وزارة السياحة اللبنانية
MINISTÈRE LIBANAIS DU TOURISME
LEBANESE MINISTRY OF TOURISM

Jeita Grotto – Conservation, Safety & Operations Upgrade (BOT)

Preliminary Financial Feasibility Study

June 2026



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1. INTRODUCTION

1.1. Project Background

Jeita Grotto is one of Lebanon's most iconic natural landmarks and a globally recognized heritage site, located 18 km north of Beirut. Spanning nearly 9 km, it is one of the most significant karstic cave systems in the Middle East, featuring exceptional geological formations, including the world's longest known stalactite (8.2m). The grotto consists of two main levels: the Upper Cave, showcasing monumental chambers and formations, and the Lower Cave, traversed by an underground river and explored via boat tours. Together, they offer a unique visitor experience combining natural beauty and scale.

Beyond tourism, Jeita plays a critical national role as a major water source, supplying drinking water to over one million people. Given its ecological sensitivity and cultural importance, preservation and sustainable management are essential to protect its fragile environment while supporting tourism and public use.

The performance of Jeita Grotto is closely tied to broader market conditions, including airport traffic, macroeconomic trends and security stability. The sector has experienced volatility in recent years due to the economic and geopolitical factors, but it is expected that the market will witness slow recovery of tourism activity, underpinned by rising visitor arrivals to Lebanon.

Limited investment in core infrastructure over recent years has resulted in deterioration risks, particularly with respect to site safety and visitor experience. A detailed site assessment has been undertaken to identify priority infrastructure gaps and required interventions. In response, the Ministry intends to engage an operator under a 4-year contract to implement upgrade, and rehabilitation works, while simultaneously managing and operating the site.

1.2. Objective of the Study

This exercise aims to determine an appropriate **fee structure** payable to the **Ministry of Tourism (MoT share)**, while ensuring that the project remains financially viable and attractive to the operator/investor. The assessment takes into consideration the following:

- The capex to be invested by the Operator to upgrade the grotto and ensure safety of the site and that are outlined in the Scope of Works;
- The revenues which may be generated from the operation of the Grotto during the 4-year period; and
- Their target return on equity invested into the project.

This study has been prepared exclusively for the Public Procurement Authority and should not be shared with investors or any third parties, nor construed as a substitute for their own independent due diligence or assessment.

1.3. Structure of the Report

To deliver on the above objective, the following report includes:

- **Methodology & Key Assumptions –** Outline of the approach adopted to assess the project's financial performance and key parameters;

- **Capital Expenditure Requirements –** Estimate of the capital investment required to undertake the proposed works, including core construction costs, soft costs, contingencies, and financing costs incurred during construction. This is considered as a key input in assessing the operator/investor's ability to generate the required return while paying fees to the Ministry of Tourism;

- **Revenue Assumptions –** Estimate of the income which may be generated over the forecast period. This considers the forecast number of visitors, any adjustment of ticket prices, and other revenue streams generated from the operation of the Grotto;

- **Operating Costs –** Breakdown of the ongoing expenses required to operate and maintain the asset, including staffing, utilities, maintenance, and other operational expenditures based on historic performance;

- **Financial Results –** Assessment of the project's financial performance, including the returns achievable by the operator/investor after accounting for the proposed revenue share and fees payable to the Ministry of Tourism and the Municipality of Jeita. This section evaluates the balance between the Ministry's share of project revenues and the operator/investor's ability to achieve the required return on equity, taking into consideration projected revenues, operating costs, capital investment requirements, and debt repayment obligations;

- **Sensitivity Results -** evaluates how changes in key assumptions like the number of visitors and Ministry of Tourism fees impact the project's financial performance and the return to the operator/investor.



2. METHODOLOGY & KEY ASSUMPTIONS

2.1. Approach

The feasibility analysis for the project has been conducted using the Discounted Cash Flow (DCF) method — a widely accepted approach for evaluating project viability. Under this method, all project-related costs and revenues are projected and adjusted for inflation over the project lifecycle. The resulting cash flows are then discounted back to the project start date to determine their present value.

The image below provides a summary of the methodology adopted for the financial analysis.

