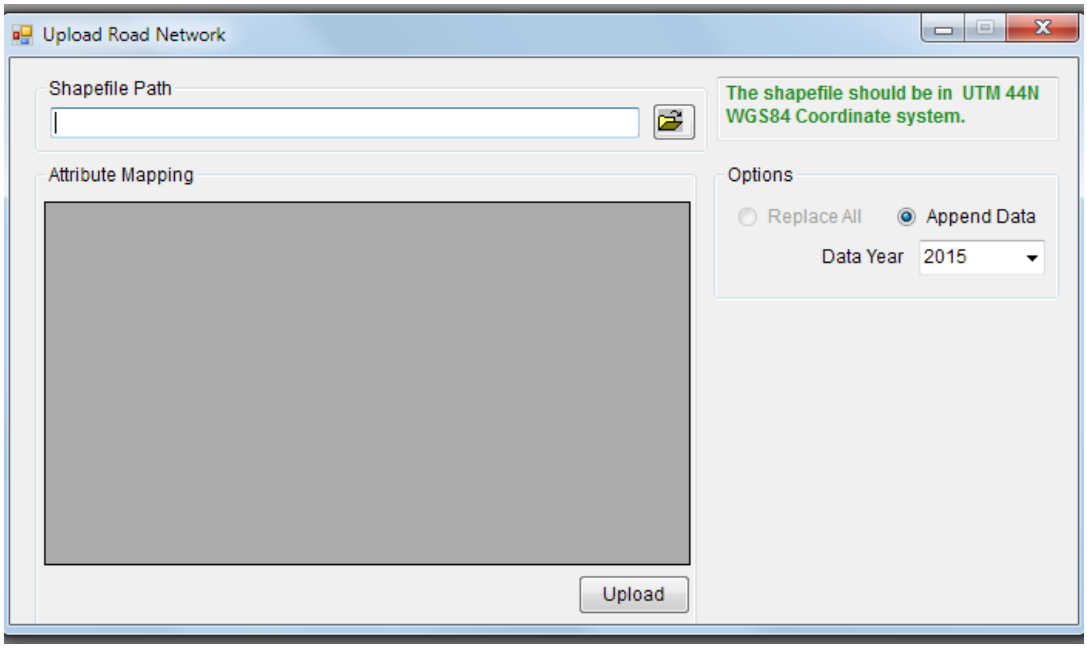
3.1 Edit Network Data

The Basic road network data can be edited or even road link deleted using this tool. Once deleted the road link is also deleted from the map.



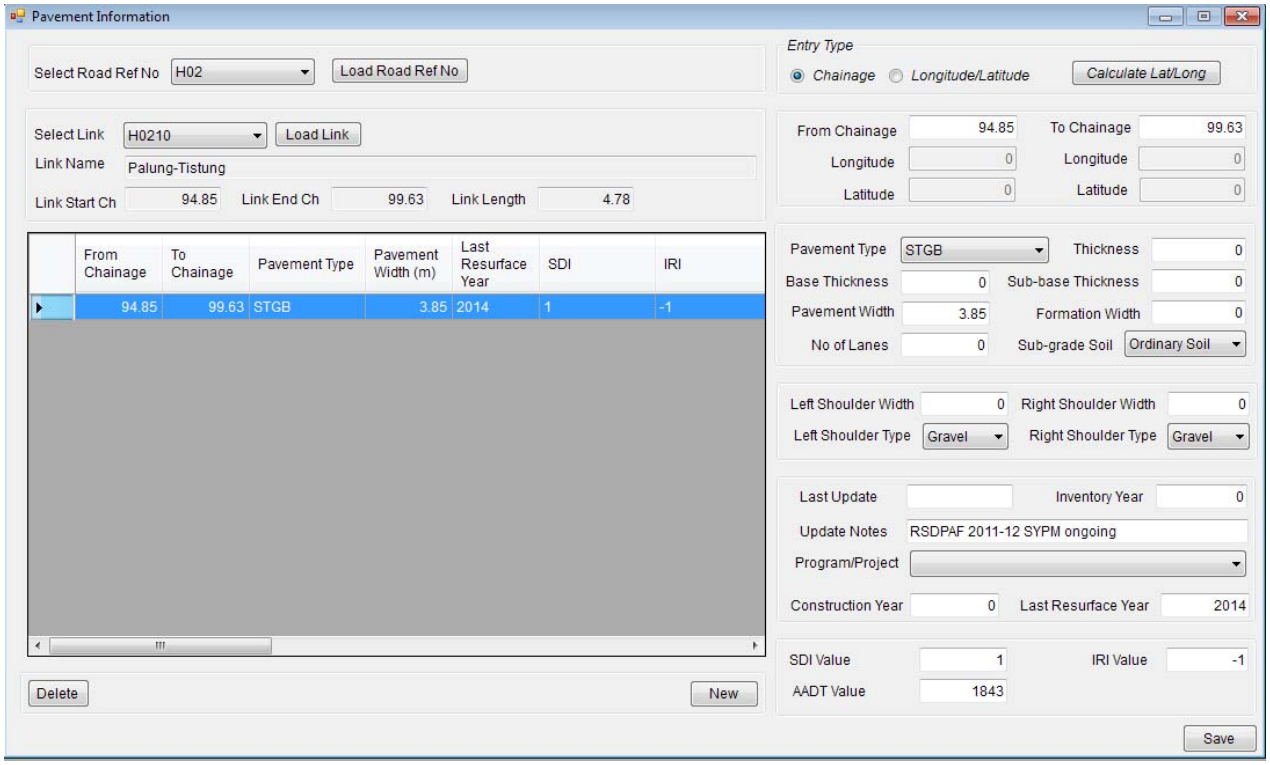
3.2 Upload Road Network

The geometry of the road network can be uploaded using this tool. Basic attribute mapping is essential to uniquely identify the road (e.g road code etc..). The geometry should be UTM Zone 44N coordinate system.

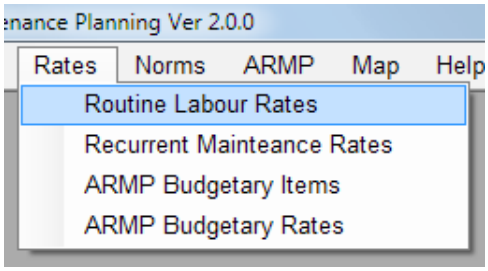


3.3 Pavement

The pavement information is tool for dynamic segmentation of the road links by various parameters. Links sections can be defined using 'From' and 'To" Chainages and various parameters can be provided and the software will break the links accordingly.

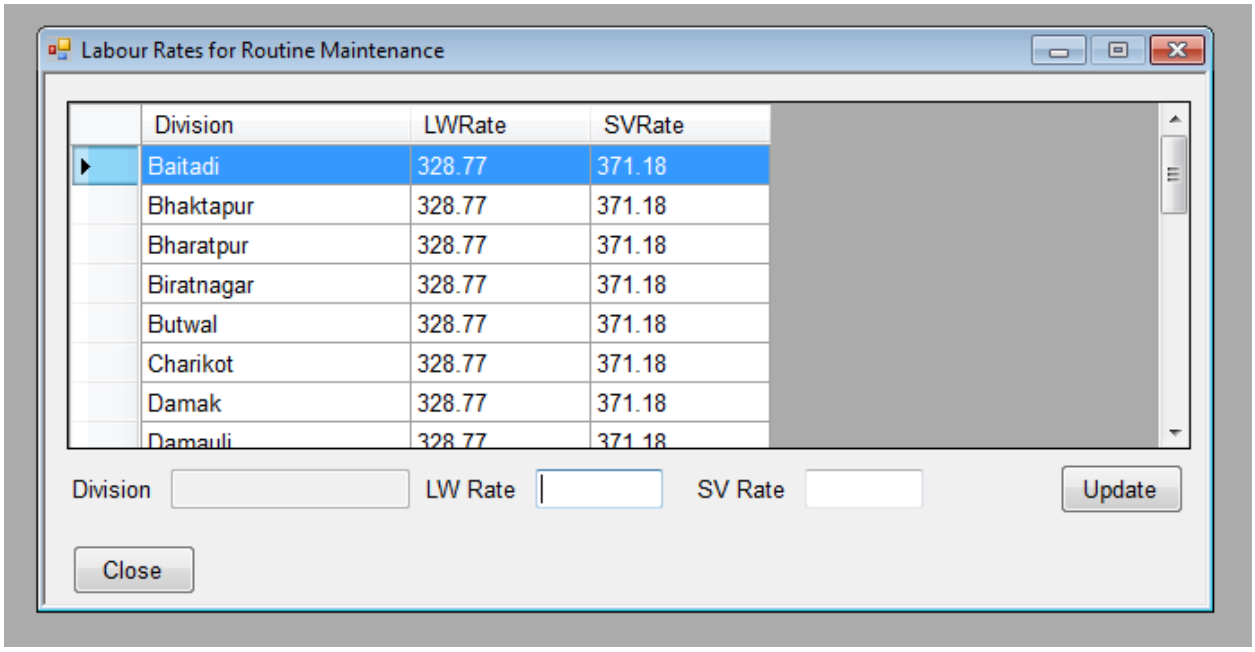


4. Rates Menu



Within the rates menu, users are able to view the routine labour rates (For Admin only). Work item and recurrent maintenance rates can also be viewed within the menu.

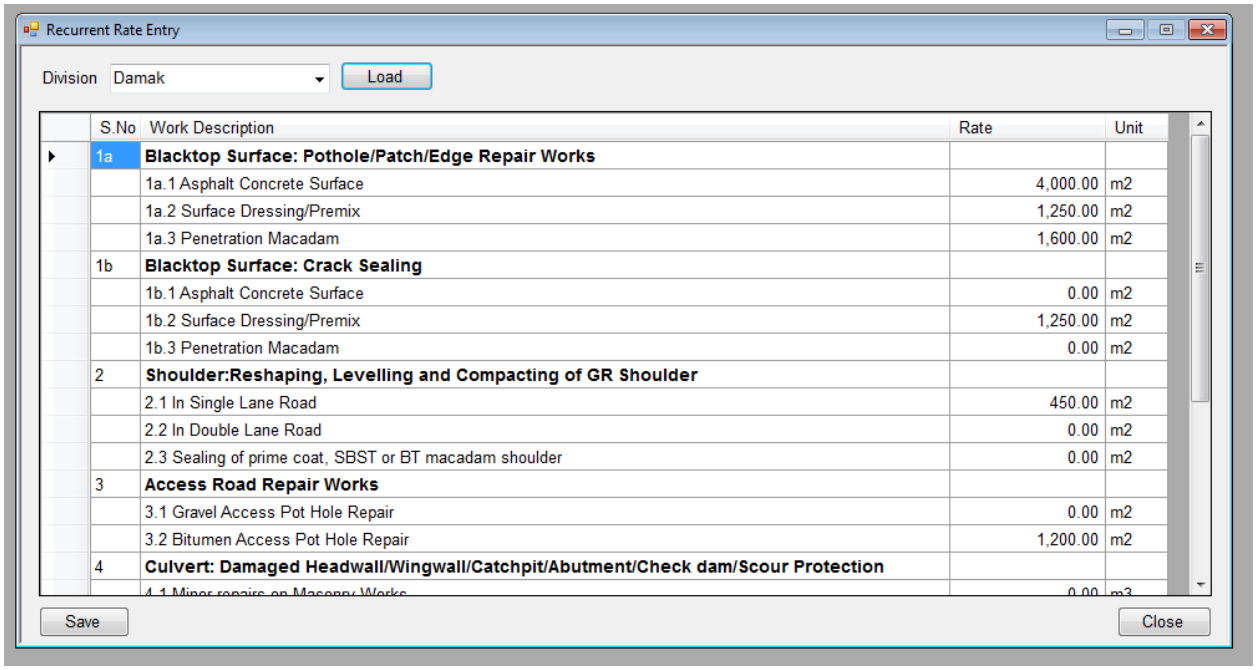
4.1 Routine Labour Rates (For Admin Only)



Admin users are able to view the routine labour rates for various divisions of the country and are also able to update the corresponding LWRate/SVRate.

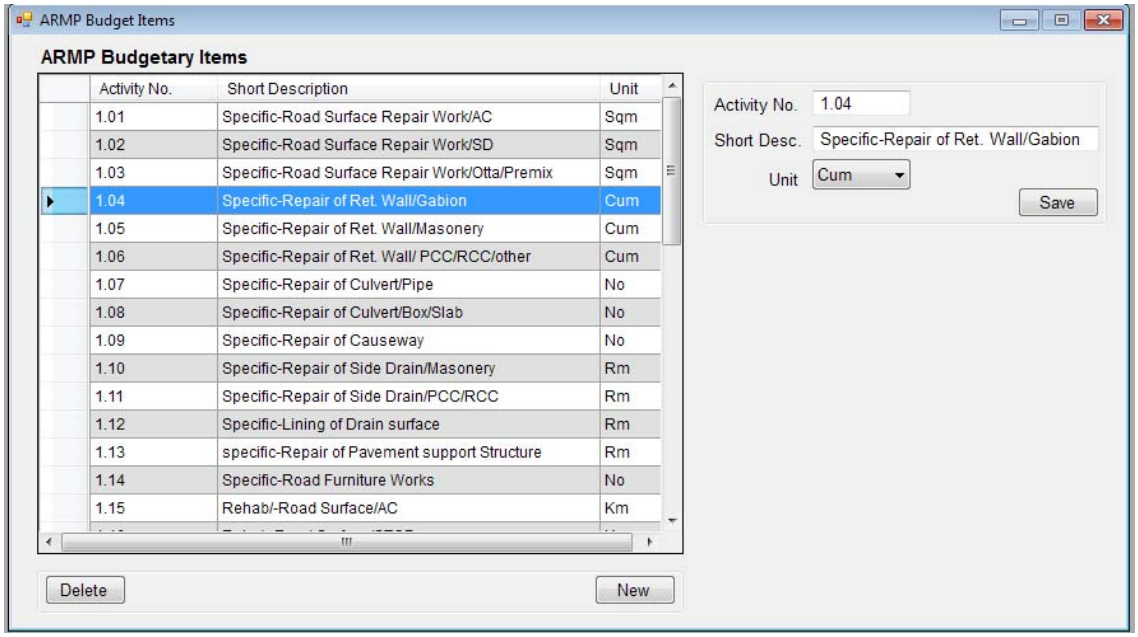
4.2 Recurrent Maintenance Rates

Rates for the common items for recurrent maintenance work can be provided using this tool.



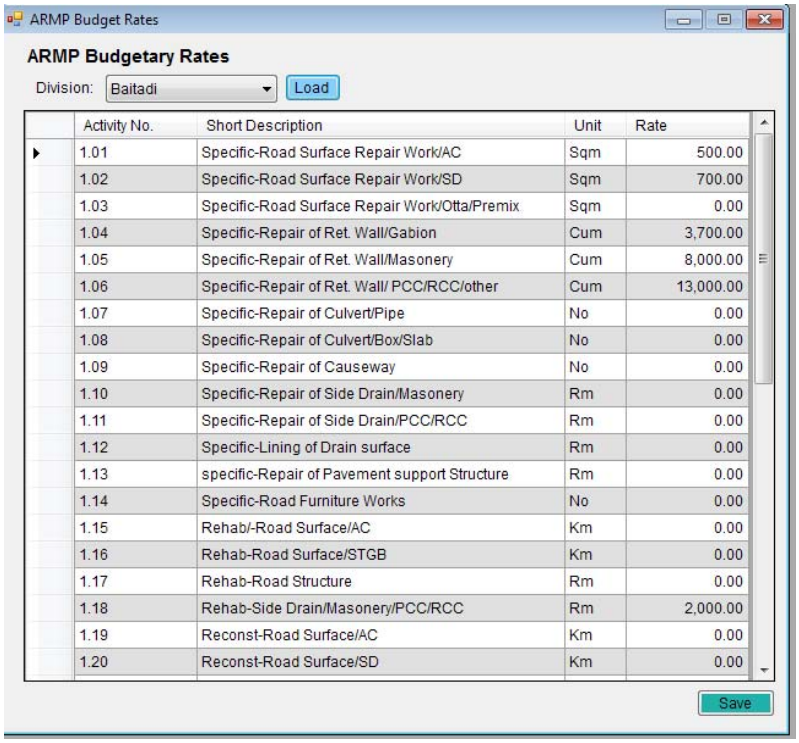
4.3 ARMP Budgetary Items (Admin Only)

These are standard items defined for entire ARMP. Editing of items are only available for the admin users.



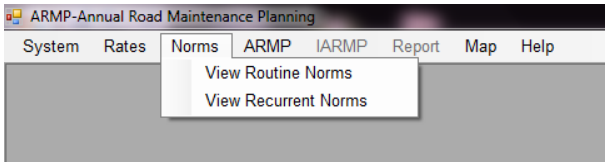
4.4 ARMP Budgetary Rates

The rates for standard items defined for entire ARMP can be entered using this tool. Each division should provide the rates applicable to the entire division.



