



**Named Social  
Worker (NSW)  
Programme:  
Cost Benefit Analysis  
(CBA)**

June 2018

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## **1 COST BENEFIT OVERVIEW**

### **Introduction**

- 1.1 This report presents an estimation of the costs and benefits associated with the delivery of the Named Social Worker (NSW) programme using a financial return on investment (FROI) model.
- 1.2 The FROI approach recognises that NSW teams had limited opportunities, given the short pilot timescale, to collect actual client outcome information. As such, the initial focus was to construct a model of impact based on a range of assumptions. This has provided an illustrative projection which can be checked with actual outcomes data at a later date.
- 1.3 This report should be read in conjunction with the Cost Benefit Analysis (CBA) Good Practice guide prepared by York Consulting contained in Annex B. This was written to assist NSW teams to conduct their own economic analysis using a predictive CBA methodology. The guide walks through the methodology in detail, using the Hertfordshire NSW pilot as a model of investigation.

### **The findings**

- 1.4 A 'deep dive' into the costs and anticipated benefits at Hertfordshire NSW pilot calculated a FROI of 2.8. This means that for every £1 invested into the pilot there was an anticipated savings (or costs avoided) of £2.80. Of these savings, 78% were estimated to be of benefit to the local authority.
- 1.5 Based on the outcome predictions of NSW project staff across the other five pilot sites, the analysis suggests that all six projects would generate a positive return on investment.
- 1.6 The predicted FROI was highest in Liverpool (9.84) and lowest in Halton (2.17). The variation in the FROI across areas reflects the variation of cohort, benefit profile, pilot approach and local context.
- 1.7 The assessment indicates that a programme investment of £404,000 would generate an anticipated £1.7 million of benefits on a pro rata basis. This represents a very credible NSW programme FROI of 5.14.
- 1.8 The primary beneficiaries in all areas and for the programme as a whole was the local authority; attracting 89% of all benefits. Many of the savings made relate to less expensive care packages (as outlined in more detail in Annex A).
- 1.9 Subject to the assumptions made in developing the CBA model (as outlined in Annex B) this FROI analysis should act as a significant stimulus for all local authorities to continue to support the investment using their own funding.
- 1.10 Results should however be treated with caution. This is indicative assessment based on predicted benefits. Further analysis should take place when actual data is available to sense check the assumptions in the model.

## The assumptions

1.11 It is worth noting a number of methodological assumptions, set out below:

- The costs of setting up the NSW is estimated to be 20% of the overall initial investment made by the Department of Health and Social Care (DHSC) to sites. The FROI has been calculated against steady state costs (which is therefore 20% less than the total DHSC funding)
- When considering the benefits anticipated by the NSW, sites were asked to be clear which impacts were directly attributable to the pilot as opposed to what would have happened during business as usual
- In these ways, the anticipated FROI is understood as additional to business as usual and excludes the cost of setting up the model. However, as this is an illustrative projection, there is no control group or actual data to directly attribute the benefits directly to the NSW
- The CBA analysis focuses exclusively on the chosen NSW delivery model in each area. No information was available on alternative operational permutations therefore consideration cannot be given to how NSW monies might have been spent differently to achieve better outcomes

1.12 It is also worth noting that as the economic and social dimensions of the cost benefit assessment have been excluded, the benefits generated by the model will almost certainly be an under estimate of actual benefits to the wider economy and society. The chosen approach, however, provides a more realistic estimate from an *invest to save* perspective.

## 2 METHODOLOGY

- 2.1 As already outlined, the approach presented recognises that NSW teams have had limited opportunities, given the short time scales, to collect much client outcome information. The initial focus is therefore on constructing a model of impact based on a range of assumptions. This provides an illustrative projection which can be checked with actual outcomes data at a later date.
- 2.2 It should be emphasised that the results presented here are based on what NSW areas expect to happen and should therefore be treated as provisional estimates. Once the client outcome data becomes available NSW areas will be able to use the guide to recalculate the CBA.

### The Predictive CBA approach

- 2.3 The predictive element follows from the limited actual data to conduct economic analysis over the course of the NSW programme. As such the methodology was constructed to project likely client outcomes based on best estimates.
- 2.4 The CBA model chosen focuses specifically on the fiscal line and is thus referred to as a Financial Return on Investment (FROI). This was selected as it specifically addresses potentially cashable outcomes, particularly important to *invest to save* project interventions.
- 2.5 As the economic and social dimensions of the cost benefit assessment have been excluded it has to be recognised that the benefits generated by the model will almost certainly be an under estimate of actual benefits to the wider economy and society. It is however the more realistic estimate from an *invest to save* perspective.
- 2.6 As the term suggests there are two sides to the cost benefit equation – costs and benefits:
- **Costs** are defined as the costs sustained in delivering the project intervention. In the NSW context this has been calculated ‘top down’ as the total funding secured from the DHSC for the project
  - **Benefits**, on the other hand, are defined as the costs avoided. In an NSW context this might include fewer GP visits and the avoidance of an emergency hospital admission for individuals supported
- 2.7 The division of benefits by costs, produces a benefit cost ratio which in this specification is the FROI.

### 3 GENERATING PREDICTIVE DATA

3.1 York Consulting undertook a ‘deep dive’ exercise with the Hertfordshire NSW project to better understand the costs and likely benefits of NSW delivery. As part of this process we prepared predictive benefit profiles for each of their ten supported clients. This information was then used to construct and illustrate the CBA Good Practice guide and a “benefits template.”

#### Benefits

3.2 The CBA Good Practice Guide and “benefits template” were sent to all NSW sites to help them identify a detailed profile of the predicted benefits for five typical cases in the NSW cohort. This data was returned to York Consulting for analysis. The benefits were then monetised and weighted to reflect this supported cohort as a whole.

3.3 Using this information, it was possible to construct cost benefit profiles for each of the six areas and for the programme as a whole. Details of these profiles are set out in Annex A. The detailed information relating to Hertfordshire’s 10 case profiles is also presented in the CBA Good Practice Guide.

3.4 A few notes on additionality:

- It is important to capture the additionality i.e. benefits and costs arising as a direct result of the intervention. This excludes what would have happened in the absence of the programme; otherwise referred to as ‘business as usual’
- Ideally an assessment of additionality would be made by comparing the cost and benefit profile before and after the introduction of the NSW intervention. Unfortunately, this information was not available and would have required extensive primary research which was not possible within the timeframes
- For this analysis we asked sites to self-validate the data and asked them to only submit benefit information that they believed occurred purely as a result of the NSW programme and additional to business as usual
- We would recommend that areas formally validate their findings as data becomes available (see Good Practice Guide – section 9)

#### Costs

3.5 Cost information was provided by DHSC based on the direct funding for each of the projects. As such it is described as ‘top down’ costs. The alternative would be to generate ‘bottom up’ costs. This would involve identifying and segmenting delivery costs such as actual staff time and associated resources.

3.6 As the NSW pilot was a six-month programme, costs have been annualised to maintain consistency with benefits which are easier to observe over a 12-month profile. This involved doubling the actual costs of funding.

3.7 Programme costs funded one-off set-up costs as well as steady state operation. One-off set-up costs include the time it took to scope out the intervention, engage initial

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Cost Benefit Analysis (CBA)**

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partners and recruit named social workers. Steady state operation included ongoing costs to protect the time of named social workers to deliver a NSW caseload.

- 3.8 Costs have been deflated to reflect steady state operation. Excluded from the analysis are one-off costs associated with the project set-up linked to aspects of design and research and development (see Good Practice Guide – section 4). As this information was not available for all projects we applied a 20% figure calculated from the Hertfordshire investigation.

- As the costs presented relate purely to the NSW intervention they are effectively additional costs and exclude business as usual delivery

- 3.9 Details of the costs for the six areas and the programme average are set out in Table 1 below.



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**Table 1: NSW Costs (annual)**

	Hertfordshire	Liverpool	Sheffield	Bradford	Halton	Shropshire	Programme
Total cost	£120,000	£232,324	£47,708	£100,000	£185,654	£121,384	£807,070
Steady state cost	£96,000	£185,859	£38,166	£80,000	£148,523	£97,107	£645,656
Cohort size	10	27	15	38	17	12	119
Unit cost	£9,600	£6,884	£2,544	£2,105	£8,737	£8,092	£5,426

3.10 Key points to note are as follows:

- The actual programme cost was £403,535 which in annual terms translates to £807,070.
- Steady state costs averaged at 80% of total costs for all areas.
- Unit costs were higher in Hertfordshire (£9,600) and lowest in Bradford (£2,544). This is strongly influenced by the size of the supported cohort in each area.
- The programme unit cost was £5,246 based on supporting 119 NSW participants on an annual basis.