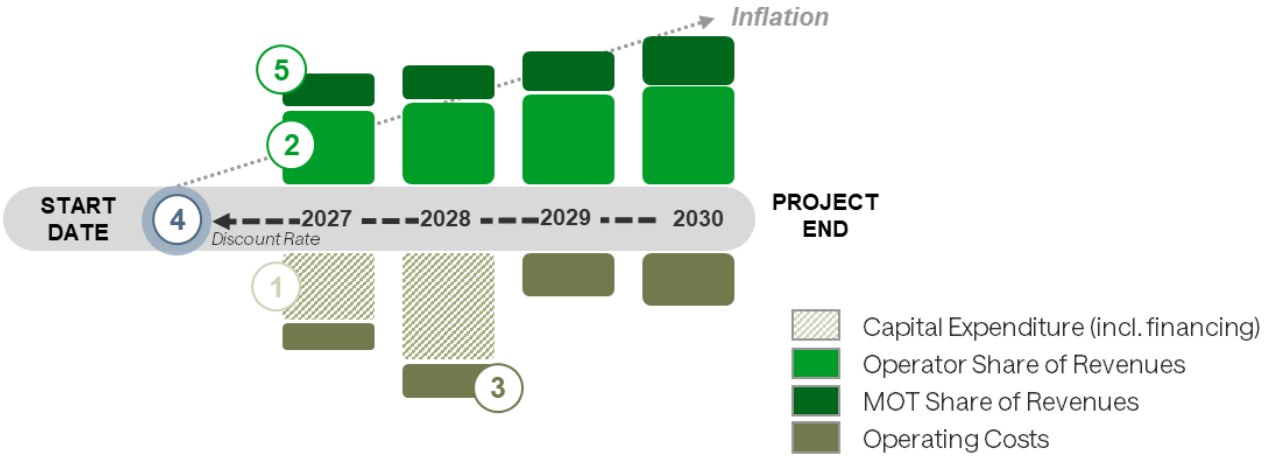


Figure 1 - Discounted Cash Flow Methodology

1. The capital expenditure required to undertake the proposed works based on site assessment and proposed interventions, including soft costs, contingencies, and financing costs.
2. Potential revenues which may be generated are forecast based on historic performance, expected visitor numbers and ticket prices. This accounts for the share payable to the Municipality of Jeita.
3. The associated costs of operation and maintenance – covering all labour and non-labour costs - are equally estimated and accounted for.
4. Revenues and opex are mapped over the 4-year term and adjusted for inflation. Cashflows are subsequently discounted back to the present in line with weighted average cost of capital.
5. The resulting cash flows are assessed to determine the level of Ministry of Tourism fees that may reasonably be secured, while allowing the operator/investor to cover operating costs, debt repayments, and achieve the target return on equity.

2.2. Key Assumptions

This sub-section presents the key assumptions underlying the financial analysis, along with the rationale for each.

2.2.1. Currency of the Analysis

The financial evaluation has been undertaken in United States Dollar (USD) given expectations that main cost items – in addition to a large share of revenues - are expected to be incurred in USD. Note that all values presented in this analysis are on a pre-tax basis and therefore exclude any applicable taxes, including Value Added Tax (VAT), income tax, or other statutory charges.

2.2.2. Inflation Rate

Nominal inflation rates in Lebanese Pound have fluctuated significantly over the past five years, reflecting Lebanon's economic and monetary instability. However, inflation is expected to gradually stabilize throughout the projected period.

In line with the use of USD as the main currency of analysis, US CPI as reported by the IMF (World Economic Outlook) has been used as a basis for adjusting cashflows. On this basis, the inflation rate is forecast to normalize at approximately 2.1% over the long term.

2.2.3. Phasing Schedule

As noted previously, the Ministry of Tourism is seeking a partner for Jeita Grotto to implement agreed-upon improvements and operate the site for a period of 4 years. In conducting the analysis, the following is assumed:

- Start date of January 1st 2027 – this reflects sufficient time to float the tender, evaluate bids, select the preferred bidder, conduct negotiations and sign the final agreement.
- 2 years of capital improvements in 2027 and 2028.
- The site is assumed to remain operational even during the identified improvements – as such, revenues and operating costs are also incurred in this period.

2.2.4. Financing Structure & WACC

As part of the analysis, it is assumed that any investor coming on board would need to mobilise a share of debt to finance proposed improvement works – the cost of servicing any loan is factored into the analysis to assess the operator/investor's ability to achieve the target return on equity under the proposed MoT fee structure.

The financial sector in Lebanon has been particularly hit by the current economic situation in the country – high levels of uncertainty and risk have also translated into higher interest rates (estimated at over 11%) and limited availability of loans. As such, it is anticipated that any Investor be required to provide a higher share of equity than may typically be the case – rather than an equity contribution of 20-30%, under the base case, it is assumed that equity will account for 50% of funding. However, the impact of full equity is also considered for the Base Case results. It is to be noted, that while the cost of debt in Lebanon has risen in recent years, the cost of equity too has been affected; the higher cost of equity increases the return threshold required by the investor/operator and therefore affects the level of MoT fees that can be supported while maintaining project attractiveness.

The below are the assumptions adopted with relation to financing:

1. The capital improvements are assumed to be financed through 50% debt and 50% equity;
2. The cost of debt is estimated at 11% with a 4-year loan tenor, including a 2-year grace period, with a 50% loan-to-value ratio.
3. The cost of equity is estimated at 32%. This rate represents the return required by equity investors to compensate them for investing in the project and bearing its residual risk. For this analysis, the cost of equity was estimated using a CAPM-based approach, adopting the US 10-Year Treasury yield of 4.35% as the USD risk-free rate, and applying a beta of 0.90 to the equity risk premium of 30.89%.