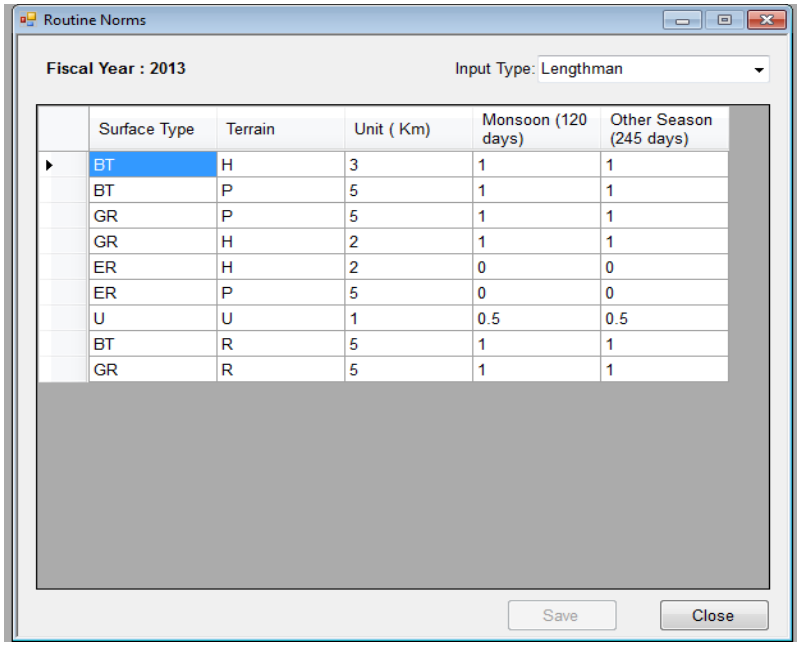
Activity No.	Short Description	Unit	Rate
1.01	Specific-Road Surface Repair Work/AC	Sqm	500.00
1.02	Specific-Road Surface Repair Work/SD	Sqm	700.00
1.03	Specific-Road Surface Repair Work/Otta/Premix	Sqm	0.00
1.04	Specific-Repair of Ret. Wall/Gabion	Cum	3,700.00
1.05	Specific-Repair of Ret. Wall/Masonery	Cum	8,000.00
1.06	Specific-Repair of Ret. Wall/ PCC/RCC/other	Cum	13,000.00
1.07	Specific-Repair of Culvert/Pipe	No	0.00
1.08	Specific-Repair of Culvert/Box/Slab	No	0.00
1.09	Specific-Repair of Causeway	No	0.00
1.10	Specific-Repair of Side Drain/Masonery	Rm	0.00
1.11	Specific-Repair of Side Drain/PCC/RCC	Rm	0.00
1.12	Specific-Lining of Drain surface	Rm	0.00
1.13	specific-Repair of Pavement support Structure	Rm	0.00
1.14	Specific-Road Furniture Works	No	0.00
1.15	Rehab/-Road Surface/AC	Km	0.00
1.16	Rehab-Road Surface/STGB	Km	0.00
1.17	Rehab-Road Structure	Rm	0.00
1.18	Rehab-Side Drain/Masonery/PCC/RCC	Rm	2,000.00
1.19	Reconst-Road Surface/AC	Km	0.00
1.20	Reconst-Road Surface/SD	Km	0.00

5. Norms Menu

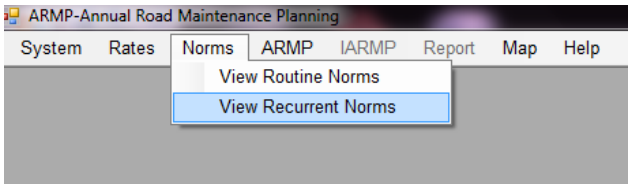


5.1 View Routine Norms

Provides the details of the labour based routine maintenance works/



5.2 View Recurrent Norms Sub Menu

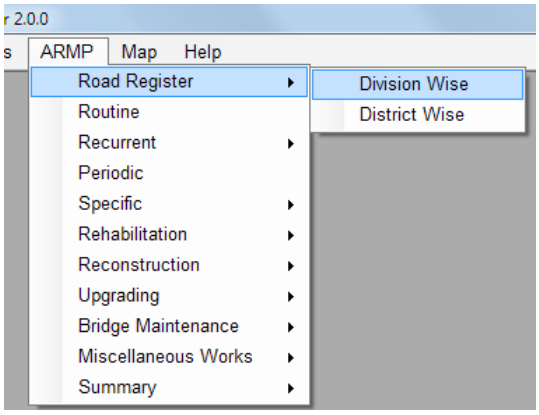


Recurrent Norms

S.N.	Road Element	Work Description	Norms
1	Black top surface	Pot hole/Patch/Edge Repair	
		Crack Sealing	
2	Shoulder	Reshaping, levelling and Compacting of GR sho...	
		Asphalt Concrete Surface	0% - 0.2% of paved surface area
		Surface Dressing / Premix	0% - 0.75% of paved surface area
		Penetration Macadam	0% - 0.3% of paved surface area
		Asphalt Concrete Surface	0% - 0.3% of paved surface area
		Surface Dressing / Premix	0% - 0.2% of paved surface area
		Penetration Macadam	0% - 0.1% of paved surface area
		Shoulder Repairing for Single Lane Road	0% - 0.5% of shoulder surface area
		Shoulder Repairing for Double Lane Road	0% - 0.2% of shoulder surface area
		Sealing of prime coat,SBST or BT macadam sh...	0% - 0.15% of shoulder surface area
3	Access Road	Gravel Access Pot Hole Repair	0% - 0.4% of shoulder surface area
		Bitumen Access Pot Hole Repair	0% - 0.3% of shoulder surface area
4	Culverts	Damaged Headwall/Wingwall/Catchpit/Abutment...	0 - 0.1 m3 per Culvert
5.a	Gabion Wall	Damaged Dry Wall/Gabion Wall(Minor Repairs o...	0 - 1 m3 per 1000m Length
5.b	Masonry Wall	Damaged Masonry Wall(Minor Repairs on Maso...	0 - 0.5 m3 per 1000m Length
6.a	Earthen Drain	Reshaping (Earthwork)	0 - 5 m3 per 100m Length
6.b	Masonry Drain	Damaged Masonry work and water Proofing Bas...	0 - 2 m3 per 1000m length
6.c	Concrete Cover Drain	Replace Concrete Cover	0 - 0.25 m3 per 100m length
7.a	Embankment	Filling Rain Cuts and eroded Slopes	0 - 2% of embankment area
7.b		Turfing	0 - 1% of embankment area

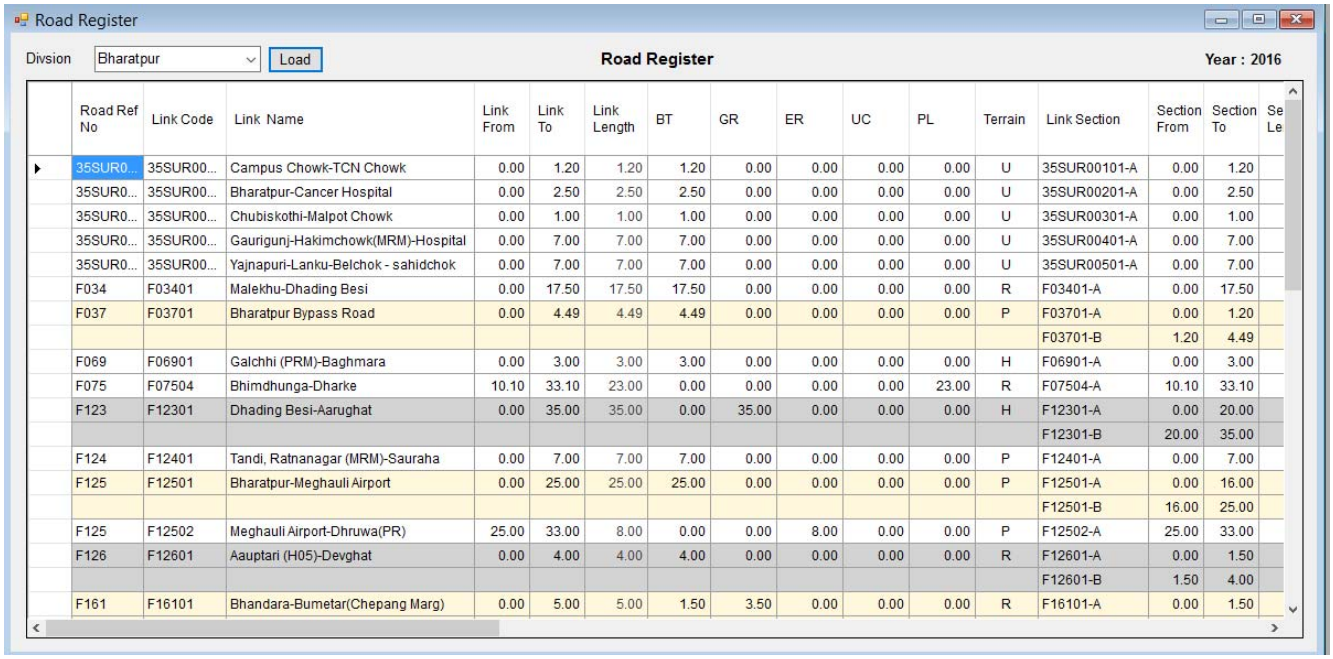
6. ARMP Menu

6.1 Road Register



6.1.1 Division wise Road Register

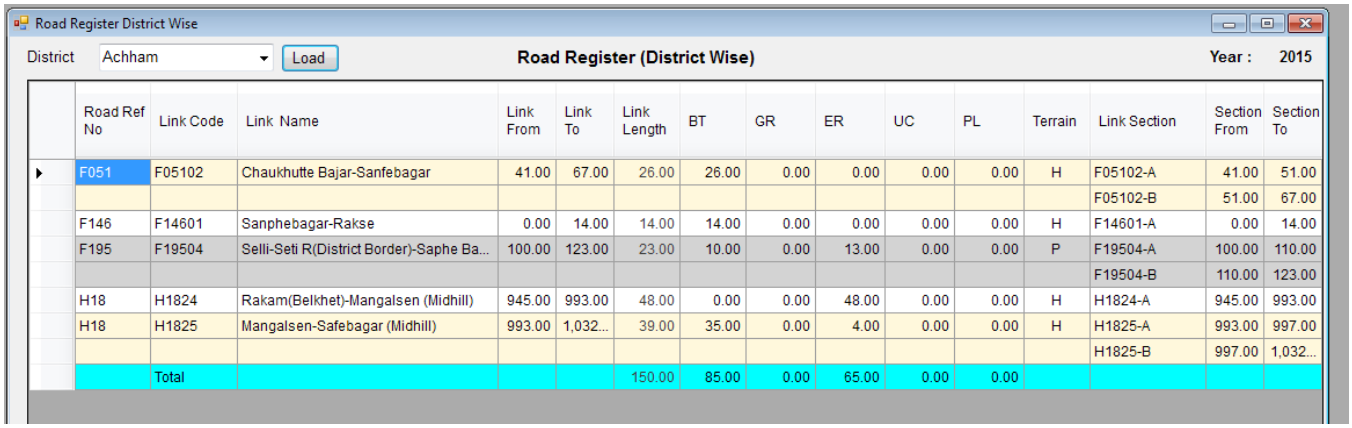
Provides the road register by division. It also includes the sub-links and the activities e.g. last resurfacing, pavement status and project notes for each of the links and sub-links.



Road Ref No	Link Code	Link Name	Link From	Link To	Link Length	BT	GR	ER	UC	PL	Terrain	Link Section	Section From	Section To	Se Le
35SUR0...	35SUR00...	Campus Chowk-TCN Chowk	0.00	1.20	1.20	1.20	0.00	0.00	0.00	0.00	U	35SUR00101-A	0.00	1.20	
35SUR0...	35SUR00...	Bharatpur-Cancer Hospital	0.00	2.50	2.50	2.50	0.00	0.00	0.00	0.00	U	35SUR00201-A	0.00	2.50	
35SUR0...	35SUR00...	Chubiskothi-Malpot Chowk	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	U	35SUR00301-A	0.00	1.00	
35SUR0...	35SUR00...	Gaurigunj-Hakimchowk(MRM)-Hospital	0.00	7.00	7.00	7.00	0.00	0.00	0.00	0.00	U	35SUR00401-A	0.00	7.00	
35SUR0...	35SUR00...	Yajnapuri-Lanku-Belchok - sahidchok	0.00	7.00	7.00	7.00	0.00	0.00	0.00	0.00	U	35SUR00501-A	0.00	7.00	
F034	F03401	Malekhu-Dhading Besi	0.00	17.50	17.50	17.50	0.00	0.00	0.00	0.00	R	F03401-A	0.00	17.50	
F037	F03701	Bharatpur Bypass Road	0.00	4.49	4.49	4.49	0.00	0.00	0.00	0.00	P	F03701-A	0.00	1.20	
												F03701-B	1.20	4.49	
F069	F06901	Galchhi (PRM)-Baghmara	0.00	3.00	3.00	3.00	0.00	0.00	0.00	0.00	H	F06901-A	0.00	3.00	
F075	F07504	Bhimdhunga-Dharke	10.10	33.10	23.00	0.00	0.00	0.00	0.00	23.00	R	F07504-A	10.10	33.10	
F123	F12301	Dhading Besi-Aarughat	0.00	35.00	35.00	0.00	35.00	0.00	0.00	0.00	H	F12301-A	0.00	20.00	
												F12301-B	20.00	35.00	
F124	F12401	Tandi, Ratnanagar (MRM)-Sauraha	0.00	7.00	7.00	7.00	0.00	0.00	0.00	0.00	P	F12401-A	0.00	7.00	
F125	F12501	Bharatpur-Meghauli Airport	0.00	25.00	25.00	25.00	0.00	0.00	0.00	0.00	P	F12501-A	0.00	16.00	
												F12501-B	16.00	25.00	
F125	F12502	Meghauli Airport-Dhruwa(PR)	25.00	33.00	8.00	0.00	0.00	8.00	0.00	0.00	P	F12502-A	25.00	33.00	
F126	F12601	Aauptari (H05)-Devghat	0.00	4.00	4.00	4.00	0.00	0.00	0.00	0.00	R	F12601-A	0.00	1.50	
												F12601-B	1.50	4.00	
F161	F16101	Bhandara-Bumetar(Chepang Marg)	0.00	5.00	5.00	1.50	3.50	0.00	0.00	0.00	R	F16101-A	0.00	1.50	

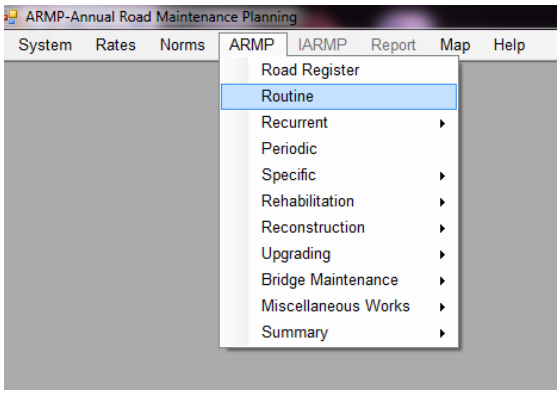
6.1.2 District wise Road Register

Provides the road register by district. It also includes the sub-links and the activities e.g. last resurfacing, pavement status and project notes for each of the links and sub-links.