## 4 MONETISING BENEFITS

- 4.1 The calculation of benefits involves monetising the hard outcomes of project interventions. These are effectively the cost avoided from things like police call outs, hospital visits, care packages and less intensive care support etc. The values for each are based on national published research. These benefits can be mapped to specific partners, for example local authorities, NHS, Criminal Justice system, DWP and police.
- This means it is possible to calculate both the total savings or costs avoided anticipated through the programme and the bodies that will directly benefit from the activity.
- 4.2 As already outlined, the benefits relate to a 12-month period and were validated by sites to be additional to business as usual.
- 4.3 In the case of Hertfordshire, no weighting of benefits was required as these relate to all ten of their cases analysed as part of deep dive exercise. In the other five NSW areas weighting was conducted by dividing the total cohort by 5 and using this as the multiplier for each monetised benefit, thus achieving a weighted profile average of total benefits.
- 4.4 Details of the benefits for the supported cohort in each NSW area and for the programme as a whole are set out in Table 2.

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**Table 2: NSW Benefits**

	Hertfordshire	%	Liverpool	%	Sheffield	%	Bradford	%	Halton	%	Shropshire	%	Programme	%
Total benefit	£268,615		£1,828,021		£112,870		£474,240		£322,402		£310,515		£3,316,663	
Cohort size	10		27		15		38		17		12		119	
Unit benefit	£26,862		£67,704		£7,525		£12,480		£18,965		£25,876		£27,871	
Benefit recipients:														
Local Authority	£209,640	78%	£1,632,792	89%	£87,978	78%	£474,240	100%	£262,401	81%	£280,913	90%	£2,947,964	89%
NHS	£46,798	17%	£52,816	3%	£23,070	20%	-	-	£41,514	13%	-	-	£164,198	5%
Criminal justice system	-	-	£127,022	7%	-	-	-	-	£8,419	3%	-	-	£135,441	4%
DWP	£10,410	4%	£12,520	1%	-	-	-	-	£4,602	1%	£29,603	10%	£57,135	2%
Police	£1,767	1%	£2,870	<1%	£1,822	2%	-	-	£5,467	2%	-	-	£11,926	<1%
Total benefit	£268,615	100%	£1,828,021	100%	£112,870	100%	£474,240	100%	£322,402	100%	£310,515	100%	£3,316,663	100%

**Named Social Worker (NSW) Programme  
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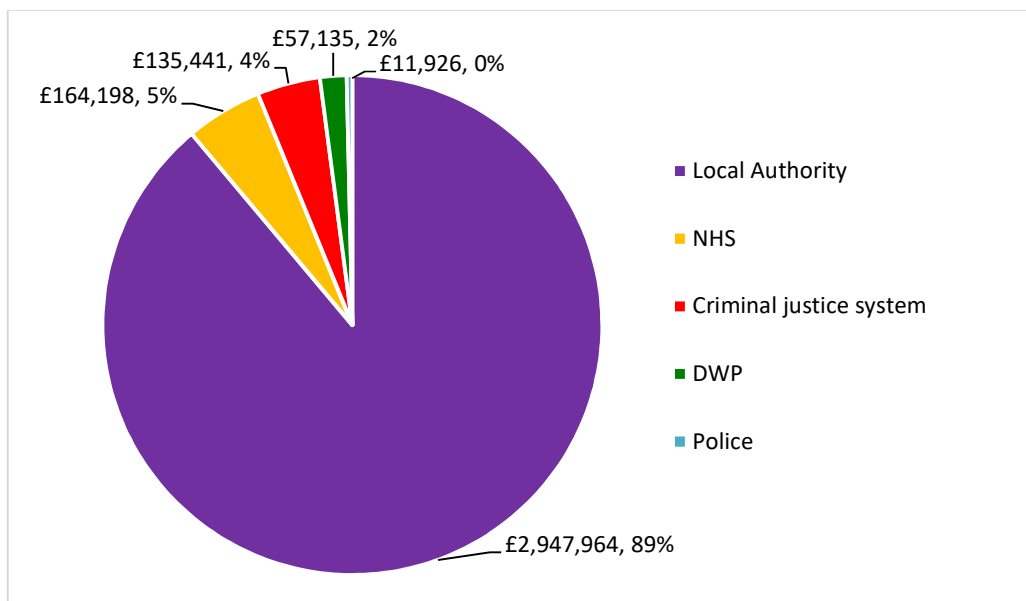
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4.5 Outlined below are key points emerging from the benefit assessment. They highlight the wide variation across the projects of benefit profiles. In many cases these reflect locality specific factors and the nature of the target group. (See Annex A). Points to note are as follows:

- Annual programme benefits were projected to be £3.3million; a unit benefit per supported individual of £27,871
- Unit benefits were projected as highest in Liverpool (£67,704) and lowest in Sheffield (£7,525)
- The high projected unit benefits in Liverpool reflect transitions from specialist care to unsupported living
- At a programme level and in all areas the main beneficiary organisation of benefits sustained was the local authority; attracting 89% of all benefits
- NHS benefits were highest in Sheffield (20%) and Hertfordshire (17%)
- Criminal justice benefits were highest in Liverpool (7%)
- DWP benefits were highest in Hertfordshire (4%)
- Criminal Justice benefits were highest in Liverpool (7%)
- Police benefits were highest in Sheffield and Halton (2%)

4.6 Details of the relative distributions of benefits at a programme level are shown in Figure 3. (see Good Practice Guide – section 8).

**Figure 3: NSW Benefit Distribution**



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Cost Benefit Analysis (CBA)**

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## **5 FINANCIAL RETURN ON INVESTMENT**

- 5.1 The division of benefits by costs, produces a benefit cost ratio which in this specification is the FROI.
- 5.2 Details of the FROI for each project and for the programme as a whole are shown in Table 4 below.

**Table 4: NSW FROI**

	Hertfordshire	Liverpool	Sheffield	Bradford	Halton	Shropshire	Programme
Benefit	£268,615	£1,828,021	£112,870	£474,240	£322,402	£310,515	£3,316,663
Cost	£96,000	£185,859	£38,166	£80,000	£148,523	£97,107	£645,656
FROI	2.80	9.84	2.96	5.93	2.17	3.20	5.14

- 5.3 Key points to note are as follows:

- The overall programme predictive FROI was 5.14 which means a saving of £5.14 for every £1 invested in NSW support. This would constitute a positive return on investment and support a case for continued project funding
- All areas recorded a positive return on investment.
- The FROI was highest in Liverpool (9.84) and lowest in Halton (2.17). The variation in the return on investment across areas reflects the achieved benefit profile and variation of cohort, pilot approach and local context

## **6 CONCLUSIONS**

- 6.1 The CBA assessment is theoretical based on what areas expect to happen following NSW support. In this sense it is predictive and results should be treated with caution.
- 6.2 The predictive assessments were provided by each area based on their own expectations. Sites predicted client benefit data as a direct result of the NSW programme (as opposed to what would happen during business as usual). While we asked areas to be realistic regarding their predictions we are unable to comment on the validity of their estimates.
- 6.3 Based on the FROI model and assumptions generated through the Hertfordshire 'deep dive' and the benefit profile information submitted by sites, the NSW programme suggests a positive FROI. Specifically, the economic assessment indicates that:
- a programme investment of £404,000 would generate an anticipated £1.7 million of benefits on a pro rata basis. These benefits have been annualised in the analysis. This represents a very credible NSW programme FROI of 5.14
  - all areas would record a predictive positive FROI. The predicted FROI was highest in Liverpool (9.84) and lowest in Halton (2.17). The variation in the FROI across areas reflects the variation of cohort, benefit profile, pilot approach and local context
  - the primary beneficiaries in all areas and for the programme as a whole was the local authority; attracting 89% of all benefits
- 6.4 This positive assessment should act as a significant stimulus for all local authorities to continue to support the NSW investment using their own funding.
- 6.5 Finally, it will be important to revisit this analysis once the actual data is available on client outcomes to validate the assessment.