On the basis of the above, a Weighted Average Cost of Capital (WACC) of 21% has been applied to discount cashflows as part of the analysis.

3. CAPITAL EXPENDITURES

The required total investment to undertake the proposed renovation and upgrade works at Jeita Grotto is estimated at USD 2.32 million; the table below outlines indicative cost estimates for the proposed works.

Table 1: Estimated Capex Breakdown by Project Component

Item	Description	Cost (USD)
01	Parking	$ 309,264
02	Lower Cable Car	$ 141,731
03	Upper Cable Car	$ 295,921
04	Tech.Rms	$ 56,000
04a	Equipment	$ 382,000
05	Open Areas	$ 247,745
06	Administration	$ 2,900
07	Restaurant	$ 14,600
08	Lower Grotto	$ 348,164
09	Upper Grotto	$ 519,767
	TOTAL	**$ 2,318,092**

It is noted that these are intended solely to provide a rough order of magnitude and have been prepared in the absence of any preliminary design. Accordingly, the actual construction costs may vary significantly based on detailed design development, site conditions, procurement strategy, market conditions, operator methodologies, risk allocation, and other project-specific factors.

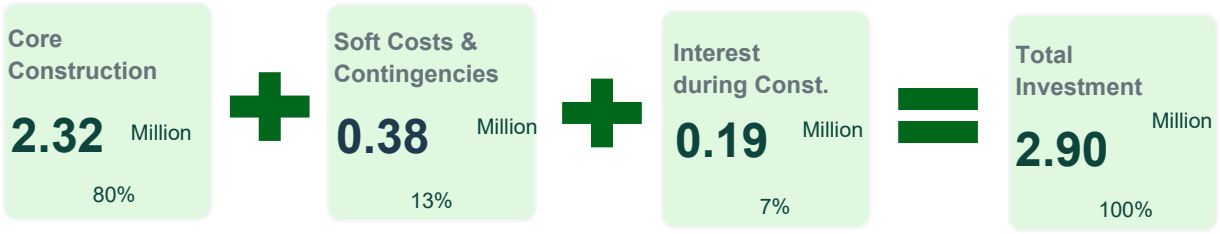
To account for these uncertainties, the capex considered in the analysis equally accounts for soft costs and contingencies:

- Soft costs have been assumed at 5% of core construction costs. These include studies, project management, rehabilitation supervision etc.
- Contingencies are set at 10%, accounting for potential design changes, cost overruns, and execution uncertainties.

In addition, IDC has been incorporated as part of the total investment to capture the financing cost incurred during the construction period, including the impact of time value of capital and inflation embedded within financing rates.

The analysis assumes 75% of capex is incurred in 2027, and the remaining 25% in 2028.

When the above are all factored in, a total capex of USD 2.9 million for works has been considered in the financial analysis.



4. REVENUE ASSUMPTIONS

4.1. Historic Performance

4.1.1. Visitor Numbers

The below chart outlines the number of visitors to Jeita Grotto in the period 2014-2024. As evident, in the period 2014-2019, visitor numbers were broadly stable with gradual growth from 164,000 visitors to over 200,000 visitors; the Grotto recorded an average of 190,000 visitors per year in this period and saw an average increase in visitor numbers of around 4.5% (CAGR).

The superseding period characterised by the global health pandemic and economic/ political instability led to more fluctuation in visitor numbers with the Grotto closed at various times. As a result, visitor numbers plummeted in 2020 to approximately 25,000 visitors and increased to 55,000 by 2022. Visitor numbers reached a peak in 2023 at 319,000 – this is largely attributed to the devaluation of the currency which led to a drop in the real value of ticket prices when paid in LBP (and before re-adjustment of the exchange rate). In 2024, the Grotto was again closed for a period as a result of the wider situation leading to slightly lower visitation at 175,000.

As a result, the period 2014-2019 provides a more reliable benchmark of visitation to the Grotto and has been used to inform projections moving forward.

