

VALUE, SUSTAINABILITY AND HERITAGE IMPACT

Current estimates are that commercial archaeology had a global value in 2018 of £1.5 billion pounds.

At the ClfA Conference in Leeds, Christopher Dore made the business case that to have a large heritage impact, organisations must be sustainable. And to be organisationally sustainable requires an ongoing increase in financial value.

These linkages and prerequisites had little relevance a professional generation ago when archaeology was funded through public sources or wealthy patrons. But today archaeology has been privatised. Current estimates (Heritage Business International and Landward Research) are that commercial archaeology had a global value in 2018 of £1.5 billion pounds (US\$ 1.8bn). In private archaeology, growth in financial value is essential for sustainability and impact.

Dore's ClfA lecture presented the case for value growth and its importance, but didn't show how value is calculated and measured. Measuring value is the topic of this article. Financial value is defined as the intrinsic worth of a financial asset, for example a department, a project, a person, a business line, etc. Intrinsic worth is derived from the long-term cash-flow-generating ability of the asset. The ability of the asset to generate cash flow, over a period of time, is measured by the *discounted free cash flow*.

What is free cash flow and why is it discounted? Free cash flow is cash that is available to an organisation's financial stakeholders (eg creditors and shareholders) after accounting for all capital expenditures such as buildings or property, plant, and equipment. Free cash flow is used by heritage organisations to expand, develop new services, make acquisitions, pay dividends and reduce debt. Discounting is a way to account for the 'time value' of money. A pound today doesn't have the same value as a pound five years from now. The value today of a future amount of money (such as the payment made at the end of an archaeological project) is called the *present value* and is calculated as

$$Present\ Value = \frac{1}{(1+r)^n}$$

where *r* is the discount rate and *n* is the number of periods (typically years). Thus, if someone gave you £150 five years from now, assuming an annual inflation rate of 3 per cent, the present value would be

$$£129.39 = \frac{£150}{(1+.03)^5}$$

We can use this approach to look at the value growth (called *real growth*) versus the growth in today's pounds (*nominal growth*) for commercial archaeology in the UK.

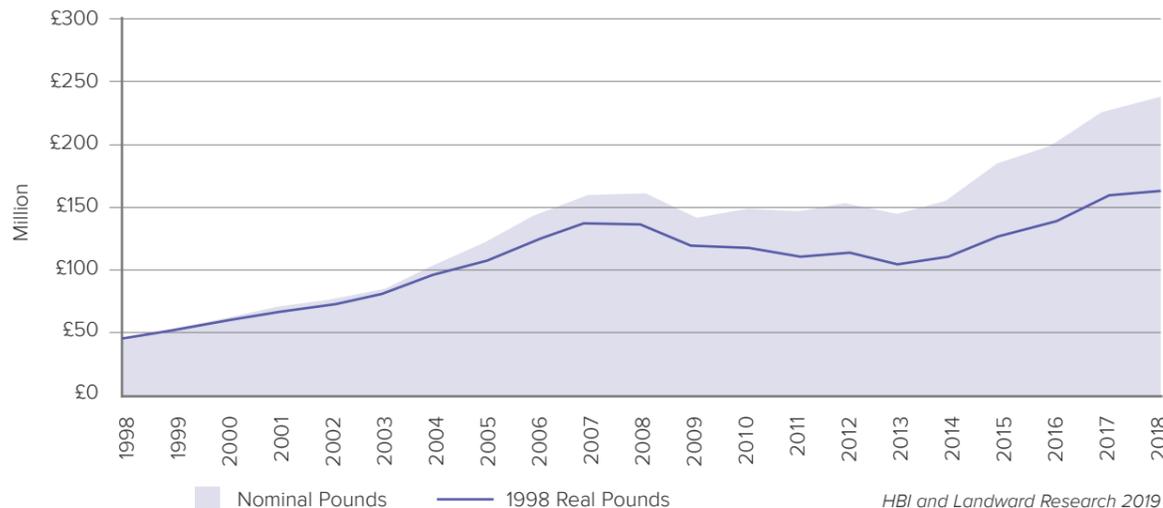


Figure 1: UK commercial archaeology in nominal and real pounds

In Figure 1, the blue line represents real growth (inflation accounted for). Everything above the blue line is simply inflation.

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Commercial archaeological organisations need capital to undertake projects. Typically, clients pay at the end of a project and, between the start of the project and getting paid, there are many business expenses, including the salaries of the archaeologists doing the work. Thus, capital must be obtained prior to starting the project. Most heritage companies will borrow this money (purchase debt), issue stock (sell an ownership stake in the firm), or use retained earnings, and there is a cost to using it. When all sources of capital are considered, their cost is called the *Weighted Average Cost of Capital* (WACC). For value purposes, the WACC is what is used for the discount rate in the present value (or net present value) calculation

$$WACC = \frac{E}{E+D} (Re) + \frac{D}{E+D} (Rd) (1-T)$$

where *Re* = Cost of Equity (%), *Rd* = Cost of Debt (%), *E* = Market Value of Equity (£), *D* = Market Value of Debt (£), and *T* = Corporate (Corporation) Tax Rate (%) (the fact that some heritage organisations are constituted to not pay Corporation Tax is discussed below).