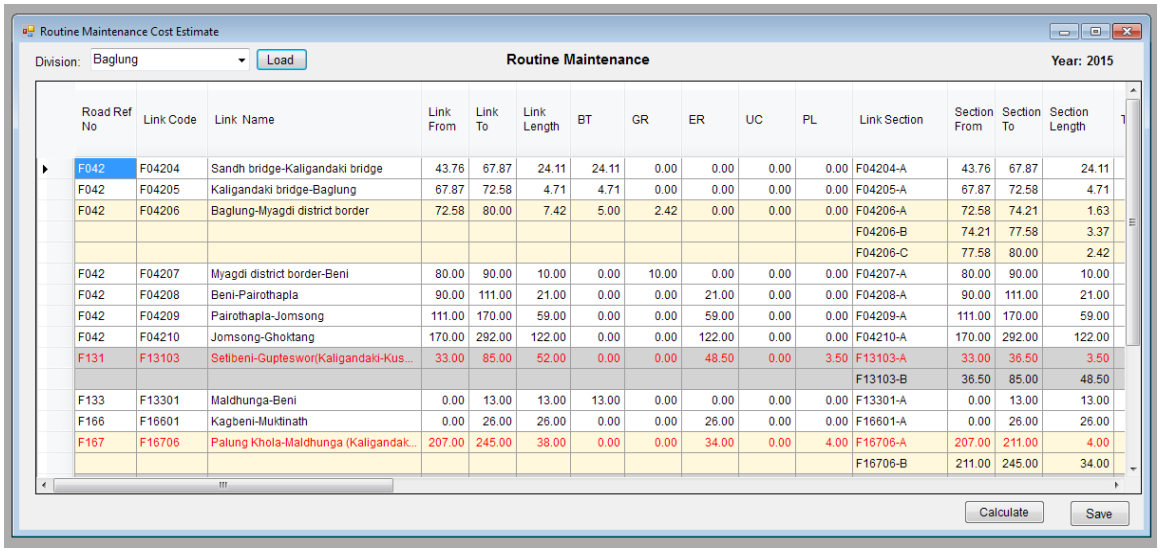


Road Ref No	Link Code	Link Name	Link From	Link To	Link Length	BT	GR	ER	UC	PL	Terrain	Link Section	Section From	Section To
F051	F05102	Chaukhutte Bajar-Sanfebagar	41.00	67.00	26.00	26.00	0.00	0.00	0.00	0.00	H	F05102-A	41.00	51.00
												F05102-B	51.00	67.00
F146	F14601	Sanphebagar-Rakse	0.00	14.00	14.00	14.00	0.00	0.00	0.00	0.00	H	F14601-A	0.00	14.00
F195	F19504	Selli-Seti R(District Border)-Saphe Ba...	100.00	123.00	23.00	10.00	0.00	13.00	0.00	0.00	P	F19504-A	100.00	110.00
												F19504-B	110.00	123.00
H18	H1824	Rakam(Belkhet)-Mangalsen (Midhill)	945.00	993.00	48.00	0.00	0.00	48.00	0.00	0.00	H	H1824-A	945.00	993.00
H18	H1825	Mangalsen-Safebagar (Midhill)	993.00	1,032...	39.00	35.00	0.00	4.00	0.00	0.00	H	H1825-A	993.00	997.00
												H1825-B	997.00	1,032...
	Total				150.00	85.00	0.00	65.00	0.00	0.00				

6.2 Routine Maintenance



Routine Screen



Road Ref No	Link Code	Link Name	Link From	Link To	Link Length	BT	GR	ER	UC	PL	Link Section	Section From	Section To	Section Length
F042	F04204	Sandh bridge-Kaligandaki bridge	43.76	67.87	24.11	24.11	0.00	0.00	0.00	0.00	F04204-A	43.76	67.87	24.11
F042	F04205	Kaligandaki bridge-Baglung	67.87	72.58	4.71	4.71	0.00	0.00	0.00	0.00	F04205-A	67.87	72.58	4.71
F042	F04206	Baglung-Myagdi district border	72.58	80.00	7.42	5.00	2.42	0.00	0.00	0.00	F04206-A	72.58	74.21	1.63
											F04206-B	74.21	77.58	3.37
											F04206-C	77.58	80.00	2.42
F042	F04207	Myagdi district border-Beni	80.00	90.00	10.00	0.00	10.00	0.00	0.00	0.00	F04207-A	80.00	90.00	10.00
F042	F04208	Beni-Pairothapla	90.00	111.00	21.00	0.00	0.00	21.00	0.00	0.00	F04208-A	90.00	111.00	21.00
F042	F04209	Pairothapla-Jomsong	111.00	170.00	59.00	0.00	0.00	59.00	0.00	0.00	F04209-A	111.00	170.00	59.00
F042	F04210	Jomsong-Ghoktang	170.00	292.00	122.00	0.00	0.00	122.00	0.00	0.00	F04210-A	170.00	292.00	122.00
F131	F13103	Setibeni-Gupteswor(Kaligandaki-Kus...	33.00	85.00	52.00	0.00	0.00	48.50	0.00	3.50	F13103-A	33.00	36.50	3.50
											F13103-B	36.50	85.00	48.50
F133	F13301	Maldhunga-Beni	0.00	13.00	13.00	13.00	0.00	0.00	0.00	0.00	F13301-A	0.00	13.00	13.00
F166	F16601	Kagbeni-Muktinath	0.00	26.00	26.00	0.00	0.00	26.00	0.00	0.00	F16601-A	0.00	26.00	26.00
F167	F16706	Palung Khola-Maldhunga (Kaligandak...	207.00	245.00	38.00	0.00	0.00	34.00	0.00	4.00	F16706-A	207.00	211.00	4.00
											F16706-B	211.00	245.00	34.00

a) Select the Division and press 'Load'

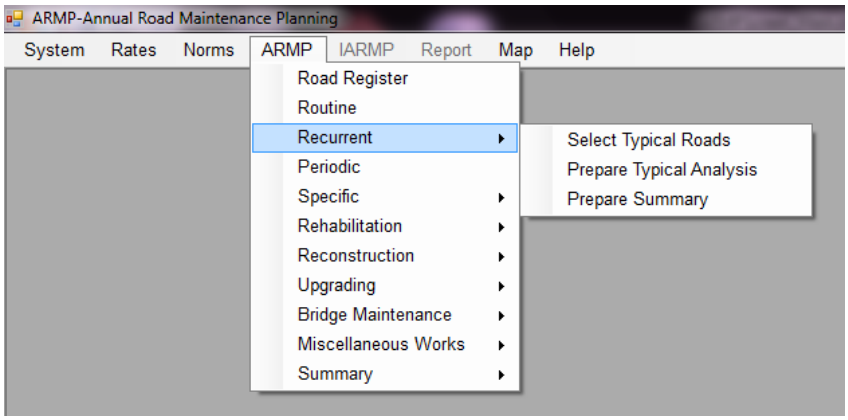
b) A decision has to be made to include or exclude the link from the routine maintenance based on the on-going project information. Reason for the excluding should be mentioned. The roads with PL or UC status are shown in red color and are automatically excluded.

c) The routine maintenance of the earthen road is estimated at NRs 20,000 per km which also includes the recurrent maintenance. This is automatically calculated.

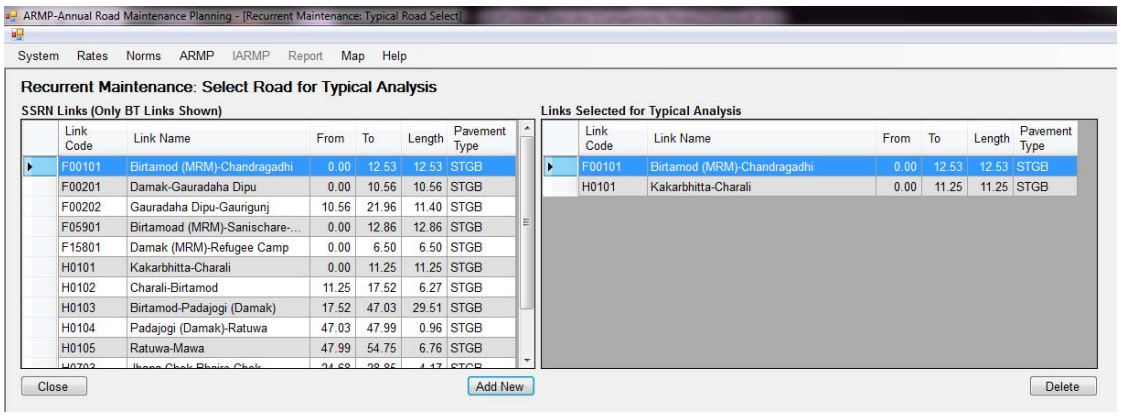
d) After making changes, press save to record the changes.

e) Right click on the grid to export the data to Excel

6.3 Recurrent Maintenance



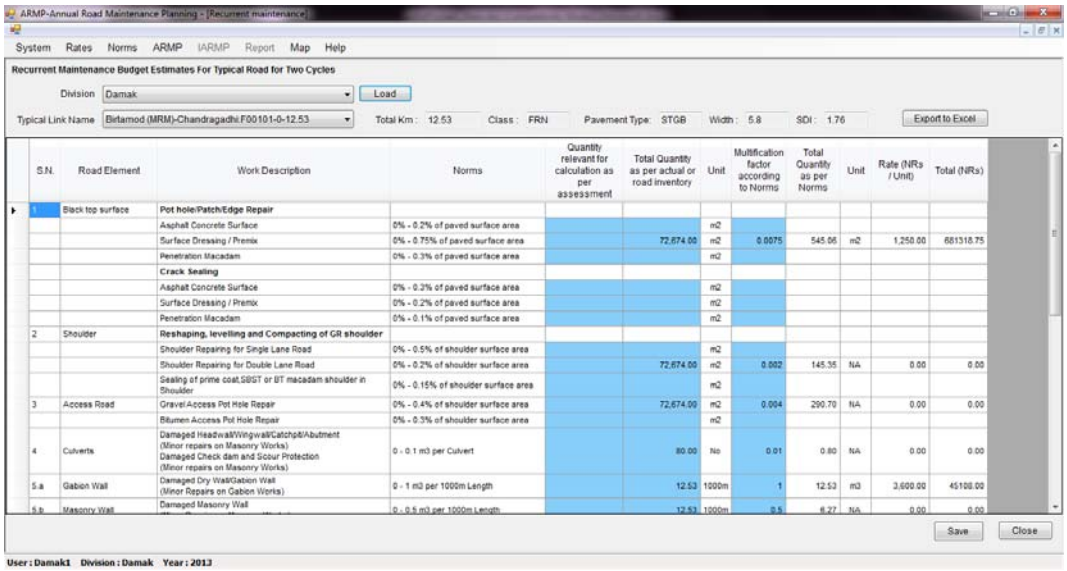
6.3.1 Select Typical Roads



In order to carry out the typical analysis for the recurrent maintenance works, road should selected. No need to select all the roads in the division but a typical road should be selected to compute the per kilometer cost. The division can also use its own measurement or judgment for particular roads to arrive at the recurrent maintenance cost.

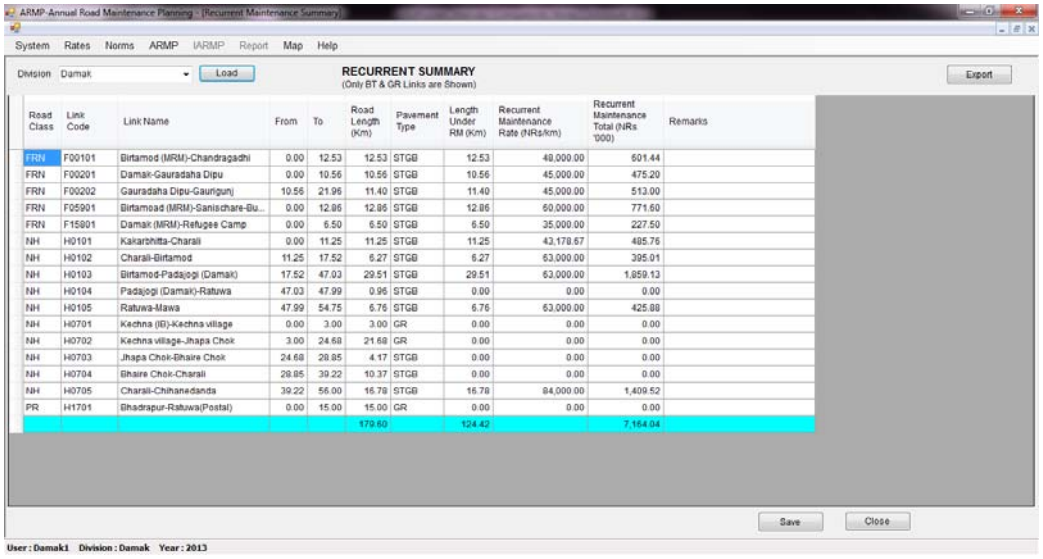
6.3.2 Prepare Typical Analysis

Typical analysis for recurrent maintenance can be done using this tool. Provide the representative quantities for the selected road for each of the recurrent work items and the cost per Kilometer is computed which can be used to compute the total recurrent maintenance cost of the same road and also use it to for other roads. Right click on the grid to export the data to Excel.

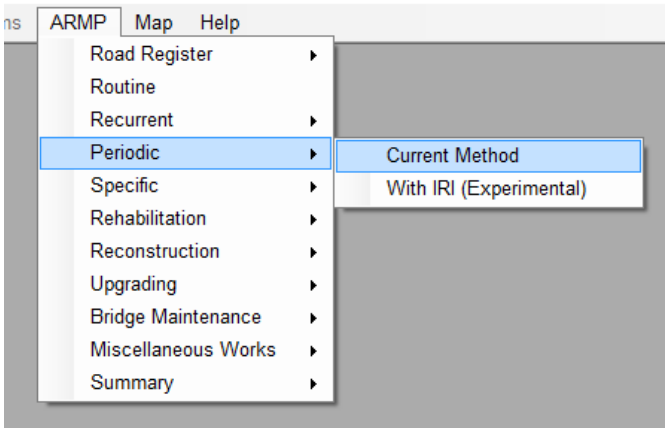


6.3.3 Prepare Summary

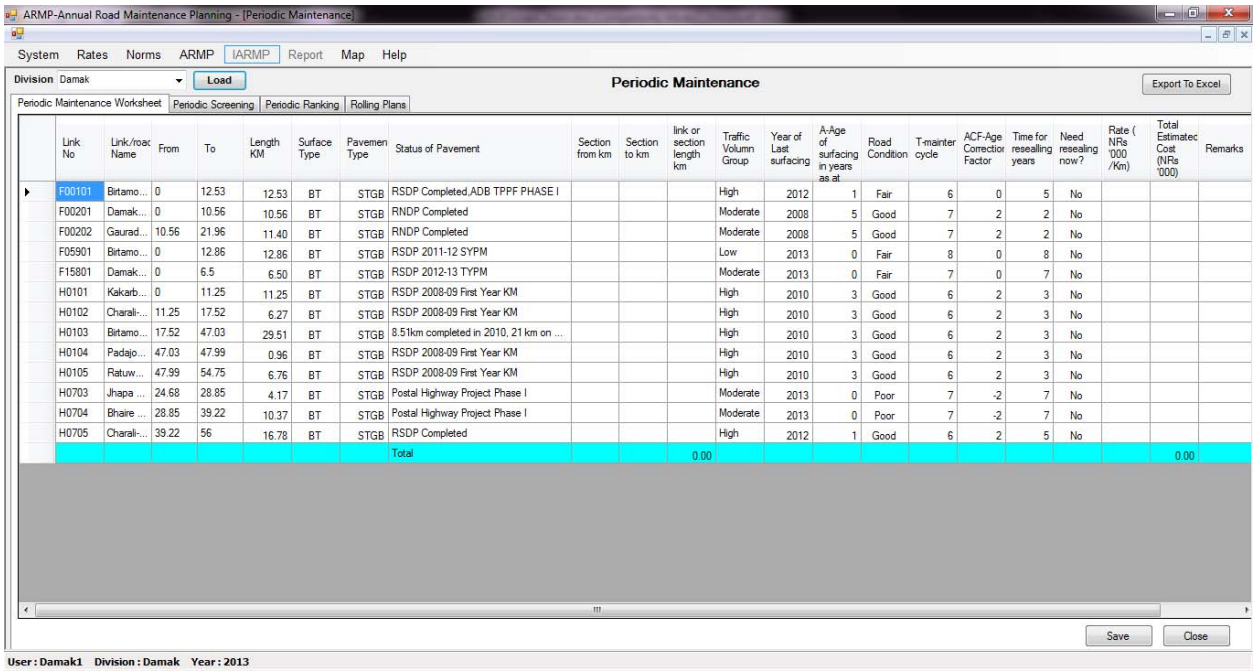
A summary of recurrent maintenance can be prepared using this tool. The recurrent maintenance of the gravel road is automatically assigned to NRs 30,000 and for the BT roads, rates per kilometer from the typical analysis has to be provided.