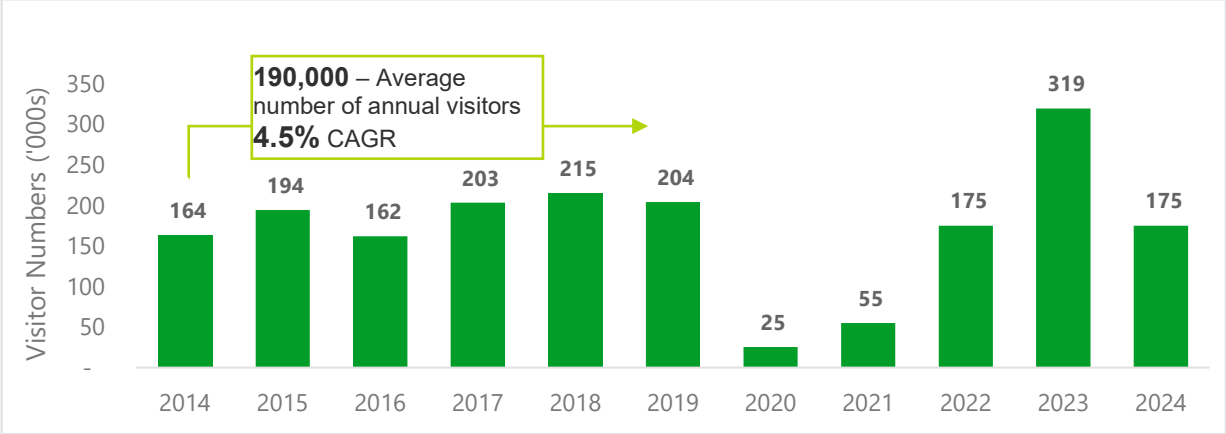


Figure 2 - Jeita Grotto Visitor Numbers (in '000s, 2014-2024), Source: Jeita Municipality

4.1.2. Historic Revenue Performance

According to the Profit and Loss statement dated (July 2025-March 2026) shared by Jeita Municipality, total revenues generated in that period amounted to USD 1.37 million. As outlined by the table below:

- Ticket sales accounted for 92.4% of total revenues – of this, adults account for the higher share owing to higher visitor numbers (82% of total) and higher ticket prices (67% higher) than children. As a result, adult tickets represent ~82% of total revenues, while children's tickets contribute ~11%. The average weighted ticket price without tax was accordingly USD 12.56 – or USD 13.94 inclusive of tax. For reference, ticket prices before 2019 were USD 12 for adults – as such, there has been one revision of prices in that time;
- Other revenues include parking, rentals (F&B concessions) and events but these individually account for less than 4% of total revenues.

With relation to the latter, it is noted that, historically, revenues generated from rentals and events was higher; data provided by the Ministry of Tourism indicates that in the period 2009- 2019, ticket sales accounted for 80% of total revenues. In the reported period (July 2025- March 2026) it is understood that limited to no events were held and that restaurants were not fully operational – thereby explaining the fall in their relative importance.

Table 2: Revenues Generated by Jeita Grotto - July 2025 - March 2026

Values in USD	Ticket Value (with VAT)	Ticket Value (without VAT)	Number of Visitors	Revenue Breakdown
Adult tickets	15.00	13.51	83,272	1,125,296
Children's tickets	9.00	8.11	17,826	144,532
Parking				53,211
Rentals				33,505
Events				18,018
Total				**1,374,562**



Figure 3 – Revenue breakdown (July 2025-March 2026) (Jeita Grotto Municipality)

4.2. Projected Number of Visitors

Taking into account historic performance, the Base Case considers that 180,000 visitors will visit Jeita Grotto in the first year – and will grow by around 5.8% annually in line with historic trends. This figure reflects:

- A capture rate of around 5% of projected tourist arrivals estimated at approximately 3.6 million by 2027, which helps rationalise and validate demand rationale;
- Assumptions around recovery and stabilisation of the country; and

- Expectations of an increase in ticket price (outlined in the next section) which will moderate visitor flows as compared to 2023.

In addition, the analysis considers an Optimistic/ Best Case Scenario where a starting figure of 200,000 visitors is achieved in 2027 – in line with pre-COVID visitor flows, as well as a Conservative Case which assumes **150,000 visitors**, reflecting the trend observed between 2020 and 2024.

The base analysis adopts the Base Scenario forecasts; the Sensitivity Tests presented in Section 6 test the impact of the Conservative and Optimistic visitor numbers on financial performance and results.

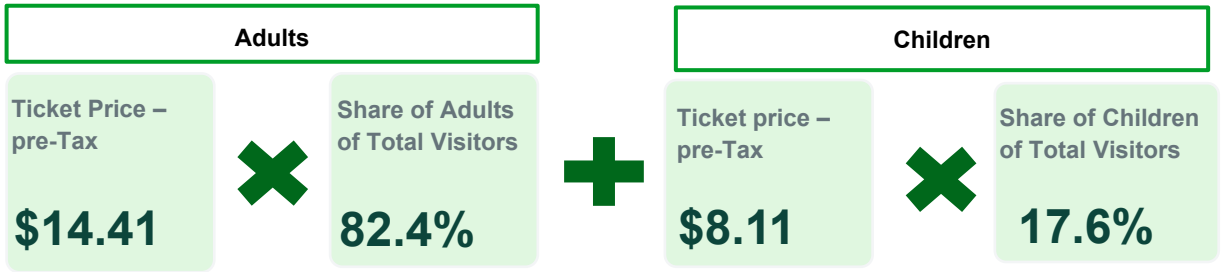


Figure 4 - Projected Grotto Visitors ('000s) under the three scenarios, 2027-2030 (Consultant's Analysis):

4.3. Ticket Price

As presented above, adult ticket prices stood at USD 15 in 2025, with children's ticket prices priced at USD 9. Following discussion with the Ministry of Tourism and benchmarking conducted by the Ministry of similar cave destinations globally, there are aspirations to further increase the ticket price to USD 16 for adults (after tax).