Let's start with debt, and in this case, it is long-term (more than a year) debt that is of interest.

Debt	Amount	Cost (Interest)	Cost (Pounds)	Weighted per cent
Bank loan 1	£21,734	6.50%	£1,413	
Bank loan 2	£7,569	5.50%	£416	
Car loan	£15,468	4.25%	£657	
Loan from director	£10,000	2.35%	£235	
TOTAL	£54,771		£2,721	4.97%

We now have two of the figures for the WACC equation: market value of debt (£54,771) and the cost of debt (4.97%).

The cost of equity is calculated using the *Capital Asset Pricing Model* (CAPM), which describes the relationship between systematic risk and return for assets. (Systematic risk is the risk inherent in the overall market system.) Three inputs are required: an estimate of the *risk-free interest rate* (*R_f*), an estimate of the *market risk premium* (*R_m*), and an estimate of *beta* (*β*). Typically, the 30-year bond yield is used for the risk-free rate and the mean over the past 20 years is 3.7 per cent. The market risk premium is the expected return for the overall market and can be estimated by using the FTSE 100. The average annual return for the past 30 years is 5.56 per cent. Beta is a measure of the volatility in the value of an individual firm in comparison to the market. A 2018 beta for UK professional services firms is 1.19 (Duff & Phelps 2019).

$$Cost\ of\ Equity = R_f + \beta (R_m - R_f)$$

$$5.91 = 3.7 + 1.19 (5.56 - 3.7)$$

The two numbers still needed for the WACC are the *Market Value of the Equity* and the *Corporate Tax Rate*. For these, we will assume the corporate tax rate is 19.0 per cent and the market value of this example firm is £2,000,000. The formula may now be completed.

This means that the value break-even for this organisation is 4.75 per cent profit. If year-end profits for this firm are positive, but below 4.75, the firm is losing value. When firms lose financial value, they are not sustainable. When profits are above 4.75 per cent, the firm gains value.

$$4.75\% = \frac{£2,000,000}{£2,000,000 + £54,771} (5.91\%) + \frac{£54,771}{£2,000,000 + £54,771} (4.97\%) (1 - 0.19\%)$$

In private archaeology, growth in financial value is essential for sustainability and impact.

Jobs in British Archaeology

Ben Lewis, Doug Rocks-Macqueen MCIfA (6540), and So Young Ann

2015–18

The WACC is powerful because it can be scaled and used to value any financial asset: a firm, a department, a project, a person. We advocate that firms substitute 'value' for 'profit' in day-to-day decision making. This requires, however, a significant change in the frame of reference for how we think about the business of commercial archaeology. For example, should a firm bid on a particular job? Use the WACC to discount the future free cash flows and calculate the net present value. If the net present value is greater than or equal to zero, then the project will return value to the organisation. The formula for net present value is simply the formula for present value calculated and summed on a year-by-year basis. In this example, the *r* would be the WACC of 4.75 per cent. *C_t* is the free cash flow; *C₀* is the total investment costs – for a job it would be the marketing, sales, and proposal costs.

$$Net\ Present\ Value = \sum_{t=1}^T \frac{C_t}{(1+r)^t} - C_0$$

If archaeological organisations are going to have a significant heritage impact, they must be sustainable and must return value.

Why are we advocating a reconsideration of value in commercial archaeology? Because the commercial archaeology industry in the UK does not appear to be financially sustainable. Landward Research (2019) reports that the mean profit for commercial archaeology organisations was 7.5 per cent in 2018. On the surface, that seems like a reasonable profit. However, Duff & Phelps (2019) reports that for UK professional service firms, which includes commercial archaeology, the WACC was 8.5 per cent in 2018. Thus, overall for 2018, the industry lost one per cent value and was therefore not sustainable.

Approximately 52 per cent of people working in commercial archaeology in the UK work for not-for-profit charities (calculated from Landward Research 2019). Charities don't have equity or the associated cost. They are also generally exempt from corporation tax. Thus, technically, the WACC approach to valuation isn't applicable. But it has merit. Charities also need to be profitable and return a certain level of value. One technique for substituting the cost of equity, discussed by Essaiades (2016), is to use the required return on investment capital: 'If a nonprofit board of directors has a mandate that an organization annually return \$1 million of its assets through scholarships or other various charitable avenues and its assets base (ie invested capital) is \$10 million, requiring a 10 percent annual return'. An internet search for WACC and non-profits will provide several resources for archaeological charities interested in adapting a financial value approach.

Archaeology as a discipline continues to evolve. The privatisation of our discipline now requires a different, and more sophisticated, method of evaluating financial value. If archaeological organisations are going to have a significant heritage impact, they must be sustainable and must return value. The WACC method provides a relatively easy, and scalable, solution to measure, monitor, and ensure business decisions are made in a way that returns value to the organisation.

