



MAJOR MAINTENANCE RESERVE ACCOUNT

When capital expenditure is lumpy and / or large it is common to need to consider and model a major maintenance reserve account (MMRA/c). This tutorial describes the function of MMRA and how to code and link it to the Financial Statements.

During the operational phase of a project, capital investment is required to ensure that the project is able to continue operating as planned. Examples include, the resurfacing of runway, a planned lane widening on a toll road or the major overhaul of a generation set. Just like saving up for a rainy day the MMRA/c is designed to accumulate funds to ensure the funds are there when they are needed, if not a little before.

A MMRA/c is typically required by lenders where the maintenance cycle of the project is such that there are large maintenance costs relative to the cashflow which incurred during the operational life of the project. Lenders would be concerned in these circumstances to ensure that cash was effectively put aside equal to the estimated maintenance costs in the year in which such costs are to be incurred.

From the lenders' perspective, this is important because if that essential maintenance is not done when scheduled it may mean the ability of the project to repay the outstanding loan on time is impaired.

Funding of MMRA

The Major Maintenance Reserve Account usually funded up to certain target balance. The target balance for the MMRA might be set at 6, 12, 18, or 24 months of future major maintenance capex. It may even be a fixed amount.

Similar to DSRA, the funding method for the establishment of the MMRA is usually stated in the Term Sheet which could be one of the following:

- Funded in full on the last day of construction ;
- Partially funded on the last day of construction, then built-up.... from the project's cashflow; or
- Completely built-up from the project's cashflow.

In terms of positioning in the cashflow waterfall, the cash available to fund MMRA is usually ranked after operational cashflow but takes precedence over debt service payment.

"Reserve accounts are a key structural instrument employed on most project financings. Being able to model them properly without circular references is an important aspect of a project finance Analyst's role."

Nick Crawley, Managing Director
Navigator Project Finance

Modelling MMRA in a project finance model

The following points relate to the example used in the accompanied workbook:

- The Project has completed the construction
- Product price for revenue calculation is cyclical from year to year
- Product price dips by 20% in operational year-2
- There is a large major maintenance capex in year-2
- The Project needs to maintain a MMRA during operations
- The MMRA provides for the succeeding 24-months of capex
- Partial funding of MMRA has taken place on the last day of construction

Tutorial Assumptions					
Revenue & OpEx					
\$ are expressed as Real @ Model start date					
Production Capacity	tpd	500.00			
Plant Efficiency	%	Op Yr 1	Op Yr 2	Op Yr 3	Op Yr 4+
		85.00%	90.00%	92.50%	95.00%
Product Price	AUD/t	Op Yr 1	Op Yr 2	Op Yr 3	Op Yr 4
		375.00	300.00	300.00	300.00
Freight	%	Op Yr 1	Op Yr 2	Op Yr 3	Op Yr 4
		5.00%	5.00%	5.00%	5.00%
OpEx	AUD/t	180.00			
Major Maintenance CapEx					
Maintenance CapEx	AUD M p.a.	Op Yr 1	Op Yr 2	Op Yr 3	Op Yr 4
		2.50	20.00	2.50	2.50
Target MMRA	# months	24 Mth(s)			
MMRA Initial funding	AUD M	15.00			

Screenshot: Tutorial assumptions

Modelling the mechanics of a MMRA is similar to modelling a DSRA. Essentially, modelling the MMRA involves cash inflows and cash outflows as described below:

Cash Inflows (i.e. Additions to MMRA from project cashflows)

- Funding from Cashflow: This is funding from the project's cashflow to top-up the Major Maintenance Reserve Account to the required target balance.

Cash Outflows (i.e. Releases to project cashflow from DSRA)

- Release to Cashflow: This is the cashflow release from the available balance in the MMRA to fund the shortfall in operational cashflow to meet the maintenance capex.
- Release to Cashflow (excess cash released): This is the release from the MMRA to reduce the balance down to the target balance.



The screenshot below illustrates the elements and calculations of the MMRA. Note that the MMRA target balance is calculated as the sum of future expected maintenance capex. SUM (OFFSET) is used to calculate the dynamic target balance. Refer to our Tutorial titled *Offset Function* to learn more about this combination.

Generally, interest is earned on the opening balance of the Major Maintenance Reserve Account and is recognised in the same way interest on cash balance is in the cashflow waterfall.