For the purpose of the analysis, a blended pre-tax rate of **~ $13.30** is assumed over the four-year projection period, reflecting the weighted mix of adult and child ticket holders.



4.4. Projected Revenue

Given the above visitor numbers and ticket prices and considering that ticket revenues will account for some 80% of total revenues, gross revenues are projected to increase from approximately $2.99 million in 2027 to approximately $3.85 million by 2030.

Of these revenues, a share of 12.5% of gross ticket revenues will be paid to the Municipality of Jeita – this comprises the fixed per-ticket fee allocation and the 5% share of net investor proceeds, as established under Decree No. 9930 dated 21 February 2013.

Once this payment is accounted for, net revenues collected by the Operator will start at USD 2.69 million and increase to USD 3.5 million by 2030. It is noted that this excludes any payment to the MOT which is derived on the basis of the financial analysis in Section 6.

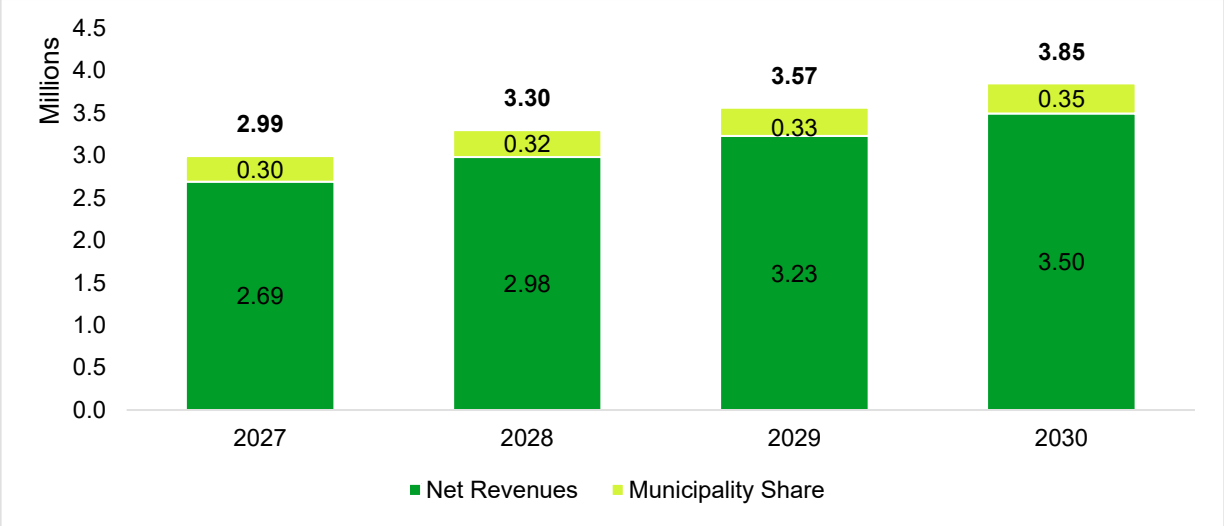


Figure 5 – Total revenue and Municipality fee in USD, 2027-2030 (Consultant's Analysis)

5. OPERATING ASSUMPTIONS

5.1. Historical Data

Operating Expenditure (OPEX) refers to the ongoing costs required for the daily operation of the facility, ensuring its efficiency and long-term sustainability. These expenses are influenced by factors such as visitors' forecasts, operational requirements, maintenance and staffing needs.

The below table provides a breakdown of the operating expenses incurred by Jeita Municipality in the period July 2025 and March 2026. As evident, the 9-month period was associated with total operating expenses of USD 895,537. This excludes the MOT Tax of 40% which has already been outlined as the current analysis deducts this payment directly from revenues.

As evident, salaries and maintenance account for the largest cost drivers, and alone account for around 86% of operating costs.