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**ANNEX A: NSW AREA BENEFIT PROFILES**

Liverpool FROI				
Case	Unit cost	Benefit type	Estimated 12-month saving	FROI
1	£6,884	<ul style="list-style-type: none"> <li>Placement stability</li> <li>Reduction in care package</li> <li>Specialised hospital placement to Supported Living</li> </ul>	£152,472	22.15
2		<ul style="list-style-type: none"> <li>Access to education/training</li> <li>Residential care to living independently</li> </ul>	£76,455	11.11
3		<ul style="list-style-type: none"> <li>Prevent going to Prison</li> <li>Reduction in Police call outs</li> <li>Reduction in Hospital Admissions</li> </ul>	£33,835	4.92
4		<ul style="list-style-type: none"> <li>Hospital setting to Supported Living</li> </ul>	£74,435	10.81
5		<ul style="list-style-type: none"> <li>Reduction in care package</li> </ul>	£1,327	0.19
<b>Total</b>	<b>£34,418</b>		<b>£338,522</b>	<b>9.84</b>

Sheffield FROI				
Case	Unit cost	Benefit type	Estimated 12-month saving	FROI
1	£2,544	<ul style="list-style-type: none"> <li>Reduction in Police call outs</li> <li>Hospital discharge</li> <li>Placement stability</li> </ul>	£8,614	3.39
2		<ul style="list-style-type: none"> <li>Reduction in Police call outs</li> <li>Hospital discharge</li> <li>Placement stability</li> </ul>	£8,432	3.31
3		<ul style="list-style-type: none"> <li>Reduction in Police call outs</li> <li>Hospital discharge</li> <li>Placement stability</li> </ul>	£8,371	3.29
4		<ul style="list-style-type: none"> <li>Less use of support staff for daily tasks</li> </ul>	£3,536	1.39
5		<ul style="list-style-type: none"> <li>Reduction in Police call outs</li> <li>Hospital discharge</li> <li>Placement stability</li> </ul>	£8,670	3.41
<b>Total</b>	<b>£12,722</b>		<b>£37,623</b>	<b>2.96</b>

Bradford FROI				
Case	Unit cost	Benefit type	Estimated 12-month saving	FROI
1	£2,105	<ul style="list-style-type: none"> <li>Reduction in placement costs</li> </ul>	£12,480	5.93
2		<ul style="list-style-type: none"> <li>Reduction in placement costs</li> </ul>	£12,480	5.93
3		<ul style="list-style-type: none"> <li>Reduction in placement costs</li> </ul>	£12,480	5.93
4		<ul style="list-style-type: none"> <li>Reduction in placement costs</li> </ul>	£12,480	5.93
5		<ul style="list-style-type: none"> <li>Reduction in placement costs</li> </ul>	£12,480	5.93
<b>Total</b>	<b>£10,526</b>		<b>£62,400</b>	<b>5.93</b>

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Shropshire FROI				
Case	Unit cost	Benefit type	Estimated 12-month saving	FROI
1	£8,092	<ul style="list-style-type: none"> <li>Residential college to Community College</li> </ul>	£16,478	2.04
2	£8,092	<ul style="list-style-type: none"> <li>Supported internship</li> </ul>	£6,167	0.76
3	£8,092	<ul style="list-style-type: none"> <li>Residential care to Supported Living</li> </ul>	£50,285	6.21
4	£8,092	<ul style="list-style-type: none"> <li>College Placement</li> </ul>	£6,167	0.76
5	£8,092	<ul style="list-style-type: none"> <li>Residential care to Supported Living</li> </ul>	£50,285	6.21
<b>Total</b>	<b>£40,461</b>		<b>£129,381</b>	<b>3.20</b>

Halton FROI				
Case	Unit cost	Benefit type	Estimated 12-month saving	FROI
1	£8,737	<ul style="list-style-type: none"> <li>Reduction on GP home visits</li> <li>Reduction in Police call outs</li> <li>Reduction in Criminal Damage</li> <li>Residential care to living in the community</li> </ul>	£151,313	17.32
2	£8,737	<ul style="list-style-type: none"> <li>Supported Living to living independently</li> </ul>	£52,305	5.99
3	£8,737	<ul style="list-style-type: none"> <li>Reduction in Police call outs</li> <li>Reduction in Ambulance call outs</li> <li>Reduction in Hospital Admissions</li> <li>Reduction in Criminal Damage</li> <li>Agency support</li> </ul>	£25,853	2.96
4	£8,737	<ul style="list-style-type: none"> <li>Reduction in Police call outs</li> <li>Reduction in Ambulance call outs</li> <li>Avoided Mental health hospital admission</li> <li>Reduction in Fire &amp; Rescue call outs</li> <li>Avoided eviction from tenancy</li> </ul>	£18,052	2.07
5	£8,737	<ul style="list-style-type: none"> <li>Avoided Mental health hospital admission</li> <li>Avoided Youth Court trial</li> <li>Avoided Court of Protection intervention</li> </ul>	£16,739	1.92
6 - 17	£8,737	<ul style="list-style-type: none"> <li>Reduction in Police intervention</li> <li>Change from Night shelter to a tenancy with a support package</li> </ul>	£4,845	0.55
<b>Total</b>	<b>£148,523</b>		<b>£322,402</b>	<b>2.17</b>



**ANNEX B: TEN STEPS TO CREATING YOUR OWN COST BENEFIT  
ANALYSIS**



**Named Social  
Worker  
Programme:**

**Ten steps to  
creating your own  
cost benefit  
analysis**

**A York Consulting  
support guide**

**John Rodger and  
Brian Stewart**

**February 2018**

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## **INTRODUCTION**

1. This guide, developed by York Consulting, is designed to assist Named Social Worker (NSW) teams to conduct their own economic assessment using a predictive cost benefit analysis (CBA) methodology.
2. The approach presented recognises that NSW teams have had limited opportunities, given the short time scales, to collect much client outcome information. The initial focus is therefore on constructing a model of impact based on a range of assumptions. This provides an illustrative projection which can be checked with actual outcomes data at a later date.
3. Cost and illustrative outcome data was estimated based on a range of consultations with the Hertfordshire NSW team. The method was further market tested with all six second round NSW teams at a NSW evaluation workshop in February 2018.
4. While the methodology presented is not definitive, it should provide NSW teams with sufficient information to get started and specify their own cost benefit models. Teams may require further advice to fine tune their approach and to estimate counterfactual scenarios.
5. Further information relating to this guide can be obtained from Brian Stewart who can be contacted at [brian.stewart@yorkconsulting.co.uk](mailto:brian.stewart@yorkconsulting.co.uk).

## 1 STEP ONE: UNDERSTANDING COST BENEFIT ANALYSIS

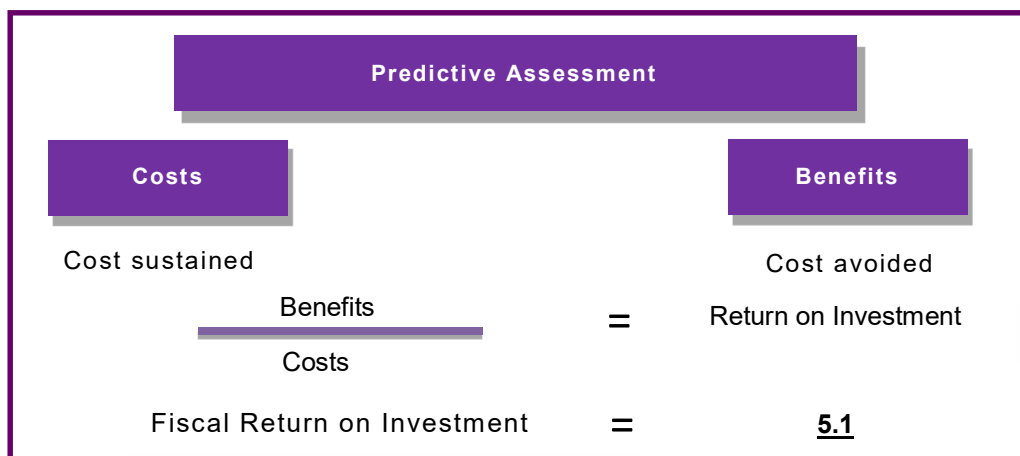
### *What is CBA?*

- 1.1 CBA is a powerful tool which is widely used across government and the private sector to assess the economic case for specific project interventions. CBA aims to quantify in monetary terms as many of the costs and benefits of an intervention as feasible, including items for which the market does not provide a satisfactory measure of economic value.
- 1.2 Typically, CBA consists of three strands of analysis:
- **Fiscal** – Also referred to as the real money line, it is the most appropriate where the focus is on cash savings or invest-to-save initiatives.
  - **Economic** – This is linked to concepts such as the income multiplier e.g. the economic value of an individual gaining employment.
  - **Social** – This strand focuses on monetising the value of a wide range of softer outcomes for which there are few financial values e.g. individual well-being.
- 1.3 Identified benefits are divided by observed costs to generate a benefit cost ratio or return on investment.