6.4 Periodic Maintenance

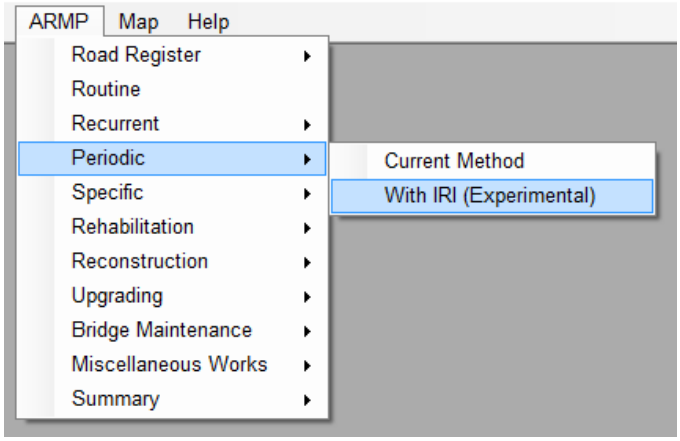


Periodic maintenance requirement (Yes/No) is computed automatically based on the last year of resurface, traffic, SDI values. The current method is the one which is in practice in the DoR. The ARMP is already updated with the recent data on the pavement condition, traffic data and last re-surface year and also updated with the 2016 periodic plan. Decision can be made to include the road under periodic maintenance even the calculation shows "No" based on observation by the division. Right click on the grid to export the data to Excel



Link No	Link/road Name	From	To	Length KM	Surface Type	Pavemen Type	Status of Pavement	Section from km	Section to km	link or section length km	Traffic Volumn Group	Year of Last surfacing	A-Age of surfacing in years as at	Road Condition	T-mainter cycle	ACF-Age Correctior Factor	Time for reseallng years	Need resealing now?	Rate (NRs '000 /Km)	Total Estimatec Cost (NRs '000)	Remarks
F00101	Birtamo...	0	12.53	12.53	BT	STGB	RSDP Completed,ADB TPPF PHASE I				High	2012	1	Fair	6	0	5	No			
F00201	Damak...	0	10.56	10.56	BT	STGB	RNDP Completed				Moderate	2008	5	Good	7	2	2	No			
F00202	Gaurad...	10.56	21.96	11.40	BT	STGB	RNDP Completed				Moderate	2008	5	Good	7	2	2	No			
F05901	Birtamo...	0	12.86	12.86	BT	STGB	RSDP 2011-12 SYPM				Low	2013	0	Fair	8	0	8	No			
F15801	Damak...	0	6.5	6.50	BT	STGB	RSDP 2012-13 TYPM				Moderate	2013	0	Fair	7	0	7	No			
H0101	Kakarb...	0	11.25	11.25	BT	STGB	RSDP 2008-09 First Year KM				High	2010	3	Good	6	2	3	No			
H0102	Charali-...	11.25	17.52	6.27	BT	STGB	RSDP 2008-09 First Year KM				High	2010	3	Good	6	2	3	No			
H0103	Birtamo...	17.52	47.03	29.51	BT	STGB	8.51km completed in 2010, 21 km on ...				High	2010	3	Good	6	2	3	No			
H0104	Padajo...	47.03	47.99	0.96	BT	STGB	RSDP 2008-09 First Year KM				High	2010	3	Good	6	2	3	No			
H0105	Ratuw...	47.99	54.75	6.76	BT	STGB	RSDP 2008-09 First Year KM				High	2010	3	Good	6	2	3	No			
H0703	Jhapa ...	24.68	28.85	4.17	BT	STGB	Postal Highway Project Phase I				Moderate	2013	0	Poor	7	-2	7	No			
H0704	Bhaire ...	28.85	39.22	10.37	BT	STGB	Postal Highway Project Phase I				Moderate	2013	0	Poor	7	-2	7	No			
H0705	Charali-...	39.22	56	16.78	BT	STGB	RSDP Completed				High	2012	1	Good	6	2	5	No			
							Total			0.00										0.00	

6.5 Periodic Maintenance With IRI



The present periodic maintenance approach takes into consideration of the SDI (Surface Distress Index), Traffic age of pavement. It does not take into account of the IRI (International Roughness Index) even though the IRI data are collected for the paved roads. IRI improvement is one of the key element of the road maintenance works such that the investment can be justified with the reduced vehicle operating cost.

An IRI based method for periodic maintenance is suggested and put as experimental in the system. It clearly shows a different level of interventions requiring additional funding. Once this method is approved, it will be as standard in coming ARMPs.

Traffic Class

0 – 150: Very Low

150-450: Low

450-1500: Moderate

>1500: High

Maintenance Cycle (Years)

Terrain	Pavement Type	Traffic Class			
		Very Low	Low	Moderate	High
Plain (P)	AC	-	-	8	7
	SD	6	5	4	-
Rolling & Hill	AC	-	-	7	5
	SD	5	4	3	-

Age Correction Factor

Good	Fair	Poor
+1	0	-1

Road Condition Matrix

a) High Traffic (>1500 AADT)

SDI/IRI	0 - 4	4 - 7	7 - 10	>10
0 – 1.7	Good	Fair	Fair	Poor
1.7 - 3	-	Fair	Poor	Poor
< 3	-	-	Poor	Poor

b) Low Traffic (<1500 AADT)

SDI/IRI	0 - 4	4 - 7	7 - 10	>10
0 – 1.7	Good	Good	Fair	Poor
1.7 - 3	-	Fair	Fair	Poor
< 3	-	-	Poor	Poor

Intervention

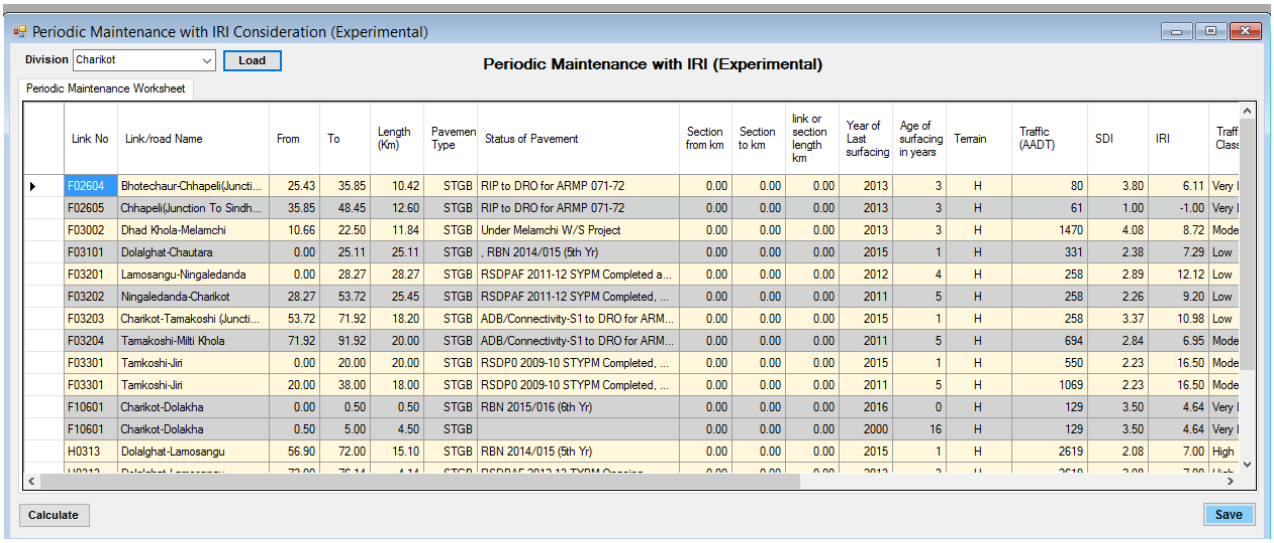
a) High Traffic (>1500 AADT)

SDI/IRI	0 – 4	4 – 7	7 – 10	>10
0 – 1.7	Good	Fair	Fair	Poor (Rehab)
1.7 – 3	-	Fair	Poor	Poor (Rehab)
< 3	-	-	Poor (Rehab)	Poor (Rehab)

b) Low Traffic (<1500 AADT)

SDI/IRI	0 - 4	4 - 7	7 - 10	>10
0 – 1.7	Good	Good	Fair	Poor
1.7 - 3	-	Fair	Fair	Poor
< 3	-	-	Poor (Rehab)	Poor (Rehab)

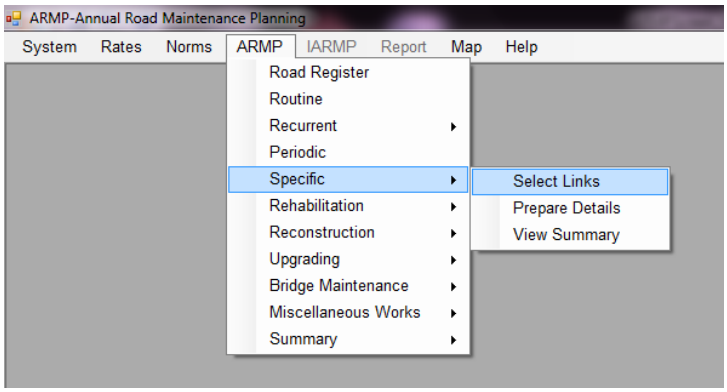
Reseal SD: SBSD AC: 25mm AC	Rehab SD: DBSD + Base AC: AC Overlay (Design?)



Link No	Link/road Name	From	To	Length (Km)	Pavemen Type	Status of Pavement	Section from km	Section to km	link or section length km	Year of Last surfacing	Age of surfacing in years	Terrain	Traffic (AADT)	SDI	IRI	Traff Class
F02604	Bhotechaur-Chhapeli(Juncti...	25.43	35.85	10.42	STGB	RIP to DRO for ARMP 071-72	0.00	0.00	0.00	2013	3	H	80	3.80	6.11	Very
F02605	Chhapeli(Junction To Sindh...	35.85	48.45	12.60	STGB	RIP to DRO for ARMP 071-72	0.00	0.00	0.00	2013	3	H	61	1.00	-1.00	Very
F03002	Dhad Khola-Melamchi	10.66	22.50	11.84	STGB	Under Melamchi W/S Project	0.00	0.00	0.00	2013	3	H	1470	4.08	8.72	Mode
F03101	Dolalghat-Chautara	0.00	25.11	25.11	STGB	, RBN 2014/015 (5th Yr)	0.00	0.00	0.00	2015	1	H	331	2.38	7.29	Low
F03201	Lamosangu-Ningaledanda	0.00	28.27	28.27	STGB	RSDPAF 2011-12 SYPM Completed a...	0.00	0.00	0.00	2012	4	H	258	2.89	12.12	Low
F03202	Ningaledanda-Charikot	28.27	53.72	25.45	STGB	RSDPAF 2011-12 SYPM Completed, ...	0.00	0.00	0.00	2011	5	H	258	2.26	9.20	Low
F03203	Charikot-Tamakoshi (Juncti...	53.72	71.92	18.20	STGB	ADB/Connectivity-S1 to DRO for ARM...	0.00	0.00	0.00	2015	1	H	258	3.37	10.98	Low
F03204	Tamakoshi-Milti Khola	71.92	91.92	20.00	STGB	ADB/Connectivity-S1 to DRO for ARM...	0.00	0.00	0.00	2011	5	H	694	2.84	6.95	Mode
F03301	Tamkoshi-Jiri	0.00	20.00	20.00	STGB	RSDP0 2009-10 STYPM Completed, ...	0.00	0.00	0.00	2015	1	H	550	2.23	16.50	Mode
F03301	Tamkoshi-Jiri	20.00	38.00	18.00	STGB	RSDP0 2009-10 STYPM Completed, ...	0.00	0.00	0.00	2011	5	H	1069	2.23	16.50	Mode
F10601	Charikot-Dolakha	0.00	0.50	0.50	STGB	RBN 2015/016 (6th Yr)	0.00	0.00	0.00	2016	0	H	129	3.50	4.64	Very
F10601	Charikot-Dolakha	0.50	5.00	4.50	STGB		0.00	0.00	0.00	2000	16	H	129	3.50	4.64	Very
H0313	Dolalghat-Lamosangu	56.90	72.00	15.10	STGB	RBN 2014/015 (5th Yr)	0.00	0.00	0.00	2015	1	H	2619	2.08	7.00	High

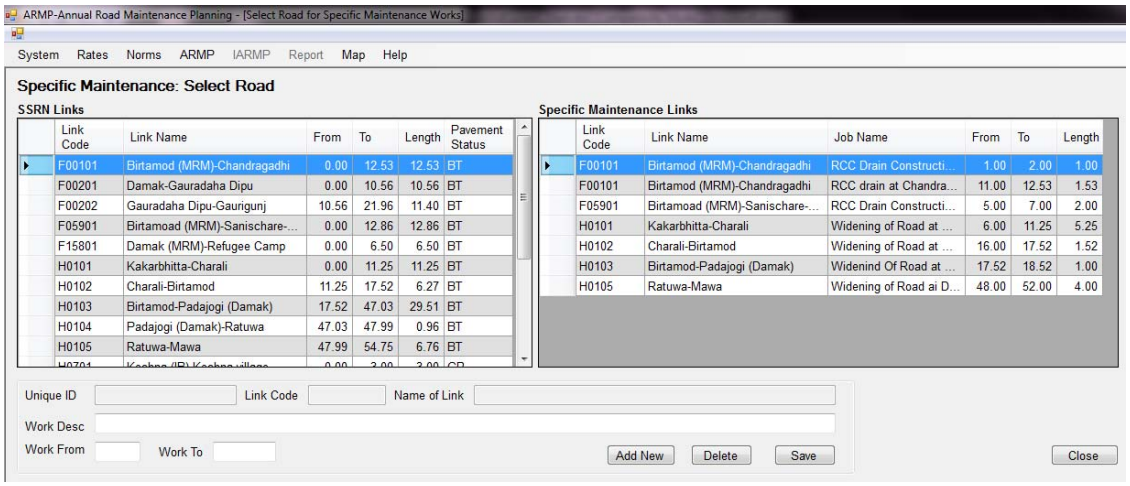
Periodic maintenance requirement (Yes/No) is computed automatically based on the last year of resurface, traffic, SDI/IRI values. The ARMP is already updated with the recent data on the pavement condition (SDI & IRI), traffic data and last re-surface year and also updated with the 2016 periodic plan. Right click on the grid to export the data to Excel

6.6 Specific Maintenance



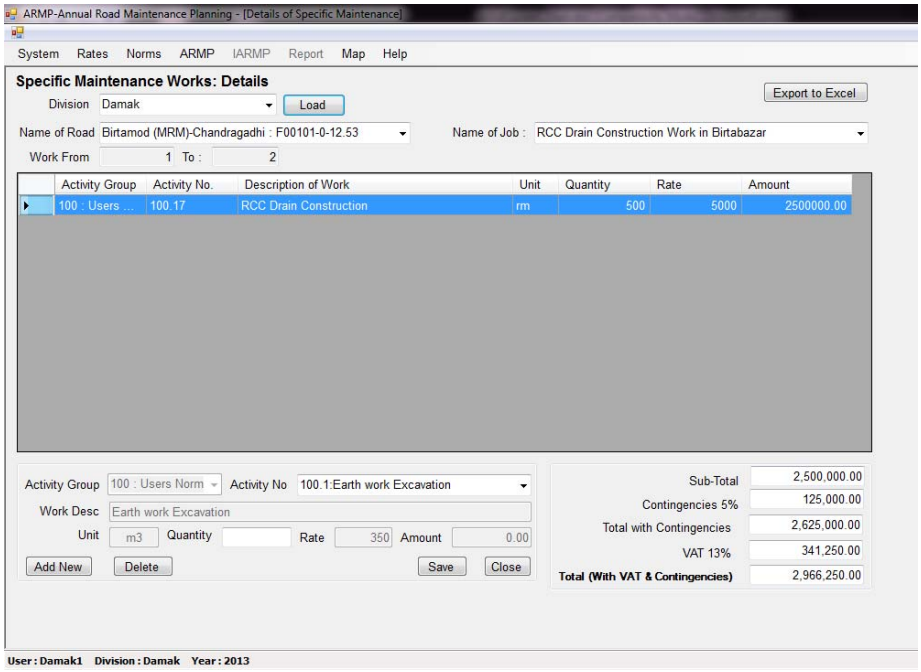
6.6.1 Select Links

Links requiring specific maintenance should be selected using this tool. The work description should be provided and should not be repeated for the same link. It is better to mention specific works e.g Wall Construction" etc. rather then putting generic description. The length of the section should also be provided.