Table 3: Operating Expenses July 2025 - March 2026 in USD

	Operating Expenses in USD	Comments
Security Guards	96,522	Excluded – covered by salaries
Raw materials	13,514	Included
Consumables	21,998	Included
Transaction Costs	453	Included in other fees
Maintenance	439,956	Apply a discount
Business Services	75,401	Included
Reception	7,991	Excluded – covered by salaries
Insurance Premiums	6,710	Included in Other fees
Salaries	224,466	Excluded – covered by salaries
Tax on Salaries	7,805	Not included
Legal Fees	720	Included
Exchange rate difference	2	Included
Total	**895,537**	

Source: Municipality of Jeita

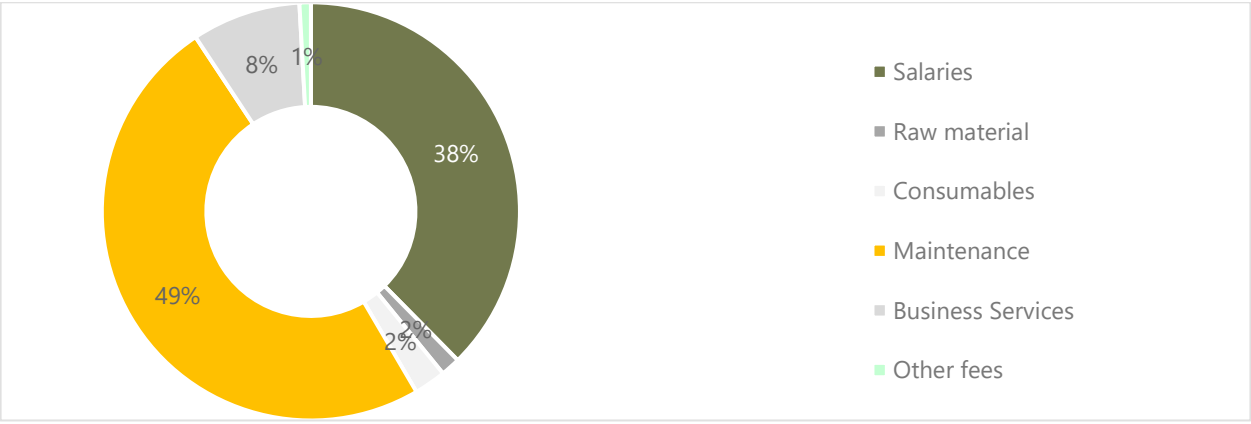


Figure 6- Operating expenses breakdown (July 2025-March 2026)

Separately, monthly data on salaries paid by Jeita Grotto and the number of employees were received – these reflected differences as compared to the below table as they indicated total cost of salaries reached USD 435,646 over the 9-month period (as compared to USD 328,792 based on the security, reception and salaries below). Data on salaries indicated that:

- The number of employees fluctuated month-on-month from 58 employees up to 78 employees;

- Average daily salary was around USD 24 – though this ranged between USD 18.21 to USD 26.00 over the 9-month period;
- Average monthly salary averaged around USD 731.36 but reached USD 806 in October, and exceeded USD 785 for 4 months of the 9-month period.

In the financial analysis, the salary data in the table above was excluded from operating costs. In lieu, an estimate was taken on the number of employees and average monthly wage to calculate the annual cost of salaries.

5.2. Opex Assumptions

Building on the above, the following operating costs were considered:

- **Salaries**: a total of 80 FTE on an average monthly salary of USD 806. This is a conservative estimate considering the upper bounds of both FTE and wages.
- **Maintenance**: it is assumed that the cost of maintenance will be lower in light of capital improvements in the early years.
- All other cost items broadly are aligned to the estimates outlined in the above table.

On this basis, the total operating cost for 2027 is estimated at **USD 1.28 million**; this is assumed to grow annually at a rate of 3% in line with inflation.

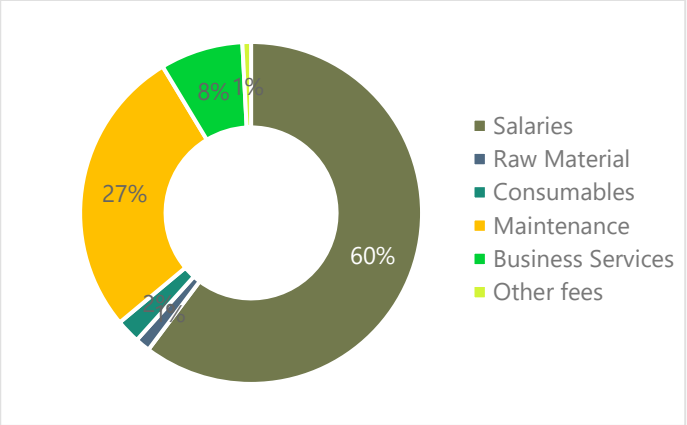


Figure 7 - Projected Operating expenses breakdown, Source: Consultant's Analysis

As noted above, any payment to the Ministry of Tourism and Jeita Municipality is not outlined as an opex as it has directly been deducted from gross revenues above; as such, this purely reflects the costs of operating and maintaining the grotto.

The below outlines the increase in operating costs over the 4-year duration, as well as the ratio of opex over gross revenues (i.e. reflecting the operating margin).