### *Constructing a predictive CBA model*

- 1.4 An overview of the predictive CBA model is set out in **Figure 1.1**.

**Figure 1.1: CBA Overview**



- 1.5 The predictive element follows from the need to project likely client outcomes based on best estimates. These can be subsequently checked against actual outcomes from client follow up at a point in the future.
- 1.6 The CBA model we have chosen focuses specifically on the fiscal line and is thus referred to as a Fiscal Return on Investment (FROI). This has been selected as it specifically addresses potentially cashable outcomes which are particularly important in invest to save project interventions. As the economic and social dimensions of the cost benefit assessment have been excluded, it has to be recognised that the benefits generated by the model will almost certainly be an under estimate of actual benefits to the wider economy and society. It is however the more realistic estimate from an invest to save perspective.
-

- 1.7 As the term suggests there are two sides to the cost benefit equation – costs and benefits. Costs are defined as the costs sustained in delivering the project intervention. In the NSW context this could be the total funding secured from the Department of Health and Social Care for the project. Benefits, on the other hand, are defined as the costs avoided. In a NSW context this might include fewer GP visits and the avoidance of an emergency hospital admission for individuals supported.
- 1.8 The division of benefits by costs produces a benefit cost ratio which in this specification is the Fiscal Return on Investment. In the example shown in Figure 1.1, an FROI of 5.1 indicates that for every £1 invested in the project there is a potential saving of £5.10. This would constitute a positive return on investment and support a case for continued project funding.
- 1.9 It is important to capture the additionality i.e. benefits and costs arising as a result of the intervention. This excludes what would have happened in the absence of the programme; otherwise referred to as 'business as usual'.
- 1.10 Taking these factors into account, CBA can be used to answer key questions such as:
  - Does the project provide value for money?
  - Which partners benefit most from the investment?
  - How to prioritise investment across a range of projects?

**Top Tip 1:** Deciding what to include in the CBA should derive from the original aim(s) of the intervention. Is it for an individual, organisation or society as a whole? This should be evident from the theory of change (TOC)/logic model for the initiative. That said, it is not always this simple given the nature of some TOC/logic models. If there are a series of questions, the model may need to be adjusted for each question.

## 2 STEP TWO: ESTABLISHING APPROACH AND ASSESSING LIMITATIONS

### ***What is the question you want to answer?***

- 2.1 CBA works best when you are clear what you want it to do. Ask yourself – why am I doing this? What do I want to show? What decisions will it influence? What factors will carry greatest weight? What level of evidence might be required? When does it need to be done?
- 2.2 Answering these questions will help you decide how to specify the model, particularly the benefits to include.

### ***How strong is your theory of change?***

- 2.3 There is a strong correlation between the robustness of your theory of change and the strength of the CBA case that can be made. The tighter your focus on the intervention and the beneficiary group the better. For example, calculating the impact of a more intensive support programme on a clearly defined client group is easier to do than a more general intervention across a wider group. It may therefore be best to concentrate on only one element of your potential TOC.

### ***Hang on to the concept of additionality or value added***

- 2.4 The CBA of a new intervention such as NSW needs to show the impact beyond what was happening before i.e. 'business as usual'. This means you need to identify the additional costs of the programme of support and set them against the additional benefits. While additional costs are relatively easy to observe benefits are trickier!

### ***Beware the magic of modelling: assumed models are illustrative not real***

- 2.5 When conducting a CBA for a project it is rare to have full and complete data at one's disposal. Therefore, the cost benefit model will need to include some assumptions. Assumptions take account of data limitations. For example, if there is no control group (counterfactual) we might assume there is no need to omit any benefits as everything observed is value added.
- 2.6 This is a very broad assumption. Typically, one constructs a model at the beginning with estimated data which is full of assumptions and then relax them, or remove them altogether, as data becomes available. The construction of an estimated model provides a helpful illustration of the components of the model and its sensitivity to changes in particular costs and benefits.
- 2.7 Assuming that sufficient data is gathered at a later stage; it will be possible to check the actual data against the predictive approach.

**Top Tip 2:** Do not get carried away when predicting your projected benefits. This could generate unrealistic expectations or potential ridicule. Concentrate on illustrating the monetisation of potential benefits and the different combinations required to break-even i.e. costs equal benefits. This strategy will be more effective and influential than simply trying to generate a high return on investment.

### 3 STEP THREE: IDENTIFYING COSTS

#### *Always start with costs*

- 3.1 The cost side of the equation is usually the easiest to estimate and as such should be your starting point in the calculation. As indicated earlier these are the additional costs of delivering your NSW project. They are additional to your business as usual costs. We are effectively ring-fencing these costs from your mainstream business activity to simplify the analysis and focus on the additionality of your project investment.
- 3.2 Costs are critically important as they set the benchmark for the CBA assessment. A project costing £110,000 needs to generate the same level of benefits to break even. This would correspond to a FROI of 1.0.

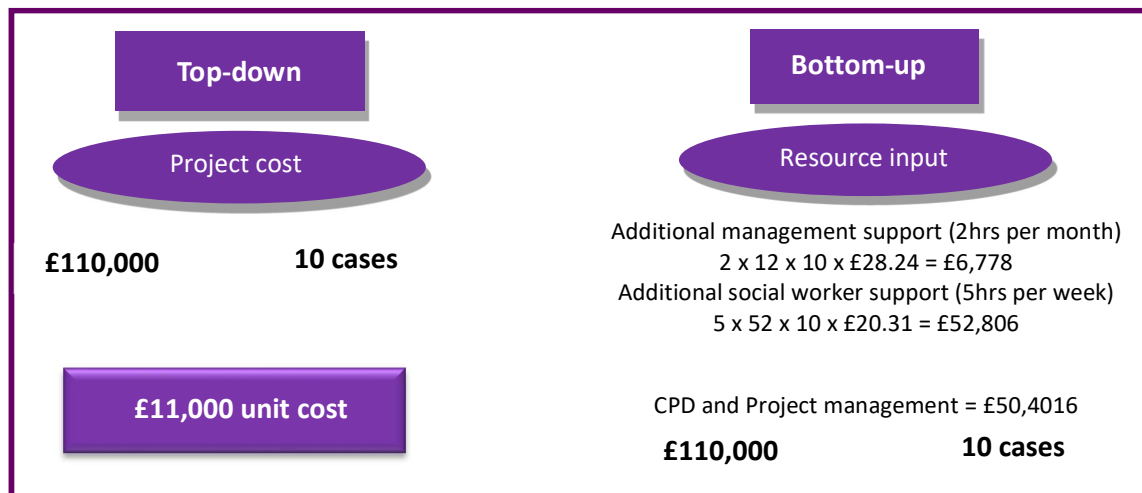
#### *Annualise costs*

- 3.3 It is always best to annualise costs to maintain consistency of comparison and improve the power of illustration. The context then becomes annual costs, annual benefits and an annual return on investment. This allows comparability with potentially other projects of different durations. If your project cost is £55,000 and lasts 6 months the annual cost would be £110,000.

#### *Top-down and bottom-up costing*

- 3.4 **Figure 3.1** illustrates the two methods that can be used to calculate your NSW project costs.

**Figure 3.1: Costing Dimensions**



- 3.5 The first, and most straightforward, is the top-down approach. This is the overall delivery cost of the programme. In the case of Hertfordshire this was £110,000. Once you know how many individuals will receive the treatment/support you can calculate the unit cost of supporting one individual throughout the programme. In Hertfordshire's case, there were ten NSW cases which meant that the cost of supporting a NSW case was £11,000.