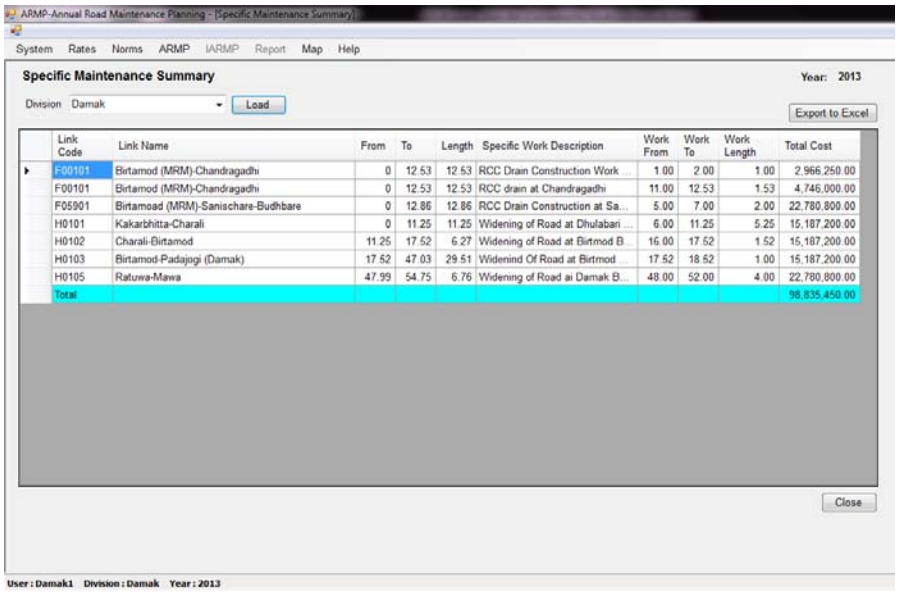
6.6.2 Prepare Details

Under each of the selected link and the work description, details should be prepared. Standard items will be available and quantities should be provided. The total cost is automatically computed. Right click on the grid to export entire details data to Excel

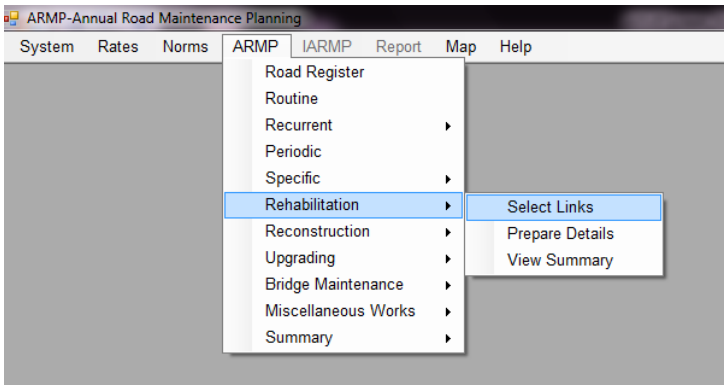


6.6.3 View Summary

Provides the summary of the specific maintenance works. Right click on the grid to export the data to Excel

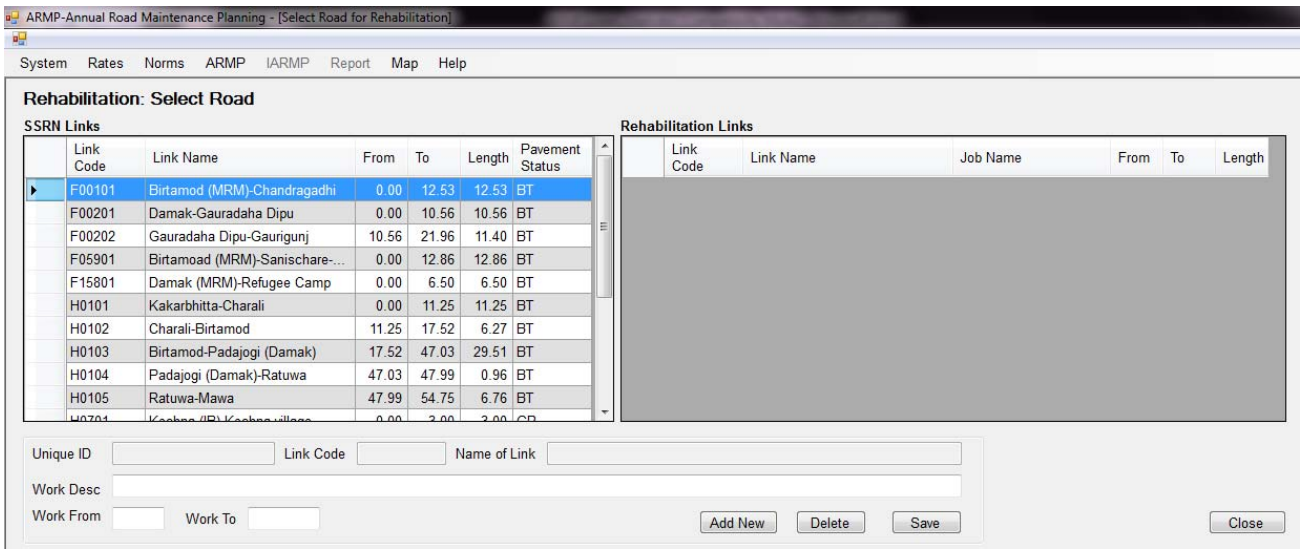


6.7 Rehabilitation



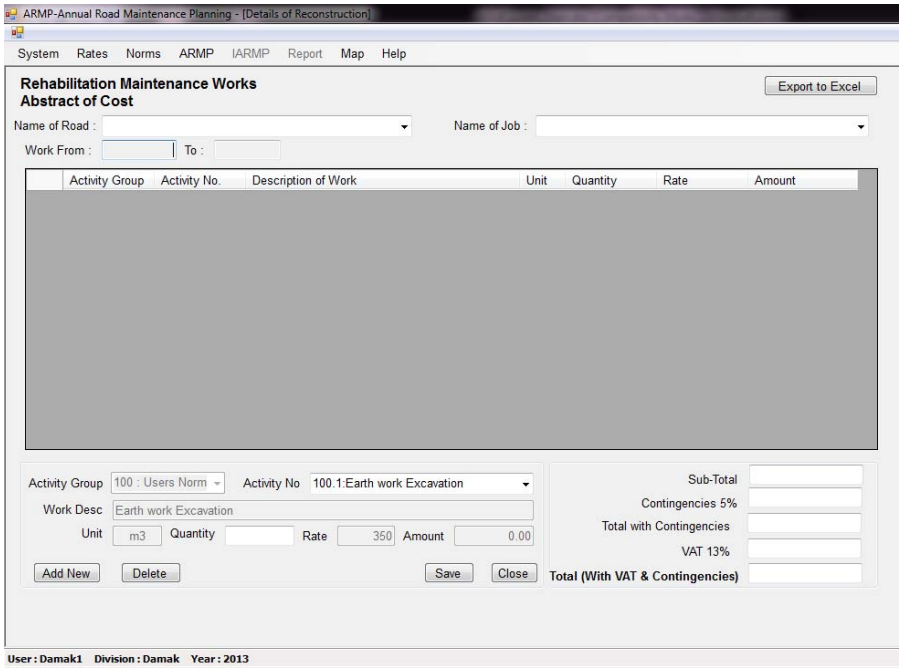
6.7.1 Select Links

Links requiring rehabilitation should be selected using this tool. The work description should be provided and should not be repeated for the same link. The length of the section should also be provided.



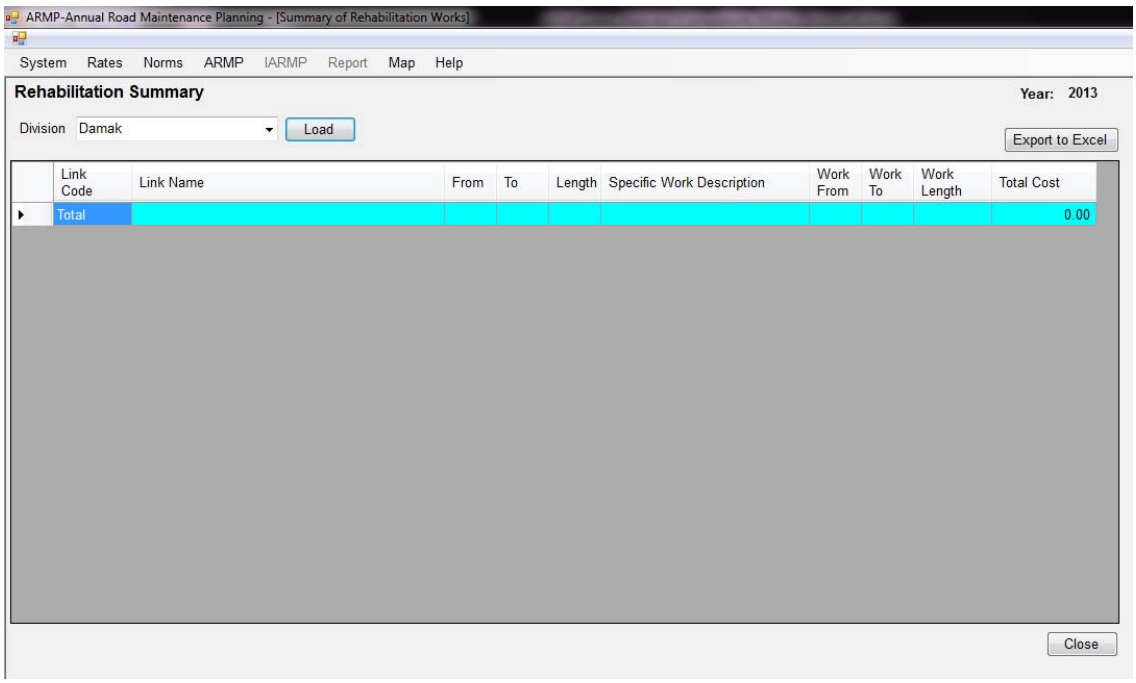
6.7.2 Prepare Details

Under each of the selected link and the work description, details should be prepared. Standard items will be available and quantities should be provided. The total cost is automatically computed. Right click on the grid to export entire details data to Excel



6.7.3 View Summary

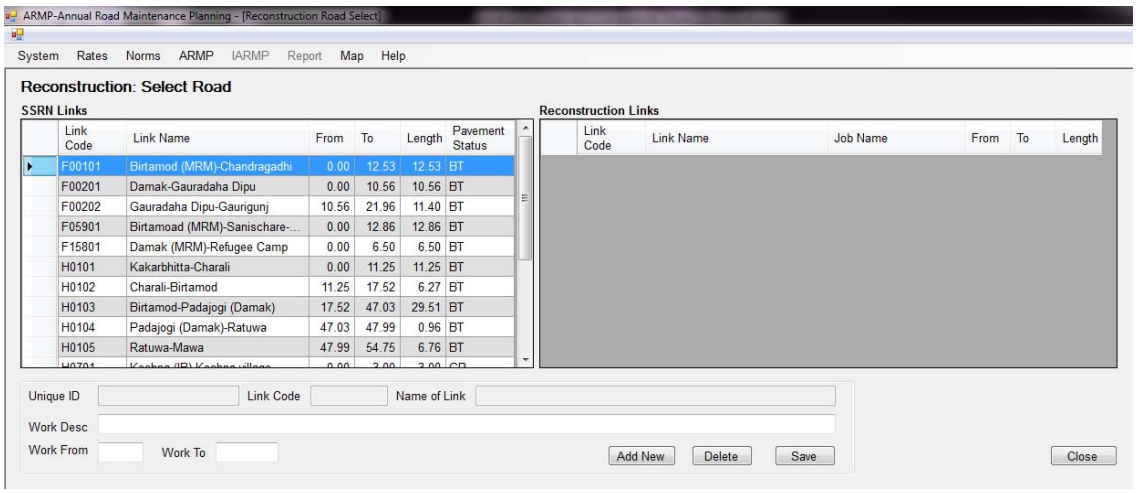
Provides the summary of the rehabilitation works. Right click on the grid to export the data to Excel



6.8 Reconstruction

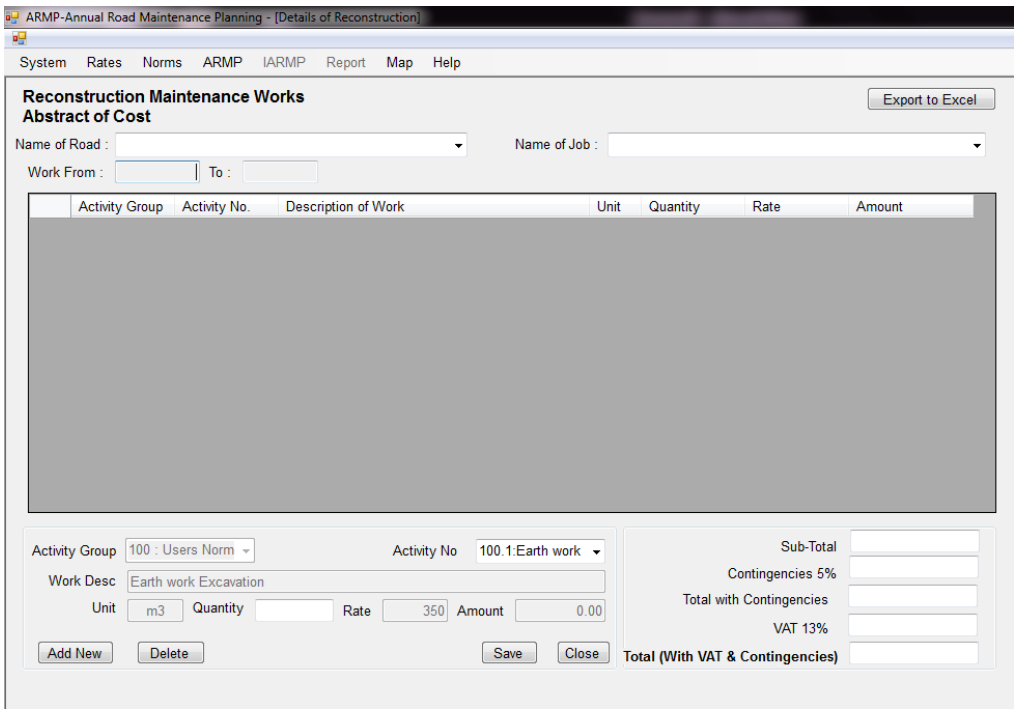
6.8.1 Select Links

Links requiring reconstruction should be selected using this tool. The work description should be provided and should not be repeated for the same link. The length of the section should also be provided.



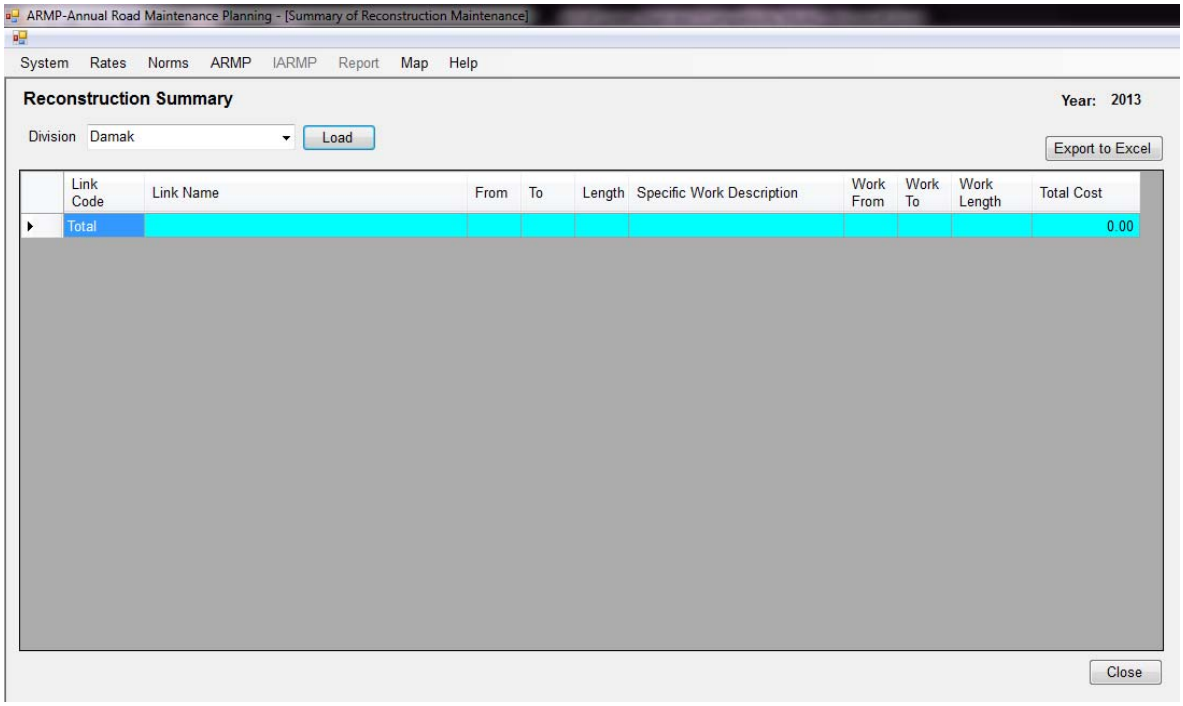
6.8.2 Prepare Details

Under each of the selected link and the work description, details should be prepared. Standard items will be available and quantities should be provided. The total cost is automatically computed. Right click on the grid to export entire details data to Excel

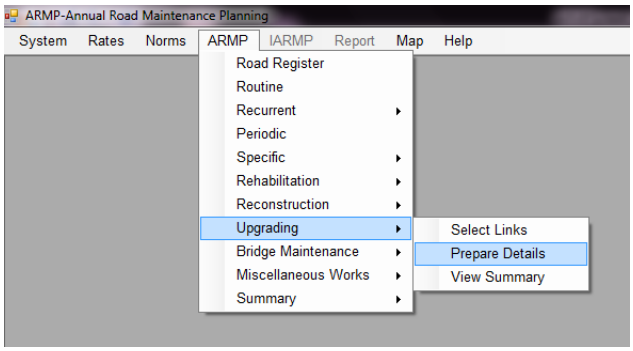


6.8.3 View Summary

Provides the summary of the reconstruction works. Right click on the grid to export the data to Excel