Figure 8 - Operating expenses in USD M and OPEX ratio, 2027-2030, Source: Consultant's Analysis

6. FINANCIAL ANALYSIS

6.1. Cashflow Analysis

Based on the key assumptions outlined above, a high-level financial feasibility assessment has been undertaken to evaluate the project's operating performance under the proposed fee structure. The cash flow statement below reflects the capex incurred, the revenues generated from the operation of Jeita Grotto, the fees payable to the Municipality of Jeita, and the operating costs required to manage and maintain the asset over the 4-year period.

Table 4: Operating Cashflows

Values in USD	2027	2028	2029	2030
Capex	2,081,192	823,871		
Revenue	2,993,054	3,301,000	3,565,384	3,850,844
Municipality Fee	299,305	316,599	334,889	354,228
Net Revenue	2,693,749	2,984,401	3,230,495	3,496,616
OPEX	1,311,146	1,378,975	1,450,314	1,525,343
Net Cashflow	**-698,589**	**781,555**	**1,780,181**	**1,971,273**
Operating Margin	49%	46%	45%	44%

Source: Consultant's Analysis

Initial capex in 2027 and 2028 is estimated to amount to USD 2.9 million – with the majority (75%) incurred in 2027. In parallel, revenues are projected to grow from USD 2.99 million in 2027 to USD 3.85 million by 2030, driven by increasing visitor demand and ticket price adjustments; of this, 12.5% of ticket sales is payable to the Municipality of Jeita. When these are accounted for, net revenues reach USD 3.5 million by 2030. Additionally, operating expenditures increase from USD 1.31 million to USD1.53 million.

As a result, net cashflows are negative in 2027 at USD -698,590, but is subsequently positive and increases to USD 1.97 million by 2030, reflecting strong underlying operating performance and the asset's ability to generate sustainable cash flows as revenues scale.. Average operating margins (calculated as Opex over Net Revenue) range between 44% and 49%.

6.2. Implications on MOT Share

The above cashflows were used to assess the potential Ministry of Tourism fee structure which could be considered. 4 options were tested, as below:

1. 15% in Years 1 and 2, increasing to 20% in Years 3 and 4.
2. MoT fee fixed at 20% throughout the projection period.
3. MoT fee grace period during the first two years, followed by 40% in Years 3 and 4.
4. Gradual MoT fee ramp-up from 10% in Year 1, 20% in Year 2, 30% in Year 3, 40% in Year 4.

As evident by the below results, Option 1 offers the most balanced outcome, generating a return on equity of around 20% and an average annual cash return of approximately USD 291,940 for the operator/investor. This indicates that a lower Ministry of Tourism fee during the first two years may be preferable to preserve the Investors' cashflows but can be ramped up once capital improvements are complete.

Under Option 2, where the Ministry of Tourism fee is fixed at 20% throughout the projection period, the return on equity declines to around 15%, with average annual cash return decreasing to approximately USD 213,260. While this structure provides a higher fee to the Ministry of Tourism during the early years, it reduces the operator/investor's retained cash flows and weakens the project's attractiveness compared to the Base Case. Given the current economic and political climate and risks in the country, a threshold of around 20% is viewed as the minimum an Investor would consider.

Under Option 3, where no Ministry of Tourism fee is paid during the first two years followed by a higher fee of 40% in Years 3 and 4, the return on equity declines further to around 11%, with an average annual cash return of

approximately USD 157,150. Although the grace period supports cash flows during the early years, the sharp increase in fees during the later years materially reduces retained earnings and limits the overall return to the operator/investor.

Option 4 represents the most aggressive fee ramp-up, reaching 40% by Year 4. Under this scenario, the return on equity is reduced to almost 0%, with an average annual cash return of only approximately USD 6,410. This indicates that a steep increase in Ministry of Tourism fees significantly constrains the operator/investor's ability to generate an acceptable return and would materially reduce the financial attractiveness of the project.

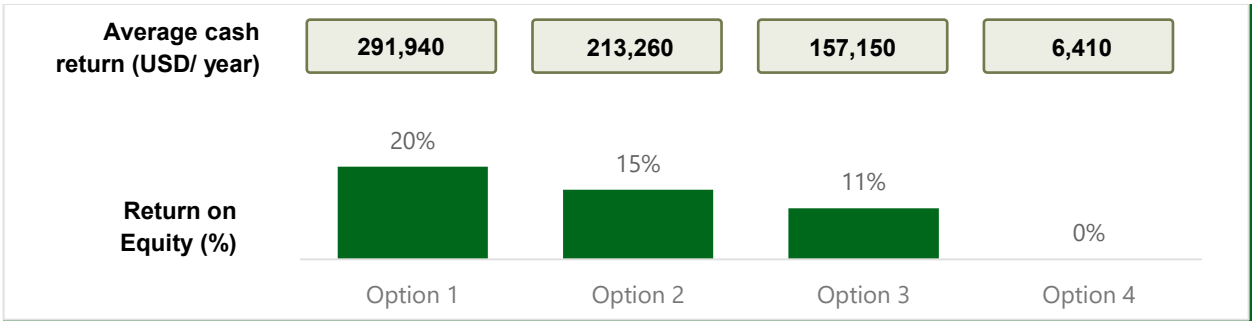


Figure 9 – Return on Equity under the Alternative MoT Payment Scenarios (Consultant's Analysis)