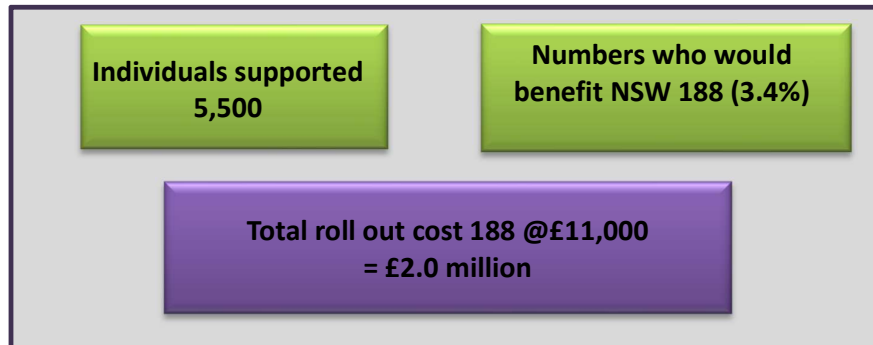


- 3.6 Alternatively, it is possible to build up the cost profile bottom-up. This involves identifying and segmenting delivery costs. In the illustration we calculate additional staff costs based on duration of support and staff hourly rates. We also identify other costs such as CPD and project management. The finer the granularity resource input assessment, the better the cost intelligence. For example, if costs subsequently prove to be higher than benefits, then the resource input assessment will make it easier to identify where potential savings might be made.
- 3.7 Figure 3.1 illustrates the top-down and bottom-up costs are the same. This rarely occurs in practice and usually means something has been missed in the resource costing or the project budget has not been fully spent.

### ***Cost simulation***

- 3.8 It is possible to simulate costs and project to a potentially larger target group. An illustration of this is shown in **Figure 3.2**.

**Figure 3.2: Cost Projections**



- 3.9 In our Hertfordshire example, 10 clients were supported in the NSW project at a unit cost of £11,000. Hertfordshire have 5,500 individuals supported annually and estimate that 3.4% fit the NSW criteria for additional support. This means that an additional annual cost for a potentially full NSW cohort would be £2 million.

### ***Steady state costs***

- 3.10 Cost estimation, whether top-down or bottom-up, should include only steady state costs. Excluded should be one off costs associated with the pilot project. This might include aspects of research and development.

**Top Tip 3:** Identifying the costs from a bottom-up approach is a much more time-consuming exercise compared to the top-down method. It is however worthwhile doing if only for a sample of cases. This is the best way of profiling cost inputs and assessing potential variation in support between client cases.

## 4 STEP FOUR: BENEFIT MAPPING

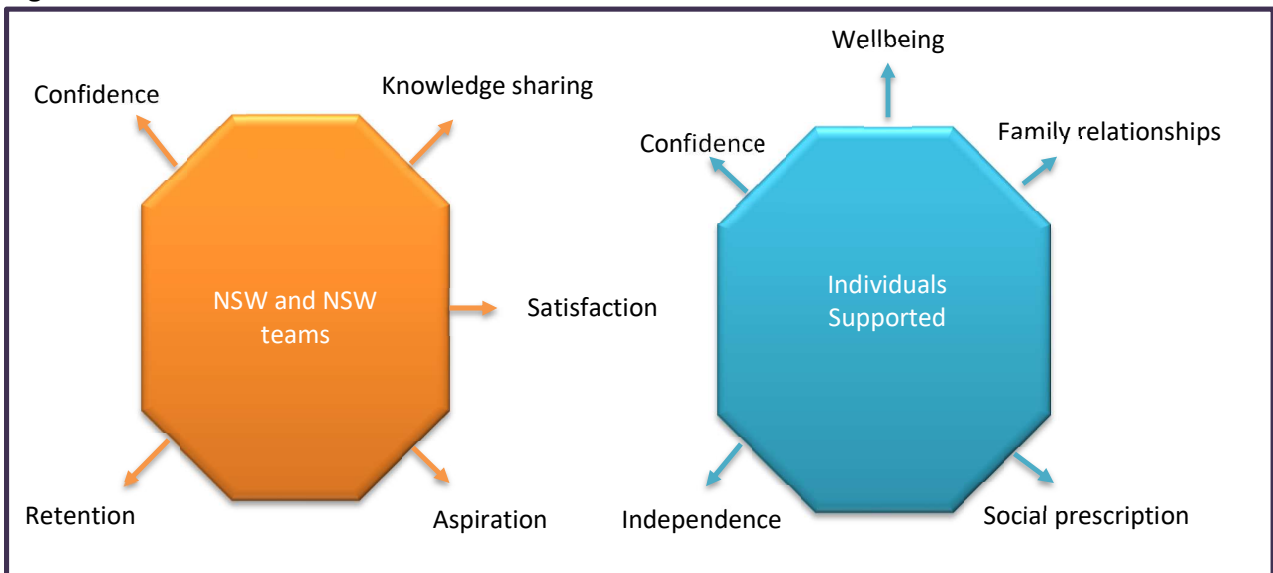
### *Map all project outcomes*

- 4.1 Within our cost benefit model, we have identified benefits as costs avoided. Prior to identifying what these cost savings might be, it is important first to map key benefit outcomes. These might not yet be evident but can be predicted from the NSW project theory of change or logic model. Construct a full list of the outcomes and the individuals/organisations who benefit from them.

### *Soft and Hard outcomes*

- 4.2 Translating benefit outcomes to costs avoided takes us into the territory of what might be described as 'soft' and 'hard' outcomes.
- 4.3 Examples of soft outcomes linked to NSWs, NSW teams and individual supported are set out in **Figure 4.1**. These relate to aspects such as confidence, wellbeing, satisfaction, independence, aspiration etc. while they are fundamental to most NSW projects they are difficult to translate into cost savings. They also take us into the realms of Social Return on Investment (SROI) which we have excluded from this CBA specification. Although these outcomes will not feature in our cost benefit calculation it is useful to keep them in mind to balance against what will be an underestimation of project benefits. It should also be noted that they may be addressed indirectly through other more easily measurable outcomes.

**Figure 4.1: Soft Outcomes**



- 4.4 Hard outcomes are more easily translatable into costs avoided or benefit savings. Examples relating to a range of beneficiary organisations are listed in **Table 4.1**.

**Table 4.1: Hard outcomes by beneficiary organisations**

Hard Outcomes by beneficiary organisations			
Local authority	Health	Education and employment	Criminal justice
<ul style="list-style-type: none"><li>• Care homes placements</li><li>• Care packages</li><li>• Placement stability</li></ul>	<ul style="list-style-type: none"><li>• GP visits</li><li>• A&amp;E visits</li><li>• Crisis situations</li></ul>	<ul style="list-style-type: none"><li>• Employment</li><li>• Qualifications</li><li>• Volunteering</li></ul>	<ul style="list-style-type: none"><li>• Police call outs</li><li>• Crime</li><li>• Prison</li></ul>

- 4.5 The hard outcomes identified relate to outcome savings on care home places, GP visits and police callouts etc. It is important to cluster them by beneficiary organisation as savings can then be deconstructed to specific Local Partners.

**Top Tip 4:** Focus most of your attention on the hard outcomes and identify as many as is consistent with your theory of change. Be realistic and assess the likelihood and prevalence of outcome manifestation.

## 5 STEP FIVE: MONETISE BENEFITS

### *Estimating costs avoided*

- 5.1 Having identified the full range of hard outcomes associated with your NSW project it is necessary to monetise them into costs avoided i.e. benefit savings. In order to do this, you need to identify an appropriate unit cost which is widely regarded as a reliable estimate for each benefit saving.

### *National estimates*

- 5.2 The best single source of benefit unit costs is 'Unit Costs of Health and Social Care' published by the Personal Social Service Research Unit (PSSRU)<sup>1</sup>.
- 5.3 Established at the University of Kent the PSSRU produce an annual database which brings together data from a range of sources to estimate national unit costs for a wide range of health and social care services including the cost of:
- GP visits;
  - Emergency hospital admissions;
  - Bed days;
  - Day care.
- 5.4 As an example, see **Table 5.1** which has been taken from the latest (2017) Unit Costs of Health and Social Care report.

