



CASHFLOW WATERFALL IN PROJECT FINANCE

Cashflow Waterfall Introduction

The Cashflow Waterfall ensures that each cashflow item occurs at the correct seniority to other items. This article outlines key categories of cashflow items and how to present Cashflow Waterfall in comparison to Cashflow Statement in a Project Finance Model.

In Project Finance, a project's cashflow is summarised using a Cashflow Waterfall, which shows the priority of each cash inflow and outflow. The cashflow waterfall ensures that each cashflow item occurs at the correct seniority to other items. The cashflow waterfall becomes especially important when illustrating debt repayments of many debt tranches with reducing seniority.

Key categories of cashflow Items

A cashflow waterfall is simple in its approach, as all cashflow items are placed in the order in which they occur. The main categories of a cashflow waterfall, in order of occurrence are:

- Revenues: Operating revenues and other income;
- Expenses: Operating expenses and capital expenses;
- Tax;
- Debt Service: Principal repayments and interest paid;
- Distributions;
- Net movement in Cash Balance.

Key Summary Lines of Cashflow Waterfall

The cashflow waterfall is used to calculate key cashflow lines, which are used in different parts of project finance modelling. Key lines of the cashflow waterfall are:

- Cashflow Available for Debt Service (CFADS):
This is the most significant line which drives all debt repayment calculations and ratios including Debt Service Coverage Ratio (DSCR), Project Life Coverage Ratio (PLCR) and Loan Life Coverage Ratio (LLCR).
- Cashflow before Funding:
This line is useful as a quick check against funding to ensure that initial construction costs are being met by debt or equity
- Cashflow Available for Debt Service Reserve (or other reserve) Account;
- Cashflow Available to Equity to calculate distributions;
- Net Cashflow.

The figure below is a high level illustration of a typical cashflow waterfall. Each category will be separated into individual line items, such as individual operating costs.

It clearly shows that by going down the page, the user is able to identify the timing and seniority of each cashflow and the highlighted key cashflow lines.

Period Start	Jan-07	Jan-08	Jan-09	Jan-10	Jan-11
Period End	Dec-07	Dec-08	Dec-09	Dec-10	Dec-11
Construction					
Operations					
Cashflow Waterfall					
<u>Revenue</u>					
Spot Sales	-	-	73,265	88,685	88,732
Interest Income					
Total	-	-	73,265	88,685	88,732
<u>OpEx</u>					
Variable OpEx	-	-	(24,968)	(27,958)	(35,158)
Fixed OpEx	-	-	(1,500)	(1,500)	(1,500)
Total	-	-	(26,468)	(29,458)	(36,658)
<u>CapEx</u>					
Expansion CapEx	(39,000)	(55,000)	(8,000)	(8,000)	(3,000)
Exploration CapEx	(1,500)	(1,500)	(4,500)	(4,500)	(2,500)
Total	(40,500)	(56,500)	(12,500)	(12,500)	(5,500)
Cashflow before Funding	(40,500)	(56,500)	34,297	46,727	46,574
<u>Funding</u>					
Debt	40,500	30,000	-	-	-
Equity	-	26,500	-	-	-
Total	40,500	56,500	-	-	-
Corporate Income Tax	-	-	(6,859)	(9,345)	(9,315)
Working Capital Adjustments					
CFADS	-	-	27,438	37,382	37,259
<u>Debt Service</u>					
Interest	-	-	(4,406)	(3,403)	(2,337)
Principal	-	-	(16,056)	(17,060)	(18,126)
Total	-	-	(20,462)	(20,462)	(20,462)
Cash Available for Reserve A/c	-	-	6,975	16,919	16,797
Reserve: Addition					
Reserve: Release					
Cash Available to Equity	-	-	6,975	16,919	16,797
Dividends Paid	-	-	(6,975)	(16,919)	(16,797)
Net Cashflow	-	-	-	-	-
Cash Balance B/f	-	-	-	-	-
Cash Balance C/f	-	-	-	-	-

Screenshot #1: Example of presenting cashflow waterfall in Project Finance model



"Cashflow waterfall analysis is fundamental in project finance and is an area of ongoing emphasis in all our training courses. When analysing a Project Finance transaction a 'cashflow statement' in the traditional sense is useless."