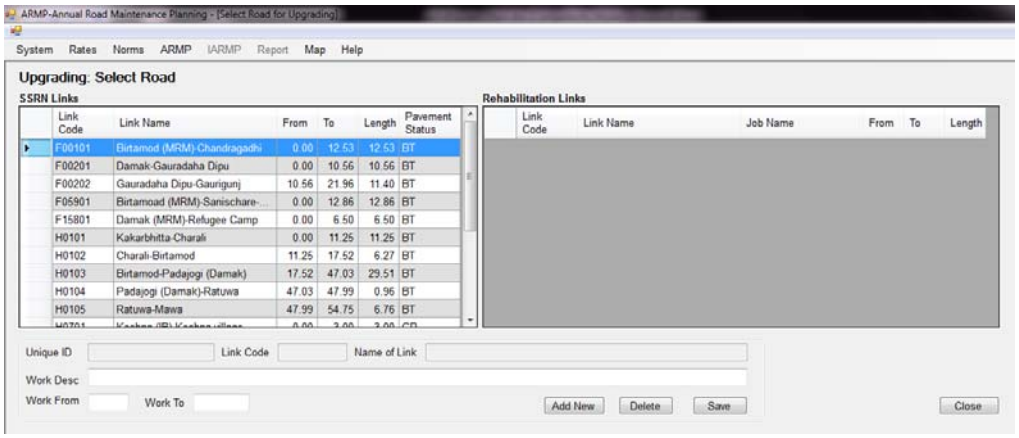


6.9 Upgrading



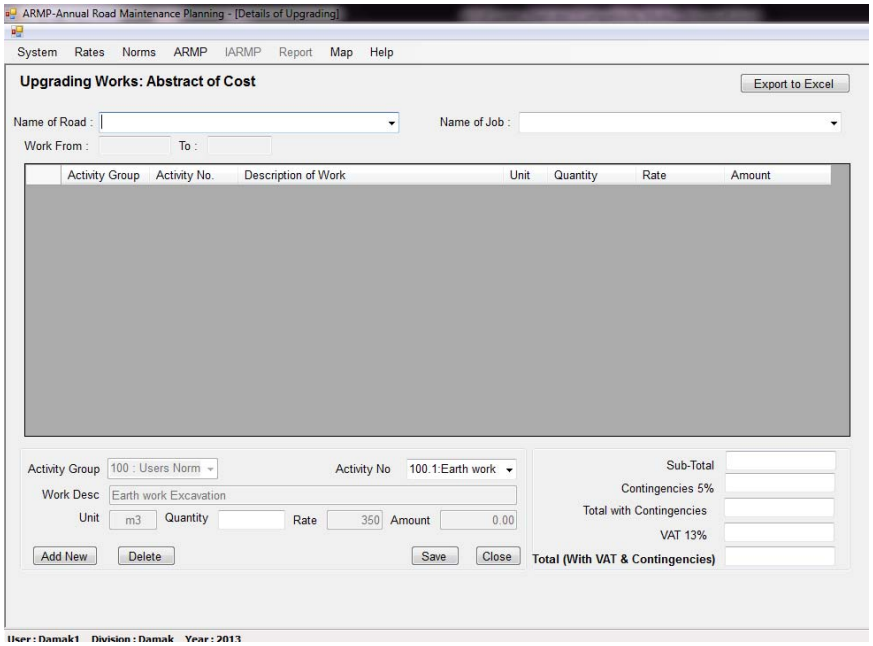
6.9.1 Select Links

Links requiring upgrading should be selected using this tool. The work description should be provided and should not be repeated for the same link. The length of the section should also be provided.



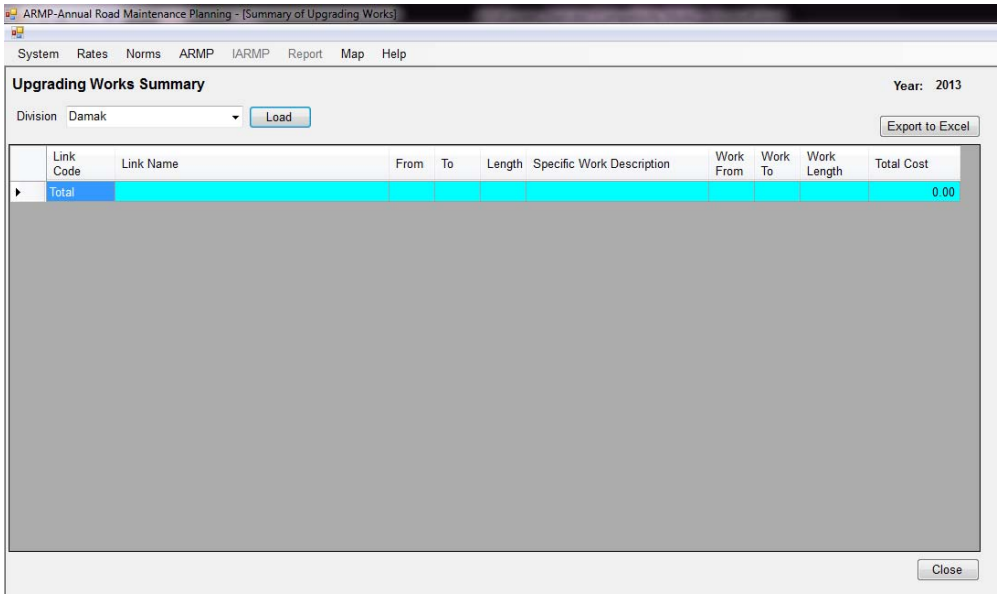
6.9.2 Prepare Details

Under each of the selected link and the work description, details should be prepared. Standard items will be available and quantities should be provided. The total cost is automatically computed. Right click on the grid to export entire details data to Excel

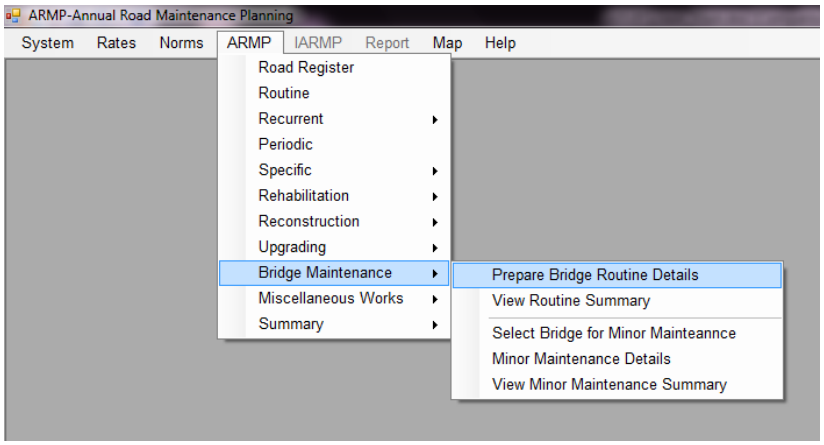


6.9.3 View Summary

Provides the summary of the reconstruction works. Right click on the grid to export the data to Excel

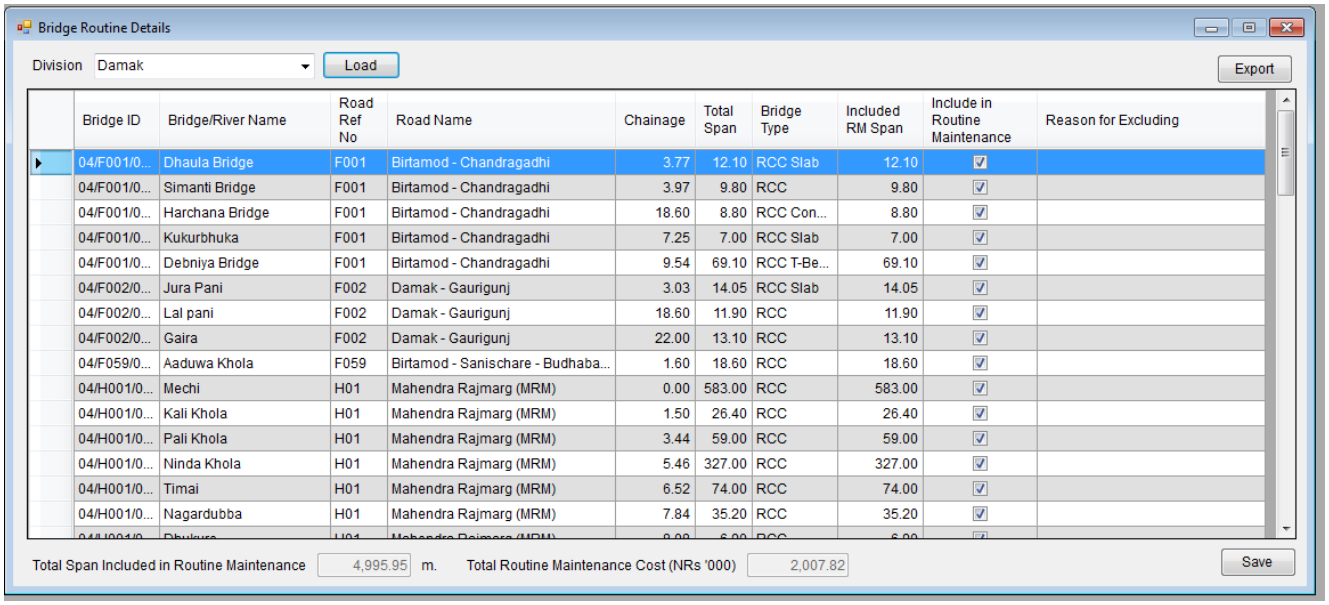


6.10 Bridge Maintenance

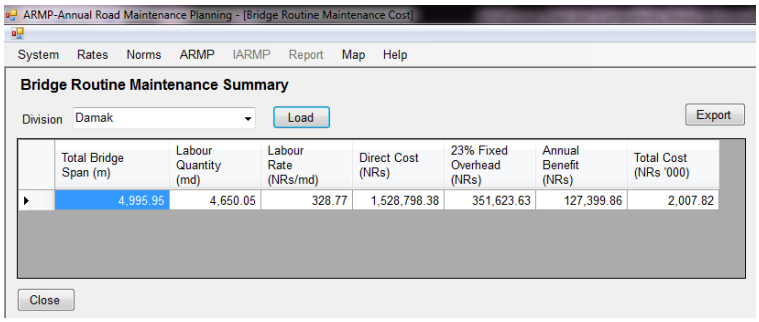


6.10.1 Prepare Bridge Routine Details

Select the bridge to include in the routine maintenance or not. Reason for exclusion also should be mentioned if the bridge is not included for routine maintenance.

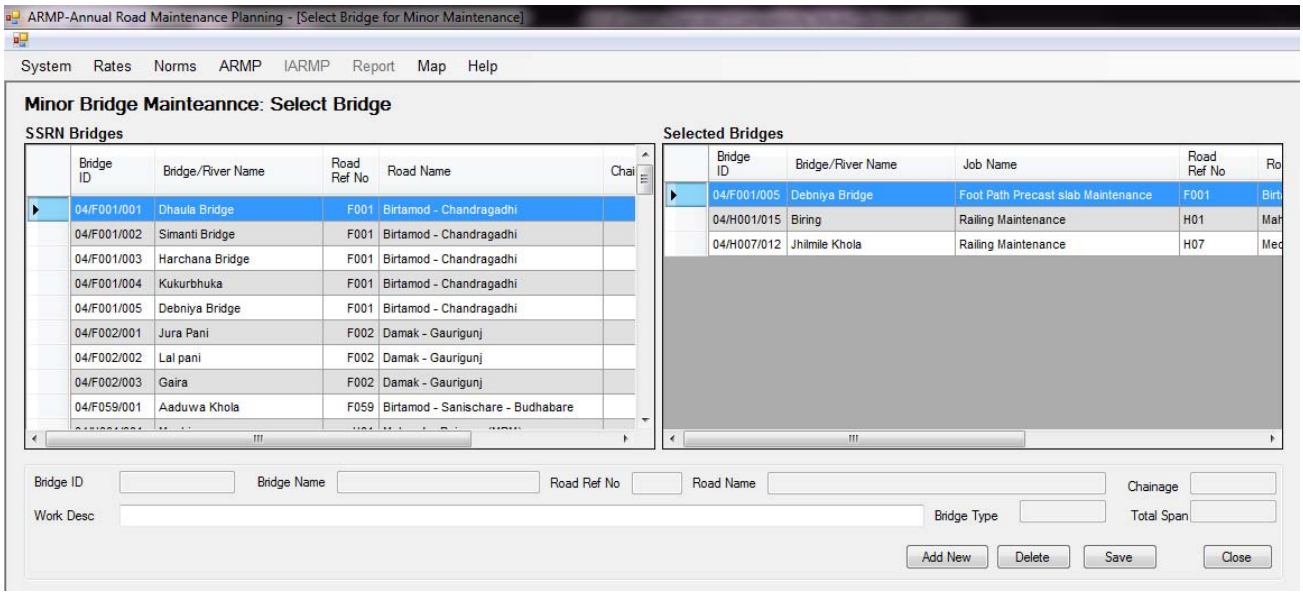


6.10.2 View Routine Summary

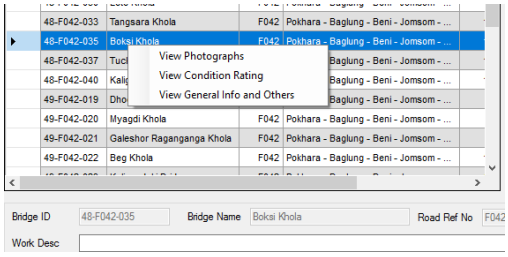


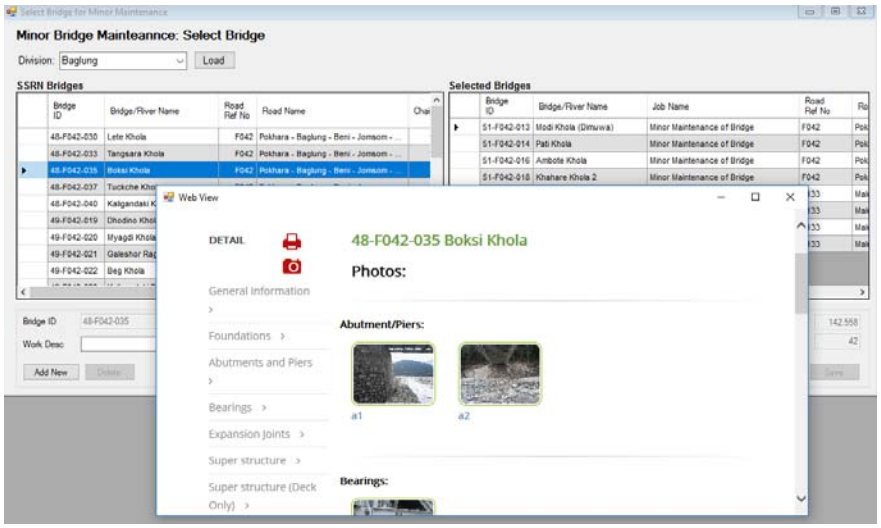
6.10.3 Select Bridge For Minor Maintenance

Select the bridges for minor maintenance and also provide the work descriptions. If same bridge is used for different works, the work description should be different.



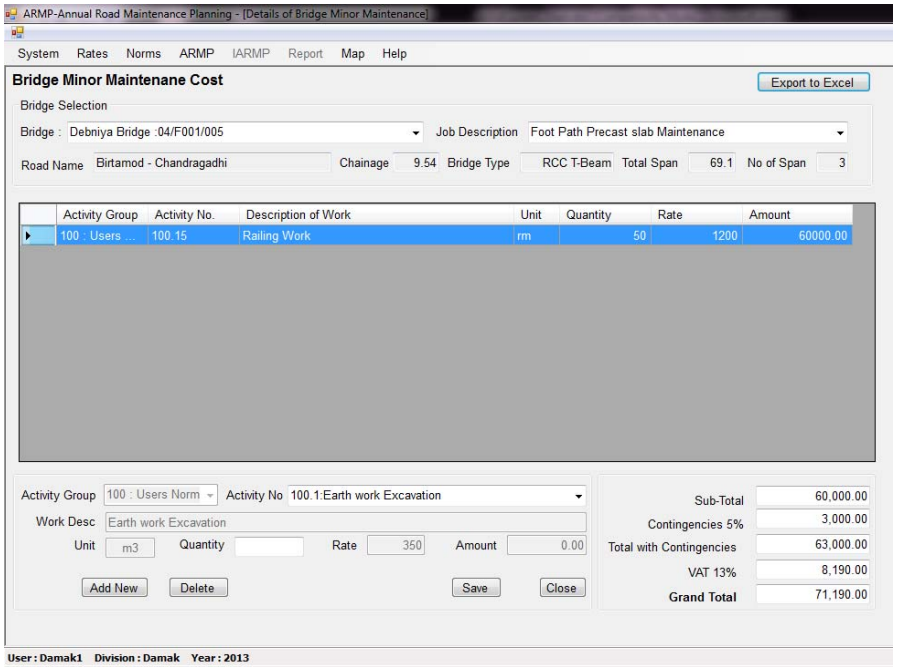
Right click on the bridge can bring bridge details from the condition assessment under the BMS. The view photographs option will take to the detailed photographs available for the bridge and other menus provides access to the bridge condition.