**Table 5.1: Monetised benefits**

NHS reference costs for mental health services	Mean £
Mental health care clusters (per bed day)	£404
Mental health care clusters (initial assessment)	£319
Alcohol services – admitted (per bed day)	£417
Alcohol services – community (per care contact)	£98
Drug services – admitted (per bed day)	£489
Drug services – community (per care contact)	£120
Drug services – outpatient (per attendance)	£105
A&E mental health liaison services	£196
Criminal justice liaison services	£176

- 5.5 An additional useful source from which you can draw financial estimates is the New Economy Unit Cost Database<sup>2</sup>. While this draws on some of the work from PSSRU, it also includes costs covering:

<sup>1</sup> <http://www.pssru.ac.uk/project-pages/unit-costs/unit-costs-2017/>

<sup>2</sup> <http://www.neweconomymanchester.com/our-work/research-evaluation-cost-benefit-analysis/cost-benefit-analysis/unit-cost-database>

- Housing;
- Employment & economy;
- Education & skills;
- Crime;
- Fire.

### ***Local estimates***

- 5.6 As an alternative to national estimates it is possible to use local data to cover local authority variables such as costs of care packages or temporary accommodation etc. If you are doing this check against national estimates to make sure they are in the same ball park. They should be similar. If they are not there is probably a definitional discrepancy. If in doubt use the national estimate. Be very wary of creating your own estimates. This falls outside the 'widely acceptable' sphere of consistency and quality assurance.

**Top Tip 5:** Check the definition of the unit costs and make sure it fits your situation, you cannot rely on the label. Also note the duration of the unit cost. There are a range of permutations from hours to years.

## 6 STEP SIX: SPECIFYING COST BENEFIT PROFILES

### *Micro analysis*

- 6.1 The best way to bring your costs and benefits together is at an individual case level. This allows you to conduct what we describe as a micro analysis. This will essentially generate a unit cost benefit assessment. Examples of ten cost benefit profiles relating to the ten individuals supported on the Hertfordshire NSW project are set out in **Figure 6.1**.

**Figure 6.1: CBA Profiles**

Case 1
<b>Costs</b>
Total cost = £11,000
<b>Benefits</b>
<ul style="list-style-type: none"> <li>▪ Bed days (10) £4,040</li> <li>▪ GP home visits (7) £1,694</li> <li>▪ Learning disability support in long-term residential care (20 weeks) £28,720</li> <li>▪ Day care for people requiring learning disability support (30 days) £2,310</li> </ul>
Total benefit = £36,764
FROI = 3.34

Case 2
<b>Costs</b>
Total cost = £11,000
<b>Benefits</b>
<ul style="list-style-type: none"> <li>▪ Ambulance services (6) £714</li> <li>▪ NHS community mental health team visit (8) £352</li> <li>▪ Elective inpatient stay £3,903</li> </ul>
Total benefit = £4,969
FROI = 0.45

Case 3
<b>Costs</b>
Total cost = £11,000
<b>Benefits</b>
<ul style="list-style-type: none"> <li>▪ Crisis resolution team (12 days) £11,520</li> <li>▪ GP visits (5) £185</li> </ul>
Total benefit = £11,705
FROI = 1.10

Case 4
<b>Costs</b>
Total cost = £11,000
<b>Benefits</b>
<ul style="list-style-type: none"> <li>▪ Loss of accommodation £7,348</li> <li>▪ Police Officer call out (3) £183</li> <li>▪ Alcohol services – admitted (12 days) £5,004</li> </ul>
Total benefit = £12,535
FROI = 1.14

### Case 5

#### Costs

Total cost = £11,000

#### Benefits

- Residential care home £91,370
- Bed days (3) £1,212

Total benefit = £92,582

FROI = 8.42

### Case 6

#### Costs

Total cost = £11,000

#### Benefits

- Community mental health team (48 hours) £1,920
- Day care (20 hours) £1,540

Total benefit = £3,460

FROI = 0.31

### Case 7

#### Costs

Total cost = £11,000

#### Benefits

- Detection for psychosis £3,380
- Drug services – admitted (8 days) £3,912
- Ambulance services (5) £595

Total benefit = £7,887

FROI = 0.72

### Case 8

#### Costs

Total cost = £11,000

#### Benefits

- Criminal offence (2) £1,340
- Police Officer call out (4) £244
- Temporary accommodation (10 weeks) £3,680
- Secure mental health service (14 days) £7,210

Total benefit = £12,474

FROI = 1.13

Case 9	Case 10
Costs	Costs
Total cost = £11,000	Total cost = £11,000
Benefits	Benefits
<ul style="list-style-type: none"> <li>Long-term residential care £74,672</li> <li>Ambulance services (2) £238</li> </ul>	<ul style="list-style-type: none"> <li>Employment £10,410</li> <li>Bed days (2) £808</li> <li>GP visits (3) £111</li> </ul>
Total benefit = £74,910	Total benefit = £11,329
FROI = 6.81	FROI = 1.03

### **The costs**

- 6.2 On the cost side of the equation we have adopted a top-down method. The total NSW project cost for one year is £110,000. A total of ten individuals will have been supported over a 12-month period creating a total unit cost for every case of £11,000.
- 6.3 If you had identified your cost bottom-up and observed that the individual cases had different combinations of resource input, then the unit costs would vary by case.

### **Predictive benefits**

- 6.4 Our starting point for calculating unit benefits is the long list of hard outcome unit costs assembled in the previous step. Now comes the truly predictive element. Based on your best knowledge of each supported case you need to allocate both the type of unit cost and the frequency of occurrence.
- 6.5 For each service user, there will be a set of benefits based on that individual's profile. Some service users, through NSW support, may have fewer incidents with the police, others may have avoided a placement breakdown. It is key to capture the additionality – the benefits that would not have been observed without the programme. Once the benefits have been identified and financial values attributed to them, you can construct your CBA profile. In our ten examples, unit additional benefits range from £3,460 (Case 6) to £92,582 (Case 5).

### **Fiscal Return on Investment**

- 6.6 For each case the division of benefits by cost will generate a Fiscal Return on Investment. For example, in case 1 the Fiscal Return on Investment is 3.34. this means that for every £1 invested in the project there will be potential saving of £3.34.
- 6.7 In Figure 6.1 the returns on investment range from 0.31 to 8.42.

**Top Tip 6:** Remember that predictive benefits are additional to what would have happened anyway. Avoid the temptation of making total benefits artificially higher than total costs. It is highly unlikely that all cases will have a positive return on investment, although not impossible!



## 7 STEP SEVEN: ESTIMATE OVERALL FROI

### Macro analysis

- 7.1 The individual cost benefit profiles established at Step Six form the building blocks for the NSW project level assessment or macro analysis. This will reveal the return on investment for the project overall and is therefore the target FROI we are seeking to generate.
- 7.2 With respect to every NSW case supported their return on investment will be equal to their estimated total benefits divided by their total costs. At an aggregated level this can be expressed as:

$$FROI = \frac{\sum(Benefits_1 + Benefits_2 + \dots Benefits_{10})}{\sum(Costs_1 + Costs_2 + \dots Costs_{10})}$$

- 7.3 **Table 7.1** shows the overall FROI based on the 10 CBA profiles used in the model. The overall FROI here is 2.44 which means that for every £1 spent, the net additional saving is £2.44. The overall FROI, of 2.44, is regarded as the 'headline' figure. This figure is important as it helps to answer key questions such as:

- Is the programme financially viable?
- How much does it cost/save?