Overall, the analysis indicates that the Ministry of Tourism fee structure has a direct and material impact on investor/operator returns. Higher and more front-loaded fee obligations reduce retained cash flows and lower the return on equity, while a more gradual and balanced fee structure helps preserve project viability. Based on the analysis, the recommended MOT fee structure is: 15% in Years 1 and 2, increasing to 20% in Years 3 and 4. As noted, this appears to provide the most appropriate balance between securing revenues for the Ministry of Tourism and maintaining sufficient attractiveness for private-sector participation. On this basis, the below outlines the estimated payments to the MOT.

	2027	2028	2029	2030
MoT Fee	448,958	495,150	713,077	770,169

6.3. Results

When accounting for the recommended MoT share of revenues, project-level cash flows become more negative in the 1st year due to the added payment to the MOT, before turning positive from 2028 onwards. Operator cash flows now grow to USD 1.2M by 2030 (as compared to USD 1.97 million before MOT payments).

Equity cash flows similarly are negative in the first year, before turning positive from 2028 onwards. Cash flows increase steadily thereafter, reflecting improved operating performance, although returns remain partially constrained by financing obligations. A total equity investment of USD 1.45 million, representing 50% of the total required capital, would be required. Under the adopted MoT fee structure, the operator/investor is expected to receive an average annual cash return of approximately USD 300,000 over the 4-year period, generating an equity NPV of approximately USD 462,000.

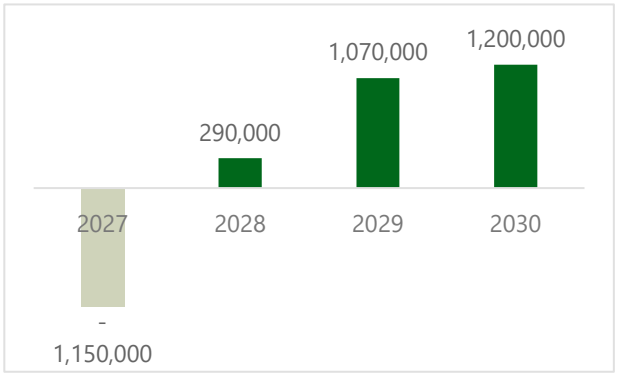


Figure 11 - Project cashflow in USD, 2027-2030, Source: Consultant's Analysis

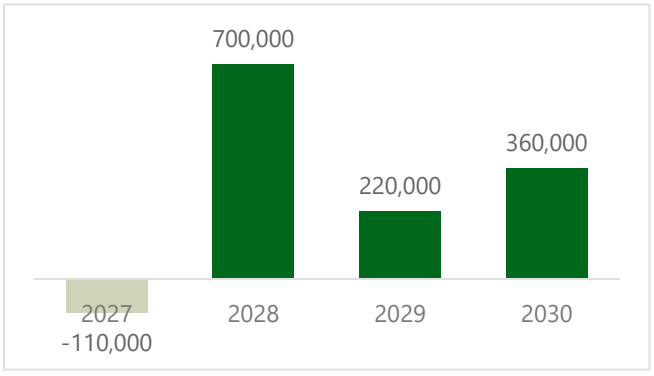


Figure 10 - Equity cashflow in USD, 2027-2030, Source: Consultant's Analysis

7. CONCLUSION

Overall, the analysis shows that Jeita Grotto is a financially sound tourism asset with significant potential for income generation, backed by the site's established status as a major national attraction and the anticipated rebound in tourism demand.

The financial analysis takes into account:

- A total capex of 2.9 million – comprised of USD 2.34 million in core improvement works, as well as soft costs, contingencies and financing costs.
- Visitor numbers commencing at 180,000 in 2027 and growing by around 5% thereafter;
- An increase in the Adult ticket price to USD 16, with the average weighted ticket price increasing to USD 13.30;
- A full-time staff of 80 employees at an average monthly salary of USD 806;
- Municipality payment of 12.5% of ticket revenue, calculated as a percentage of revenue
- Initial capital would be financed through 50% equity and 50% debt with a cost of debt of 11%; and
- Full contract duration is 4 years – with 2 years of capital improvements in 2027 and 2028.

On this basis, the potential Ministry of Tourism fee structure was assessed. This considers the amount payable by the Investor while still enabling them to achieve a threshold return on equity. 4 options were tested to understand implication on returns and on this basis, the optimal payment structure recommended is: 15% in Years 1 and 2, and increasing to 20% in Years 3 and 4.

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