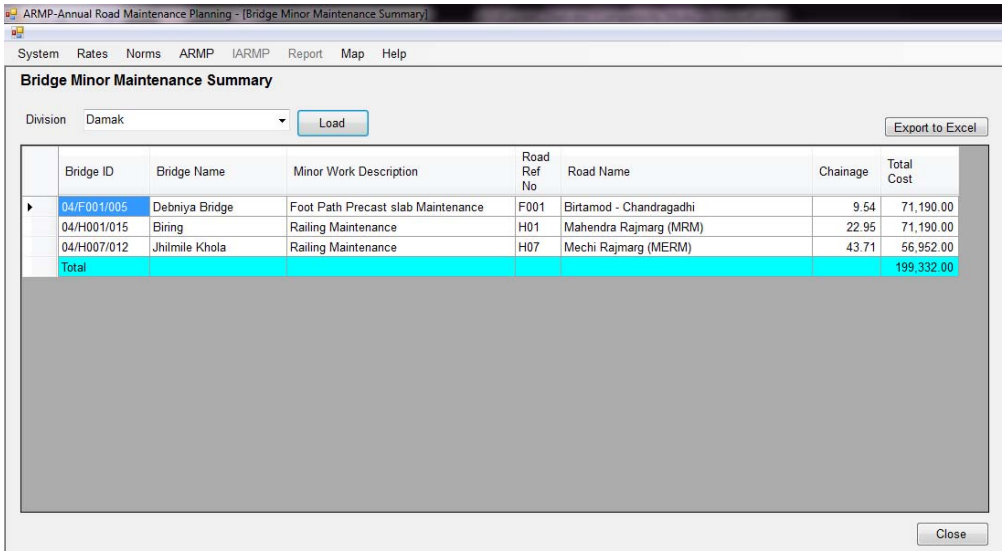
6.10.4 Minor Maintenance Details

Under each of the selected bridges and the work description, details should be prepared. Standard items will be available and quantities should be provided. The total cost is automatically computed. Right click on the grid to export entire details data to Excel



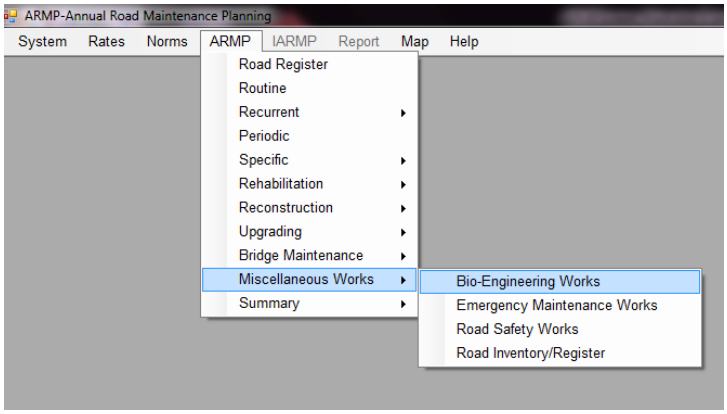
6.10.5 View Minor Maintenance Summary

Provides the summary of the minor bridge maintenance works by division. Right click on the grid to export the data to Excel

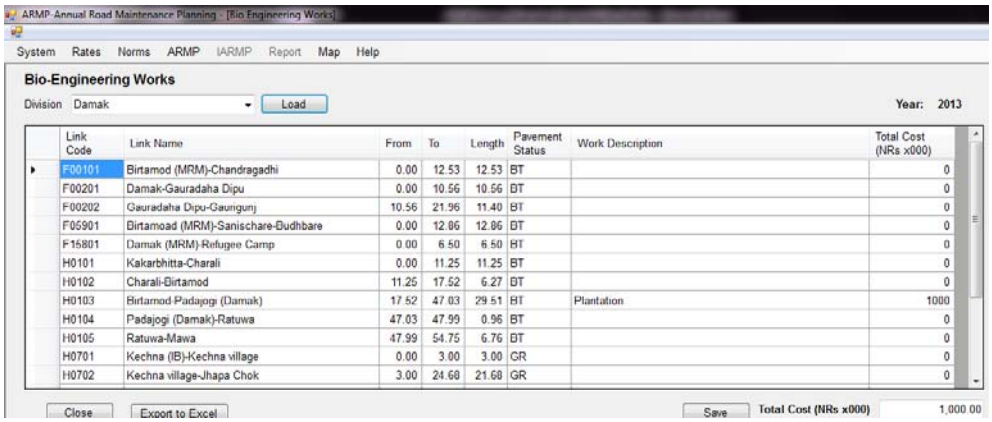


6.11 Miscellaneous Maintenance

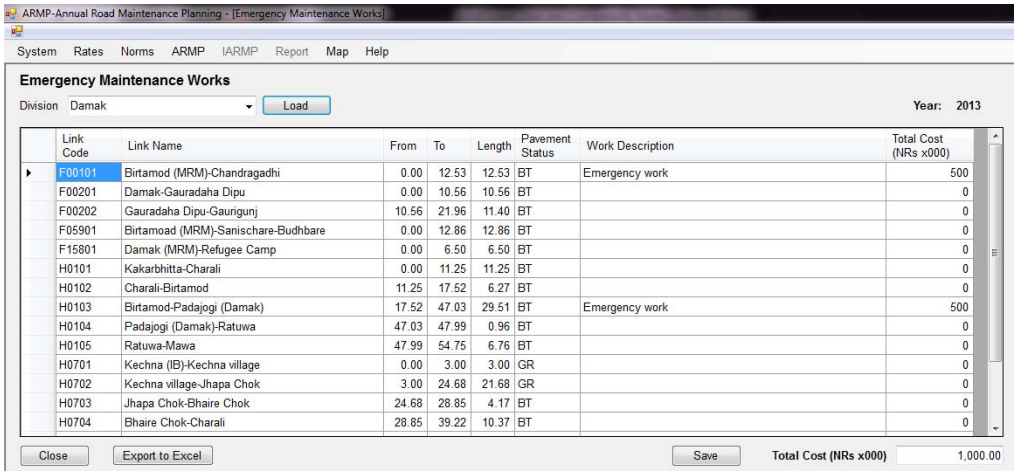
It is similar to other maintenance works e.g. specific maintenance. First the required link should be selected and details prepared. The summary of the cost can be viewed using "View Summary". Right click on the grid to export the data to Excel



6.11.1 Bio-Engineering Works

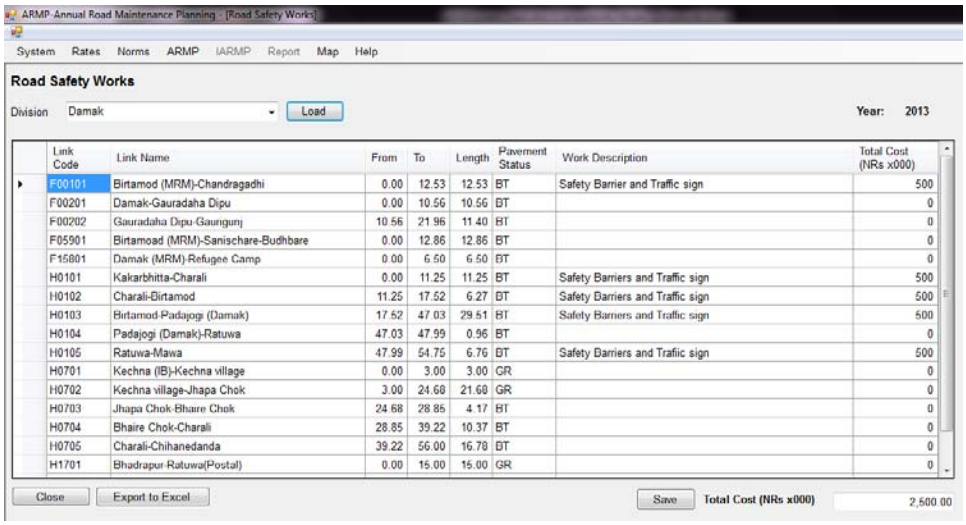


6.11.2 Emergency Maintenance Works



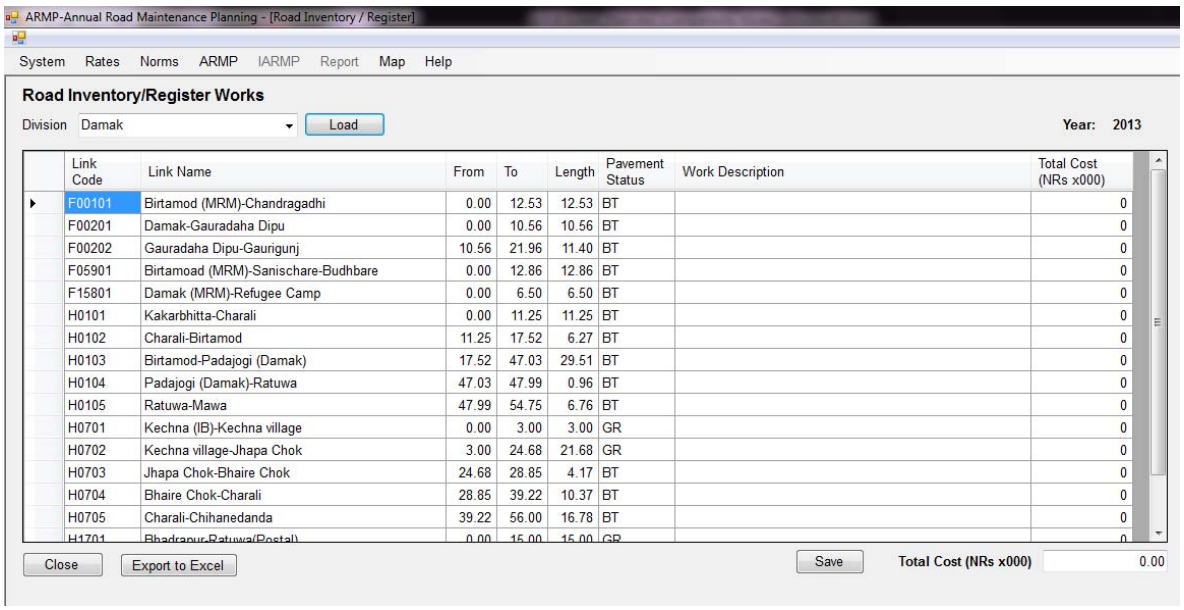
Right click on the grid to export the data to Excel

6.11.3 Road Safety Works



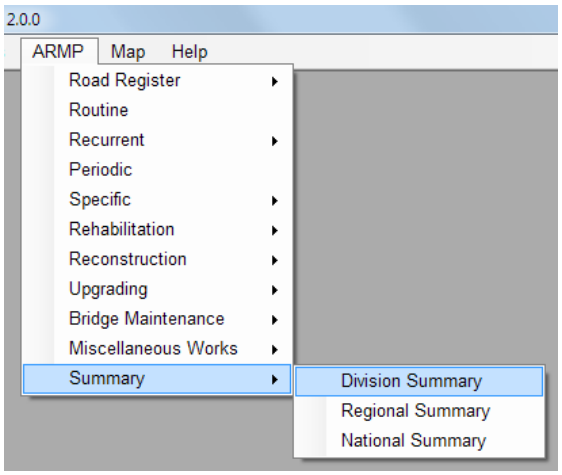
Link Code	Link Name	From	To	Length	Pavement Status	Work Description	Total Cost (NRs x000)
F00101	Birtamod (MRM)-Chandragadhi	0.00	12.53	12.53	BT	Safety Barrier and Traffic sign	500
F00201	Damak-Gauradaha Dipu	0.00	10.56	10.56	BT		0
F00202	Gauradaha Dipu-Gaurigunj	10.56	21.96	11.40	BT		0
F05901	Birtamoad (MRM)-Sanischare-Budhbare	0.00	12.86	12.86	BT		0
F15801	Damak (MRM)-Refugee Camp	0.00	6.50	6.50	BT		0
H0101	Kakarbhitta-Charali	0.00	11.25	11.25	BT	Safety Barriers and Traffic sign	500
H0102	Charali-Birtamod	11.25	17.52	6.27	BT	Safety Barriers and Traffic sign	500
H0103	Birtamod-Padajogi (Damak)	17.52	47.03	29.51	BT	Safety Barriers and Traffic sign	500
H0104	Padajogi (Damak)-Ratuwa	47.03	47.99	0.96	BT		0
H0105	Ratuwa-Mawa	47.99	54.75	6.76	BT	Safety Barriers and Traffic sign	500
H0701	Kechna (IB)-Kechna village	0.00	3.00	3.00	GR		0
H0702	Kechna village-Jhapa Chok	3.00	24.68	21.68	GR		0
H0703	Jhapa Chok-Bhaire Chok	24.68	28.85	4.17	BT		0
H0704	Bhaire Chok-Charali	28.85	39.22	10.37	BT		0
H0705	Charali-Chihanedanda	39.22	56.00	16.78	BT		0
H1701	Bhadrapur-Ratuwa(Postal)	0.00	15.00	15.00	GR		0

6.11.4 Road Inventory/Register

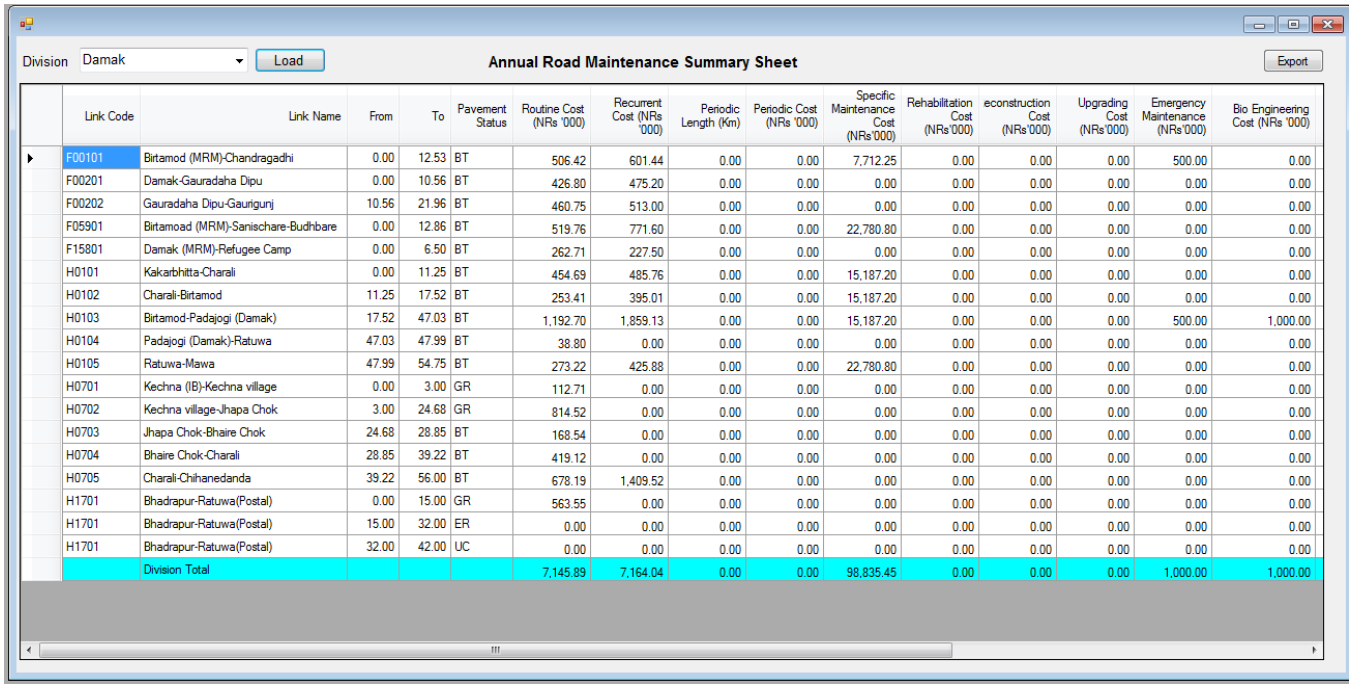


Link Code	Link Name	From	To	Length	Pavement Status	Work Description	Total Cost (NRs x000)
F00101	Birtamod (MRM)-Chandragadhi	0.00	12.53	12.53	BT		0
F00201	Damak-Gauradaha Dipu	0.00	10.56	10.56	BT		0
F00202	Gauradaha Dipu-Gaurigunj	10.56	21.96	11.40	BT		0
F05901	Birtamoad (MRM)-Sanischare-Budhbare	0.00	12.86	12.86	BT		0
F15801	Damak (MRM)-Refugee Camp	0.00	6.50	6.50	BT		0
H0101	Kakarbhitta-Charali	0.00	11.25	11.25	BT		0
H0102	Charali-Birtamod	11.25	17.52	6.27	BT		0
H0103	Birtamod-Padajogi (Damak)	17.52	47.03	29.51	BT		0
H0104	Padajogi (Damak)-Ratuwa	47.03	47.99	0.96	BT		0
H0105	Ratuwa-Mawa	47.99	54.75	6.76	BT		0
H0701	Kechna (IB)-Kechna village	0.00	3.00	3.00	GR		0
H0702	Kechna village-Jhapa Chok	3.00	24.68	21.68	GR		0
H0703	Jhapa Chok-Bhaire Chok	24.68	28.85	4.17	BT		0
H0704	Bhaire Chok-Charali	28.85	39.22	10.37	BT		0
H0705	Charali-Chihanedanda	39.22	56.00	16.78	BT		0
H1701	Bhadrapur-Ratuwa(Postal)	0.00	15.00	15.00	GR		0