**Table 7.1: Macro cost benefit assessment**

Case	Total benefit	Total cost	FROI
1	£36,764	£11,000	3.34
2	£4,969	£11,000	0.45
3	£11,705	£11,000	1.10
4	£12,535	£11,000	1.14
5	£92,582	£11,000	8.42
6	£3,460	£11,000	0.31
7	£7,887	£11,000	0.72
8	£12,474	£11,000	1.13
9	£74,910	£11,000	6.81
10	£11,329	£11,000	1.02
<b>Project level</b>	<b>£268,615</b>	<b>£110,000</b>	<b>2.44</b>
<b>Average</b>	<b>£26,861</b>	<b>£11,000</b>	<b>2.44</b>

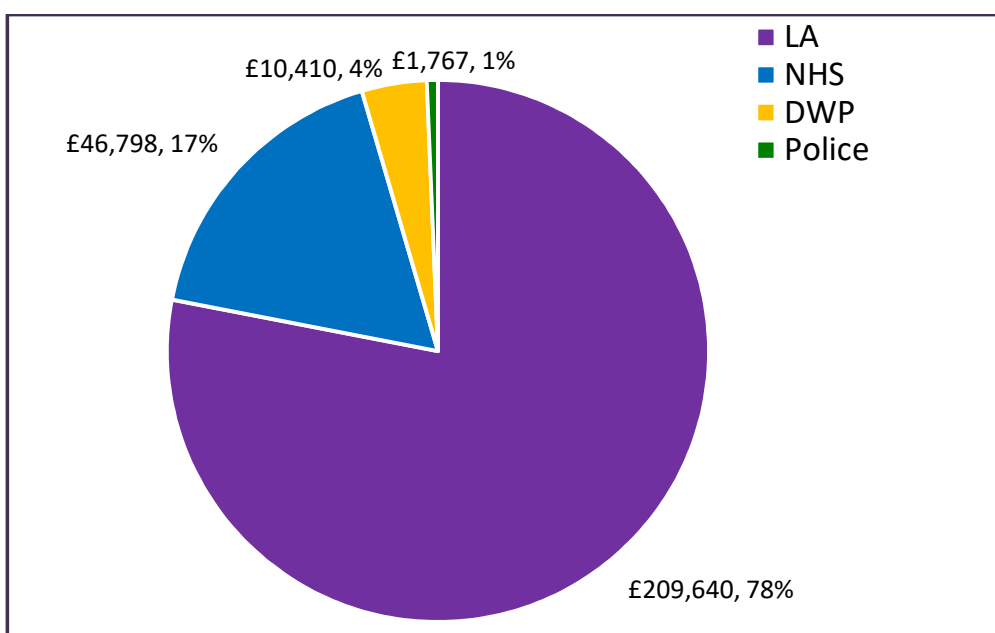
**Top Tip 7:** Remember the FROI you have created is predictive rather than actual. Be careful how you couch this finding in any wider analysis or business case.

## 8 STEP EIGHT: IDENTIFY BENEFIT BENEFICIARIES

### *Who gets the savings?*

- 8.1 We have identified that the NSW project has an overall FROI of 2.44. This is excellent news. However, we need to work out where the savings rest. Who can collect them?
- 8.2 Attribution of savings is achieved by analysing the overall additional benefit profile. From the previous section we know that the benefit savings from the project were £268,615. We also established from our benefit mapping exercise at Step Four the organisations responsible for delivering each outcome area. These are brought together in **Figure 8.1** which shows the distribution of savings across partner organisations.

**Figure 8.1: Benefit beneficiaries**



- 8.3 In this scenario, over 75% of the benefits go to the local authority. One reason behind this is linked to the types of benefits attributed to the local authority. In two CBA profiles, benefits included avoiding placement breakdown or a costlier placement. This totalled a sum of £166,042, 79% of the total local authority benefits.
- 8.4 Analysis of benefit beneficiaries is a powerful tool to potentially secure partner funding. In this example if we assume that the cost of the project is sustained by the local authority then 22% of the benefits (£59,000) is shared by NHS, DWP and the Police. None of these organisations contributed to the cost but share the benefits. They are probably not aware of this. It is however something that you should bring to their attention.
- 8.5 In this example the local authority is the main funder and the main beneficiary. This is not always the case. In a number of studies, we have conducted in this area of work the local authority is the main funder, but NHS and Police are the main beneficiaries thus generating a case for urgent dialogue.

**Top Tip 8:** Seek to find an opportunity to share this analysis with your partners. Avoid a heavy sell for contributions: at least to begin with. Let them work out the potential opportunity for themselves.

## 9 STEP NINE: OBTAINING ACTUAL DATA

### *This is an illustration*

- 9.1 Congratulations on completing your predictive cost benefit analysis. You now have some idea of your likely costs, potential benefits and possible return on investment. This must not be the end of the line. Remember the analysis is illustrative. This therefore represents the starting point in the process to generate your own data.

### **Costs**

- 9.2 You already have a reasonable handle on the top-down costs. You will however need to establish a client monitoring system to identify the resource inputs associated with bottom-up costing.

### **Benefits**

- 9.3 In order to generate your own benefit information, you need to establish two client datasets:

1. Forward tracking
2. Comparator group

#### **1. Forward tracking**

- 9.4 Forward tracking involves monitoring the individuals supported from the point they enter the project to the point they exit. If a period of support is likely to be prolonged – analyse the results after 12 months. If the number of cases supported is high, monitor a representative sample; maybe 20-30.
- 9.5 The monitoring system you put in place needs to be capable of identifying the type of outcomes featuring in the predictive analysis and their frequency. Analysis and annualisation of this data will generate your gross benefits. These however need to be adjusted to additional ‘benefits’ before they can be slotted into the CBA.
- 9.6 Also note that if you are using a sample of cases to estimate your benefits they will need to be weighted upwards. This is done by calculating the average benefit for the sample and multiplying it by the total annual cases supported.

#### **2. Comparator Group**

- 9.7 Comparator analysis is required to deduct the business as usual effect i.e. establishing additionality or a counter factual. If the project had not gone ahead some of the observed benefit outcomes would have happened anyway. These need to be netted off. The only way to establish additionality is to directly compare the outcomes for a similar cohort of individuals who did not receive this support.
- 9.8 There are three broad methods for establishing a comparator group:
1. Randomise Control Trial (RCT);
  2. Quasi Experimental Design (QED);
  3. Historical baseline.

**1. RCT**

- 9.9 This is the most rigorous approach and would involve identifying a client portfolio with similar characteristics and randomly assigning them into two groups. One would receive NSW support and the other would not.

**2. QED**

- 9.10 This is similar to RCT, but without randomisation. You would seek to match your sample with a similar group not receiving NSW support. This might be with another team within the authority not operating NSW.

**3. Historical baseline**

- 9.11 This is the least rigorous but often the most practical and would involve comparing outcomes for the same supported cohort before and after NSW support.
- 9.12 Whichever approach is adopted as the business as usual counterfactual it is necessary to subtract the outcomes achieved for the comparator group from the NSW supported group to establish net benefits. This will then become the benefit profile that will be used in your cost benefit analysis.

**Top Tip 9:** Design a realistic monitoring system that is fit for purpose and will work for you. Employ a sampling methodology. It is better to have some data than no data.

## 10 STEP TEN: CONCLUDING REMARKS

- 10.1 You are now ready to embark on your journey into the world of economic impact and cost benefit analysis. We have provided a framework which you can follow to generate both forward looking predictive cost benefit analysis and a backward facing actual cost benefit assessment. While we provided tips along the way we would like to leave you with some concluding remarks to always bear in mind when conducting your analysis.
- i. [Not an exact science:](#)
- 10.2 CBA is not an exact science and as such it is paramount to be realistic when constructing and reflecting on your CBA model. One should always resist the temptation to over claim the benefits of your project when projecting the benefits. Failure to do so could: generate unrealistic expectations of your project; and raise uncertainty around the precision of your model.
- ii. [An underestimation:](#)
- 10.3 When reflecting on your CBA model, always remember that the FROI methodology is an approximation and will underestimate the total impact of the programme as it excludes the economic and social benefits.
- iii. [Clarify assumptions:](#)
- 10.4 The CBA model is implicitly built on a set of assumptions. Indeed, each step in the guide introduces a new layer. Always clarify these assumptions and make sure it still depicts a close approximation of your project.
- iv. [Quality data:](#)
- 10.5 The key to effective CBA is quality data. Rubbish in rubbish out! Make sure the data sources you use, particularly from your monitoring systems are robust.
- v. [High unit costs:](#)
- 10.6 Always be wary of high unit costs. Projects with high unit costs are always vulnerable to a negative return on investment. If in this situation check the feasibility of a positive benefit profile.
- vi. [Cashable savings:](#)
- 10.7 Savings identified are potential savings. They only become real when the monies are withdrawn. If not withdrawn they have been re-invested.
- vii. [You are not yet an expert:](#)
- 10.8 This guide has introduced you to the potential witchcraft of cost benefit analysis. You are not yet an expert. Handle with care! If in doubt seek professional advice.