Nick Crawley, Managing Director
Navigator Project Finance

Comparison of a Cashflow Statement and a Cashflow Waterfall

Presentation

The cashflow statement presents information in three key categories: Cashflow from Operations: Cashflow from Investing and Cashflow from Financing, which are standalone from each other.

Seniority of Items

The cashflow statement does not order cashflows in order of seniority, thereby making it less efficient when analysing a project's debt repayment ability. The cashflow waterfall clearly shows the amount of cashflow at each level as described in the Term Sheet.

Investors or Financiers?

The cashflow statement provides information that can be readily analysed from an external investor's perspective, whereas the cashflow waterfall provides information that can be easily analysed by the banks.

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- Project Finance Modelling (B)
- Debt Modelling Masterclass
- VBA for Financiers

The screenshot below is a high-level illustration of a cashflow statement. When compared with the structure of the cashflow waterfall above, the differences are easily identified.

Period Start	Jan-07	Jan-08	Jan-09	Jan-10	Jan-11
Period End	Dec-07	Dec-08	Dec-09	Dec-10	Dec-11
Construction					
Operations					
Cashflow Statement					
Net Earnings	-	-	39,938	49,882	42,759
Adjustments to Cash					
Working Capital Adjustments	-	-	-	-	-
Reserve Account Adjustments	-	-	-	-	-
Depreciation					
Tax Payable Adjustments					
Cashflow from Operations	-	-	39,938	49,882	42,759
Expansion CapEx	(39,000)	(55,000)	(8,000)	(8,000)	(3,000)
Exploration CapEx	(1,500)	(1,500)	(4,500)	(4,500)	(2,500)
Cashflow from Investing	(40,500)	(56,500)	(12,500)	(12,500)	(5,500)
Debt Funding	40,500	30,000	-	-	-
Equity Funding	-	26,500	-	-	-
Debt Service	-	-	(20,462)	(20,462)	(20,462)
Dividends Paid	-	-	(6,975)	(16,919)	(16,797)
Cashflow from Financing	40,500	56,500	(27,438)	(37,382)	(37,259)
Cashflow for FY Ended Dec	-	-	-	-	-

Screenshot #2: Illustration of a cashflow statement

Points to Consider

The term sheet specifies the seniority of certain categories, such as reserve accounts.

The addition of an Annual Cashflow Waterfall significantly improves the usability of the model, as it facilitates analysis at a high level. This is efficiently coded using the SUMIF formula based on Calendar Year, Financial Year or Operating Year.

Ensure that debt is being repaid according to seniority of the tranches. This is especially important in downside sensitivity or scenario analysis, where the operating cashflows are highly stressed.

The cashflow waterfall is used to calculate the net movement in the cash balance and also the Cash Closing Balance. Adding an integrity check to this line that indicates whether the Closing Cash Balance (or Balance Carried Forward - Balance C/f) is negative, is a critical component of a complete model. If this integrity check is not added a project can appear to be funded by a negative cash balance which is not a realistic scenario.

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Founded in 2004, Navigator Project Finance Pty Ltd (Navigator) is the project finance modelling expert. Headquartered in Sydney, Australia, Navigator is raising the global benchmark in financial modelling services to the project finance sector. Navigator designs and constructs financial models for complex project financings, offers training courses throughout the Middle East, Asia and Europe, and conducts independent model reviews of project finance transaction models. Navigator delivers fast, flexible and rigorously-tested project finance services that provide unparalleled transparency and ease of use.

Customers include market leaders such as Deutsche Bank, ANZ Investment Bank, Bovis Lend Lease, Oxiana, Mirvac Property, Westpac and the Commonwealth Bank of Australia, together with leaders from the finance, mining, property, utilities, banking, chemical and infrastructure sectors.

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