6.12 Summary Sub Menu



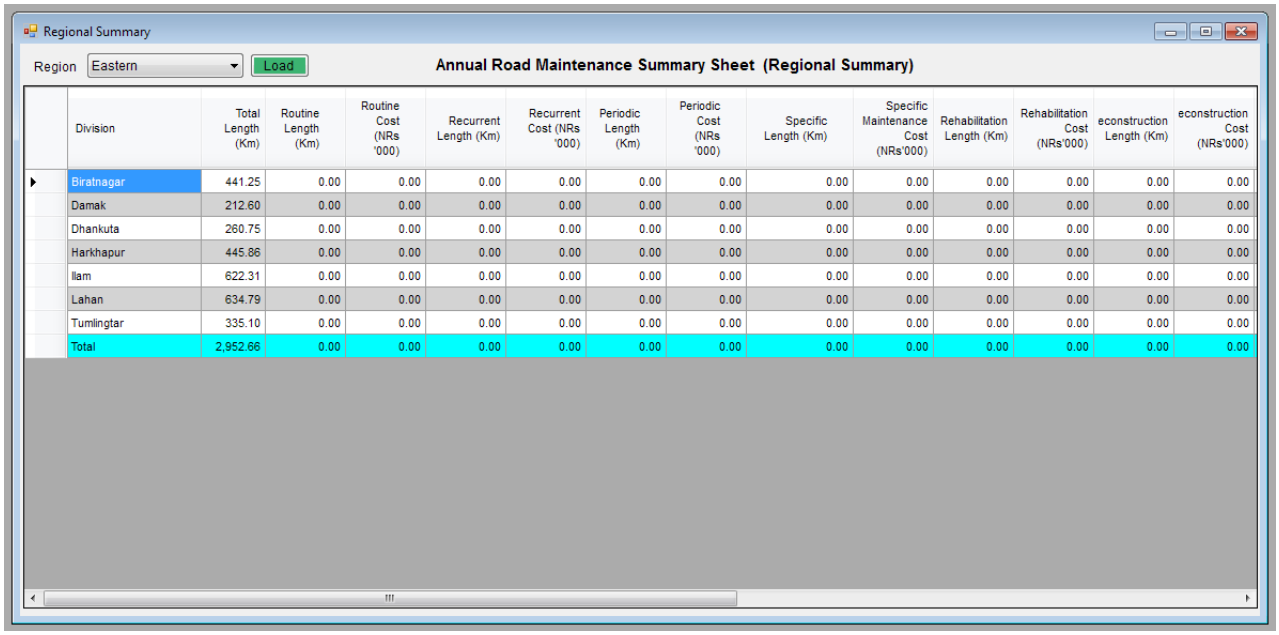
6.12.1 Division Summary



Link Code	Link Name	From	To	Pavement Status	Routine Cost (NRs '000)	Recurrent Cost (NRs '000)	Periodic Length (Km)	Periodic Cost (NRs '000)	Specific Maintenance Cost (NRs'000)	Rehabilitation Cost (NRs'000)	econstruction Cost (NRs'000)	Upgrading Cost (NRs'000)	Emergency Maintenance (NRs'000)	Bio Engineering Cost (NRs '000)
F00101	Birtamod (MRM)-Chandragadhi	0.00	12.53	BT	506.42	601.44	0.00	0.00	7,712.25	0.00	0.00	0.00	500.00	0.00
F00201	Damak-Gauradaha Dipu	0.00	10.56	BT	426.80	475.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
F00202	Gauradaha Dipu-Gaurigunj	10.56	21.96	BT	460.75	513.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
F05901	Birtamoad (MRM)-Sanischare-Budhbare	0.00	12.86	BT	519.76	771.60	0.00	0.00	22,780.80	0.00	0.00	0.00	0.00	0.00
F15801	Damak (MRM)-Refugee Camp	0.00	6.50	BT	262.71	227.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H0101	Kakarbhitta-Charali	0.00	11.25	BT	454.69	485.76	0.00	0.00	15,187.20	0.00	0.00	0.00	0.00	0.00
H0102	Charali-Birtamod	11.25	17.52	BT	253.41	395.01	0.00	0.00	15,187.20	0.00	0.00	0.00	0.00	0.00
H0103	Birtamod-Padajogi (Damak)	17.52	47.03	BT	1,192.70	1,859.13	0.00	0.00	15,187.20	0.00	0.00	0.00	500.00	1,000.00
H0104	Padajogi (Damak)-Ratuwa	47.03	47.99	BT	38.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H0105	Ratuwa-Mawa	47.99	54.75	BT	273.22	425.88	0.00	0.00	22,780.80	0.00	0.00	0.00	0.00	0.00
H0701	Kechna (IB)-Kechna village	0.00	3.00	GR	112.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H0702	Kechna village-Jhapa Chok	3.00	24.68	GR	814.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H0703	Jhapa Chok-Bhaire Chok	24.68	28.85	BT	168.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H0704	Bhaire Chok-Charali	28.85	39.22	BT	419.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H0705	Charali-Chihanedanda	39.22	56.00	BT	678.19	1,409.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H1701	Bhadrapur-Ratuwa(Postal)	0.00	15.00	GR	563.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H1701	Bhadrapur-Ratuwa(Postal)	15.00	32.00	ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
H1701	Bhadrapur-Ratuwa(Postal)	32.00	42.00	UC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Division Total				7,145.89	7,164.04	0.00	0.00	98,835.45	0.00	0.00	0.00	1,000.00	1,000.00

Right click on the grid to export the data to Excel

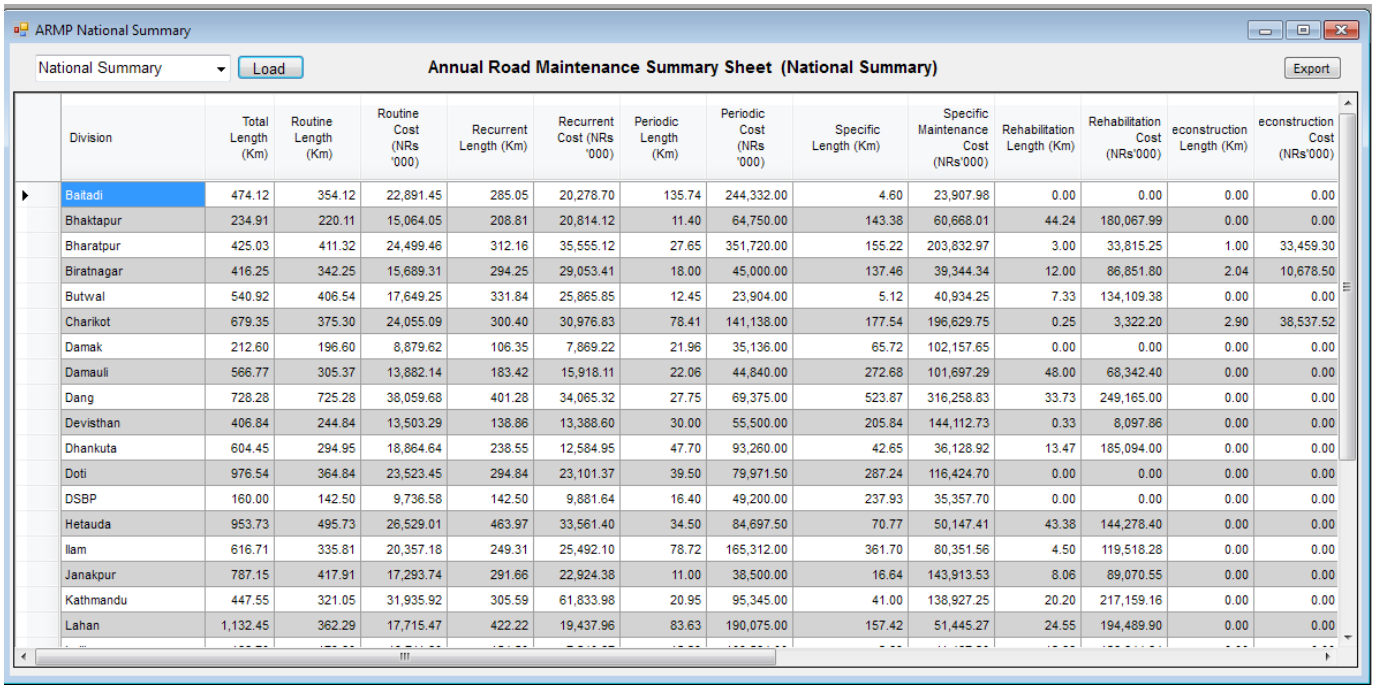
6.12.2 Regional Summary



Division	Total Length (Km)	Routine Length (Km)	Routine Cost (NRs '000)	Recurrent Length (Km)	Recurrent Cost (NRs '000)	Periodic Length (Km)	Periodic Cost (NRs '000)	Specific Length (Km)	Specific Maintenance Cost (NRs'000)	Rehabilitation Length (Km)	Rehabilitation Cost (NRs'000)	econstruction Length (Km)	econstruction Cost (NRs'000)
Biratnagar	441.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Damak	212.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dhankuta	260.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Harkhapur	445.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ilam	622.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lahan	634.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tumlingtar	335.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	2,952.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Right click on the grid to export the data to Excel

6.12.3 National Summary

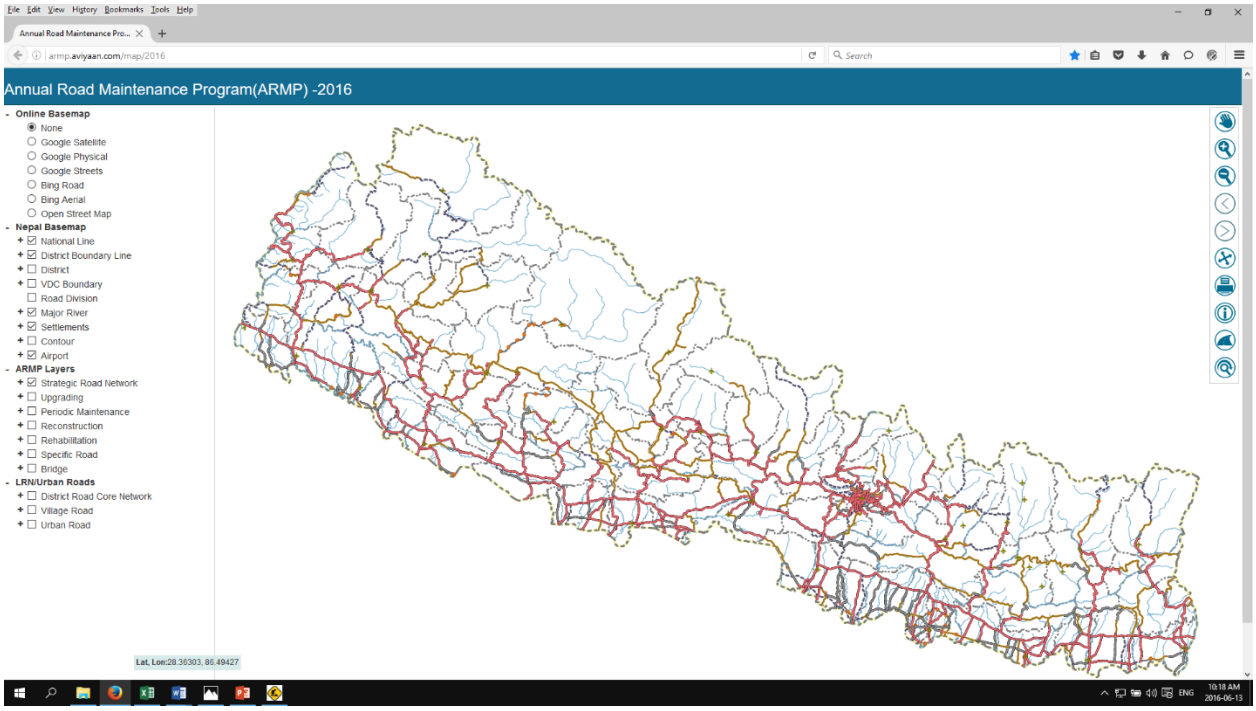


Division	Total Length (Km)	Routine Length (Km)	Routine Cost (NRs '000)	Recurrent Length (Km)	Recurrent Cost (NRs '000)	Periodic Length (Km)	Periodic Cost (NRs '000)	Specific Length (Km)	Specific Maintenance Cost (NRs'000)	Rehabilitation Length (Km)	Rehabilitation Cost (NRs'000)	econstruction Length (Km)	econstruction Cost (NRs'000)
Baitadi	474.12	354.12	22,891.45	285.05	20,278.70	135.74	244,332.00	4.60	23,907.98	0.00	0.00	0.00	0.00
Bhaktapur	234.91	220.11	15,064.05	208.81	20,814.12	11.40	64,750.00	143.38	60,668.01	44.24	180,067.99	0.00	0.00
Bharatpur	425.03	411.32	24,499.46	312.16	35,555.12	27.65	351,720.00	155.22	203,832.97	3.00	33,815.25	1.00	33,459.30
Biratnagar	416.25	342.25	15,689.31	294.25	29,053.41	18.00	45,000.00	137.46	39,344.34	12.00	86,851.80	2.04	10,678.50
Butwal	540.92	406.54	17,649.25	331.84	25,865.85	12.45	23,904.00	5.12	40,934.25	7.33	134,109.38	0.00	0.00
Charikot	679.35	375.30	24,055.09	300.40	30,976.83	78.41	141,138.00	177.54	196,629.75	0.25	3,322.20	2.90	38,537.52
Damak	212.60	196.60	8,879.62	106.35	7,869.22	21.96	35,136.00	65.72	102,157.65	0.00	0.00	0.00	0.00
Damauli	566.77	305.37	13,882.14	183.42	15,918.11	22.06	44,840.00	272.68	101,697.29	48.00	68,342.40	0.00	0.00
Dang	728.28	725.28	38,059.68	401.28	34,065.32	27.75	69,375.00	523.87	316,258.83	33.73	249,165.00	0.00	0.00
Devisthan	406.84	244.84	13,503.29	138.86	13,388.60	30.00	55,500.00	205.84	144,112.73	0.33	8,097.86	0.00	0.00
Dhankuta	604.45	294.95	18,864.64	238.55	12,584.95	47.70	93,260.00	42.65	36,128.92	13.47	185,094.00	0.00	0.00
Doti	976.54	364.84	23,523.45	294.84	23,101.37	39.50	79,971.50	287.24	116,424.70	0.00	0.00	0.00	0.00
DSBP	160.00	142.50	9,736.58	142.50	9,881.64	16.40	49,200.00	237.93	35,357.70	0.00	0.00	0.00	0.00
Hetauda	953.73	495.73	26,529.01	463.97	33,561.40	34.50	84,697.50	70.77	50,147.41	43.38	144,278.40	0.00	0.00
Ilam	616.71	335.81	20,357.18	249.31	25,492.10	78.72	165,312.00	361.70	80,351.56	4.50	119,518.28	0.00	0.00
Janakpur	787.15	417.91	17,293.74	291.66	22,924.38	11.00	38,500.00	16.64	143,913.53	8.06	89,070.55	0.00	0.00
Kathmandu	447.55	321.05	31,935.92	305.59	61,833.98	20.95	95,345.00	41.00	138,927.25	20.20	217,159.16	0.00	0.00
Lahan	1,132.45	362.29	17,715.47	422.22	19,437.96	83.63	190,075.00	157.42	51,445.27	24.55	194,489.90	0.00	0.00

Right click on the grid to export the data to Excel

6.13 Map

A basic map interface is provided using web based mapping.



The map interface provides following facilities.

a) View the SRN network

b) Zoom to Divisions and highlight/Mask

c) Export to PDF with various scales and paper size of A4/A3 in Portrait/Landscape orientation.

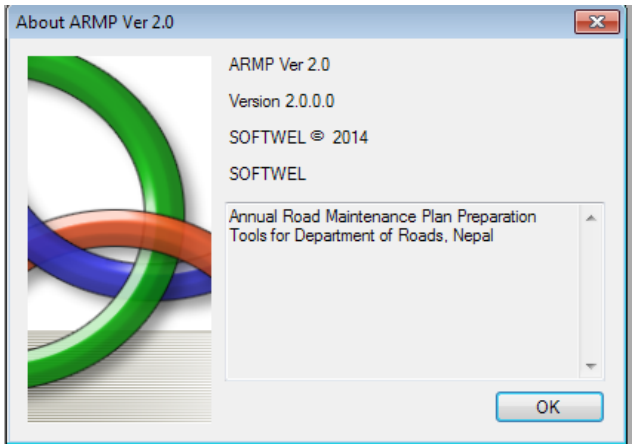
d) Overlay Google maps (Satellite, Hybrid, street, Terrain etc)

e) Search Roads using road code/link code

f) Turn On/Off various layers (Base Map and ARMP layers)

g) On screen Identification of various elements of the map.

h) Clipping of the road division boundary.

The map loading may vary with the internet speed.

6.14 Help Sub Menu (About)