Period Start	Jul-07	Jan-08	Jul-08	Jan-09	Jul-09	
Period End	30-Jun-07	Dec-07	Jun-08	Dec-08	Jun-09	Dec-09
Operations						
Major Maintenance CapEx						
Major Maintenance CapEx						
Year: Operations		1	1	2	2	3
Major Maintenance CapEx	75.0	2.5	2.5	20.0	20.0	2.5
Major Maintenance CapEx	37.5	1.3	1.3	10.0	10.0	1.3
MMRA/c						
Balance B/f		15.0	22.5	22.5	13.8	5.0
+ Funding from Cashflow	7.5	7.5	-	-	-	-
- Release to Cashflow	-	-	-	-	-	-
- Excess Cash Released	(22.5)	-	-	(8.8)	(8.8)	-
Balance C/f	15.0	22.5	22.5	13.8	5.0	5.0
Shortfall						
Cashflow from Operations	284.1	14.5	15.0	10.5	11.0	12.2
Major Maintenance CapEx	37.5	1.3	1.3	10.0	10.0	1.3
Shortfall	-	-	-	-	-	-
Available in MMRA/c	-	15.0	22.5	22.5	13.8	5.0
Release to Cashflow	-	-	-	-	-	-
Target						
Major Maintenance CapEx	37.5	1.3	1.3	10.0	10.0	1.3
Target MMRA/c	-	22.5	22.5	13.8	5.0	5.0
Funding Required for Target	7.5	7.5	-	-	-	-
Cashflow for MMRA funding	246.6	13.2	13.8	0.5	1.0	11.0
Funding from Cashflow	7.5	7.5	-	-	-	-
Excess Cash Released	22.5	-	-	8.8	8.8	-

Screenshot: Suggested layout of the calculation of MMRA

Position the MMRA in Financial Statements

In the next screenshot the Cash Inflows to / Outflows from MMRA is linked into to the cashflow waterfall, and the closing balance of the MMRA forms part of the Current Assets in the Balance Sheet.

Note that in the first year the product price is expected to be higher and hence the revenue. Thus, the MMRA is built-up to the target balance in the first year of operations.

Then the prices start to dip in the second year and at the same time there is a large major maintenance capex in year-2. But because the balance in the MMRA could be used to fund such maintenance capex, the net major maintenance capex is constant (AUD 1.25 M).

By maintaining a MMRA, lenders could ensure the funds are set aside from ongoing operations in order to be able to service such capex at given intervals – this reduces the stress of lumpy cashflows on the project and therefore on debt service.

Period Start	Jul-07	Jan-08	Jul-08	Jan-09	Jul-09	
Period End	30-Jun-07	Dec-07	Jun-08	Dec-08	Jun-09	Dec-09
Operations						
Extract of "Financial Statements"						
Cashflow Statement						
Revenue	528.2	28.6	28.9	25.4	25.7	27.5
OpEx	(244.1)	(14.1)	(13.9)	(14.9)	(14.7)	(15.3)
Cashflow from Operations	284.1	14.5	15.0	10.5	11.0	12.2
Major Maintenance CapEx	(37.5)	(1.3)	(1.3)	(10.0)	(10.0)	(1.3)
MRA/c: Addition	(7.5)	(7.5)	-	-	-	-
MRA/c: Release	22.5	-	-	8.8	8.8	-
Net Major Maintenance CapEx	(22.5)	(8.8)	(1.3)	(1.3)	(1.3)	(1.3)
CFADS	261.6	5.7	13.8	9.2	9.7	11.0
Interests	(14.2)	(1.7)	(1.6)	(1.5)	(1.4)	(1.3)
Principal Repayment	(50.0)	(2.9)	(3.0)	(3.1)	(3.1)	(3.2)
Cashflow after Debt Service	197.4	1.2	9.2	4.7	5.2	6.4
Balance Sheet						
Current Assets						
Cash @ Bank						
DSRA/c						
MMRA/c		22.5	22.5	13.8	5.0	5.0
Accounts Receivable						

Screenshot: Linking MMRA calculation to Financial Statements

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MMRA - Points to keep in mind

As with the DSRA, care is to be taken modelling the MMRA to avoid circular references. This is particularly true if the initial balance is debt-funded. There is usually no real reason for a logical circular reference to occur due to the MMRA.

An issue frequently raised by lenders is the operation mechanism of MMRA in the event of a debt service payment shortfall. If there is cash available in the MRA and the project has no other funds with which to make a payment due to the lenders, can the lenders access the MMRA in this event? In this case, it is also required to restore the balance of the MMRA if it is drawn to pay debt service.

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Navigator Project Finance Pty Ltd P +61 2 9229 7400 E enquiry@navigatorPF.com



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