References

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Chris is a consultant with Heritage Business International, a social enterprise venture that works to help heritage organisations increase their value, sustainability, and impact in a global marketplace. He currently is the President of the Register of Professional Archaeologists and has served as the President of the American Cultural Resources Association and Treasurer of the Society for American Archaeology. He also serves as an Adjunct

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Kenneth Aitchison

See member news page 32.

The Jobs in British Archaeology (JIBA) series returns to *The Archaeologist* for the first time since 2015. This series, running since 1993, collects data from job postings to examine salary and job trends in UK archaeology. This latest article covers the financial years 2015–2018, indicating how the approximately 6800 individuals currently employed in archaeology (Aitchison 2019) are being paid.

How the numbers were obtained

Data was gathered from salaries posted in job advertisements from ClfA's Jobs Information Service and Training (JIST) and British Archaeological Jobs and Resources (BAJR) from 1 April 2015 to 31 March 2018. These adverts have been found to represent an accurate portrait of salaries in archaeology (Aitchison and Rocks-Macqueen 2013).

Further explanation of the methodology can be found in previous articles (see references). Important details for understanding the data presented are:

- part-time wages are calculated pro-rata to provide the equivalent salary
- overall averages are taken for each job category – where a salary range is given, an average is taken
- highs and lows (Figures 1 and 2 and Tables 3 and 4) are based on the highest and lowest reported salaries for each job category

ClfA and BAJR minimums

BAJR and ClfA set required minimum recommended salaries. For ClfA, these are set at the Practitioner, Associate and Member levels of accreditation, and have been used for comparison in Figure 1. Since 2014, all ClfA members must 'endeavour to meet or exceed' these recommended salaries as per Code of Conduct Principle 5.5 (2014).

Salaries: archaeologist 'hierarchy'

The JIBA series categorises field (and occasionally laboratory) positions into a 'hierarchy', running: Trainee – Technician – Supervisor – Officer – Project Manager (Rocks-Macqueen 2013).

From 2015 to 2018, average salaries grew steadily across all roles in the hierarchy (Figure 1) as did the number of roles advertised (Table 2). Since warranting their own category in the 2015 JIBA series (Rocks-Macqueen 2015), the number of advertised *Trainee* positions continues to rise – with a particularly large increase in 2017–18 (Table 2).

While the average *Supervisor* salary has increased steadily, the range of *Technician* salaries has increased significantly (Figure 1). This means that although a *Supervisor* within an individual company will earn more than a *Technician*, it is increasingly likely that the same *Supervisor* will be paid less than a *Technician* in another company or area of the UK. This could create issues in the profession as some archaeologists will earn less money for significantly more responsibility than their peers.

The *Officer* category continues to be affected by the proliferation of job titles identified in the 2013–4 JIBA series (Rocks-Macqueen 2014). Several roles carry the term 'officer'

Table 1: Average salaries for 2015–18

Year	Trainee	Technician	Supervisor	Officer	Project Manager
2015–16	£16,923	£18,512	£20,571	£24,439	£32,104
2016–17	£15,768	£19,010	£20,998	£25,010	£32,014
2017–18	£16,972	£19,714	£21,367	£25,603	£32,918

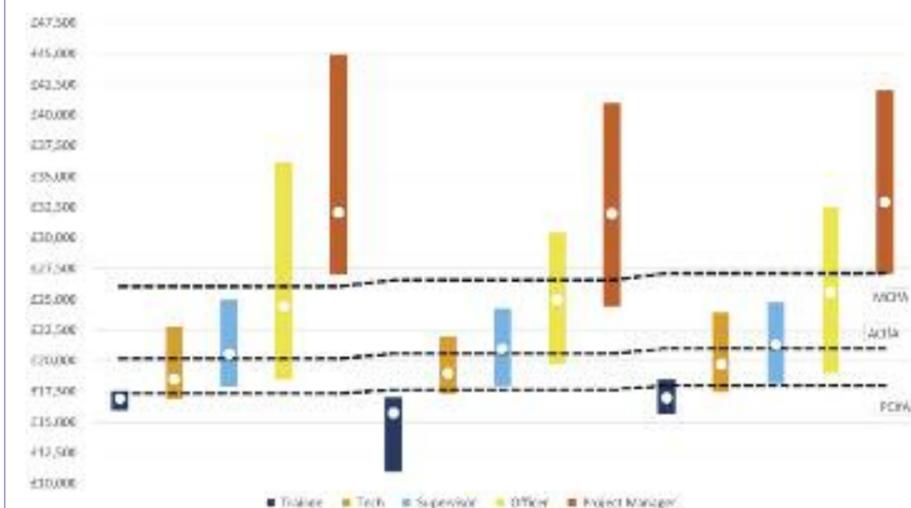


Figure 1: Highest, lowest and average salaries (white dot) per role for the 2015, 2016 and 2017 financial years, compared to ClfA minimum recommendations