**Named Social  
Worker  
Programme:**

**Ten steps to creating  
your own cost  
benefit analysis**

**A York Consulting  
support guide**

**John Rodger and Brian  
Stewart**

**February 2018**

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## **INTRODUCTION**

1. This guide, developed by York Consulting, is designed to assist Named Social Worker (NSW) teams to conduct their own economic assessment using a predictive cost benefit analysis (CBA) methodology.
2. The approach presented recognises that NSW teams have had limited opportunities, given the short time scales, to collect much client outcome information. The initial focus is therefore on constructing a model of impact based on a range of assumptions. This provides an illustrative projection which can be checked with actual outcomes data at a later date.
3. Cost and illustrative outcome data was estimated based on a range of consultations with the Hertfordshire NSW team. The method was further market tested with all six second round NSW teams at a NSW evaluation workshop in February 2018.
4. While the methodology presented is not definitive, it should provide NSW teams, and others piloting a similar approach, with sufficient information to get started and specify their own cost benefit models. Teams may require further advice to fine tune their approach and to estimate counterfactual scenarios.
5. Further information relating to this guide can be obtained from Brian Stewart who can be contacted at [brian.stewart@yorkconsulting.co.uk](mailto:brian.stewart@yorkconsulting.co.uk).



## 1 STEP ONE: UNDERSTANDING COST BENEFIT ANALYSIS

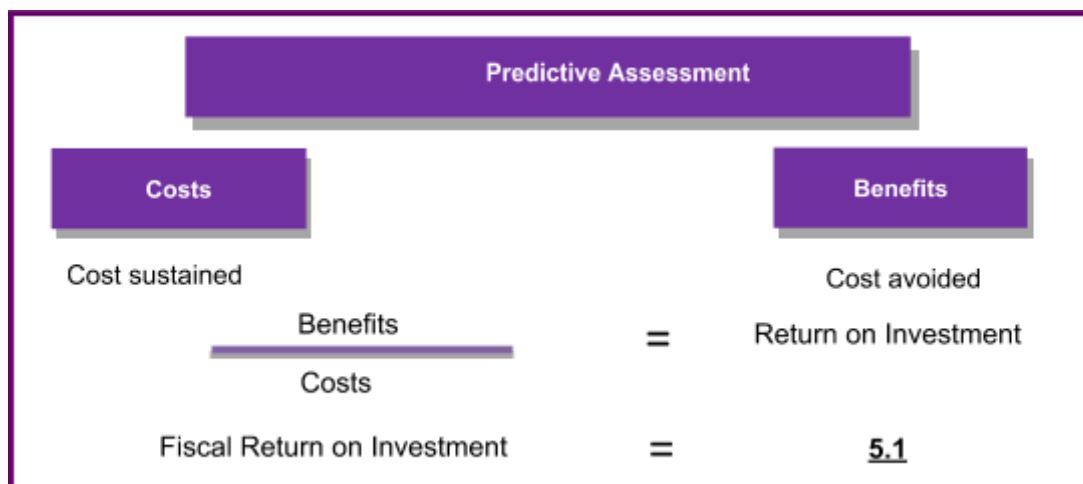
### *What is CBA?*

- 1.1 CBA is a powerful tool which is widely used across government and the private sector to assess the economic case for specific project interventions. CBA aims to quantify in monetary terms as many of the costs and benefits of an intervention as feasible, including items for which the market does not provide a satisfactory measure of economic value.
- 1.2 Typically, CBA consists of three strands of analysis:
  - **Fiscal** – Also referred to as the real money line, it is most appropriate where the focus is on cash savings or invest-to-save initiatives.
  - **Economic** – This is linked to concepts such as the income multiplier e.g. the economic value of an individual gaining employment.
  - **Social** – This strand focuses on monetising the value of a wide range of softer outcomes for which there are few financial values e.g. individual well-being.
- 1.3 Identified benefits are divided by observed costs to generate a benefit cost ratio or return on investment.

### *Constructing a predictive CBA model*

- 1.4 An overview of the predictive CBA model is set out in **Figure 1.1**.

**Figure 1.1: CBA Overview**



- 1.5 The predictive element follows from the need to project likely client outcomes based on best estimates. These can be subsequently checked against actual outcomes from client follow up at a point in the future.
- 1.6 The CBA model we have chosen focuses specifically on the fiscal line and is thus referred to as a Fiscal Return on Investment (FROI). This has been selected as it specifically addresses potentially cashable outcomes, particularly important to invest

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to save project interventions. As the economic and social dimensions of the cost benefit assessment have been excluded it has to be recognised that the benefits generated by the model will almost certainly be a under estimate of actual benefits to the wider economy and society. It is however the more realistic estimate from an invest to save perspective.

- 1.7 As the term suggests there are two sides to the cost benefit equation – costs and benefits. Costs are defined as the costs sustained in delivering the project intervention. In the NSW context this could be the total funding secured from the Department of Health for the project. Benefits, on the other hand, are defined as the costs avoided. In an NSW context this might include fewer GP visits and the avoidance of an emergency hospital admission for individuals supported.
- 1.8 The division of benefits by costs, produces a benefit cost ratio which in this specification is the Fiscal Return on Investment (FROI). In the example shown in Figure 1.1, an FROI of 5.1 indicates that for every £1 invested in the project there is a potential saving of £5.10. This would constitute a positive return on investment and support a case for continued project funding.
- 1.9 It is important to capture the additionality i.e. benefits and costs arising as a result of the intervention. This excludes what would have happened in the absence of the programme; otherwise referred to as ‘business as usual’.
- 1.10 Taking these factors into account, CBA can be used to answer key questions such as:
  - Does the project provide value for money?
  - Which partners benefit most from the investment?
  - How to prioritise investment across a range of projects?

**Top Tip 1:** Deciding what to include in the CBA should derive from the original aim(s) of the intervention. Is it for an individual, organisation or society as a whole? This should be evident from the theory of change (TOC)/logic model for the initiative. That said, it is not always this simple given the nature of some TOC/logic models. If there is a series of questions, the model may need to be adjusted for each question.

## 2 STEP TWO: ESTABLISHING APPROACH AND ASSESSING LIMITATIONS

### ***What is the question you want to answer?***

- 2.1 CBA works best when you are clear what you want it to do. Ask yourself – why am I doing this? What do I want to show? What decisions will it influence? What factors will carry greatest weight? What level of evidence might be required? When does it need to be done?
- 2.2 Answering these questions will help you decide how to specify the model, particularly the benefits to include.

### ***How strong is your theory of change?***

- 2.3 There is a strong correlation between the robustness of your theory of change and the strength of the CBA case that can be made. The tighter your focus on the intervention and the beneficiary group the better. For example, calculating the impact of a more intensive support programme on a clearly defined client group is easier to do than a more general intervention across a wider group. It may therefore be best to concentrate on only one element of your potential TOC.

### ***Hang on to the concept of additionality or value added***

- 2.4 The CBA of a new intervention such as NSW needs to show the impact beyond what was happening before i.e. ‘business as usual’. This means you need to identify the additional costs of the programme of support and set them against the additional benefits. While additional costs are relatively easy to observe benefits are trickier!

### ***Beware the magic of modelling: assumed models are illustrative not real***

- 2.5 When conducting a CBA for a project it is rare to have full and complete data at one’s disposal. Therefore, the cost benefit model will need to include some assumptions. Assumptions take account of data limitations. For example, if there is no control group (counterfactual) we might assume there is no need to omit any benefits as everything observed is value added.
- 2.6 This is a very broad assumption. Typically, one constructs a model at the beginning with estimated data which is full of assumptions and then relax them, or remove them altogether, as data becomes available. The construction of an estimated model provides a helpful illustration of the components of the model and its sensitivity to changes in particular costs and benefits.
- 2.7 Assuming that sufficient data is gathered at a later stage; it will be possible to check the actual data against the predictive approach.

**Top Tip 2:** Do not get carried away when predicting your projected benefits. This could generate unrealistic expectations or potential ridicule. Concentrate on illustrating the monetisation of potential benefits and the different combinations required to break-even i.e. costs equal benefits. This strategy will be more effective and influential than simply trying to generate a high return on investment.

### 3 STEP THREE: IDENTIFYING COSTS

#### *Always start with costs*

- 3.1 The cost side of the equation is usually the easiest to estimate and as such should be your starting point in the calculation. As indicated earlier these are the additional costs of delivering your NSW project. They are additional to your business as usual costs. We are effectively ring-fencing these costs from your mainstream business activity to simplify the analysis and focus on the additionality of your project investment.
- 3.2 Costs are critically important as they set the benchmark for the CBA assessment. A project costing £110,000 needs to generate the same level of benefits to break even. This would correspond to a FROI of 1.0.

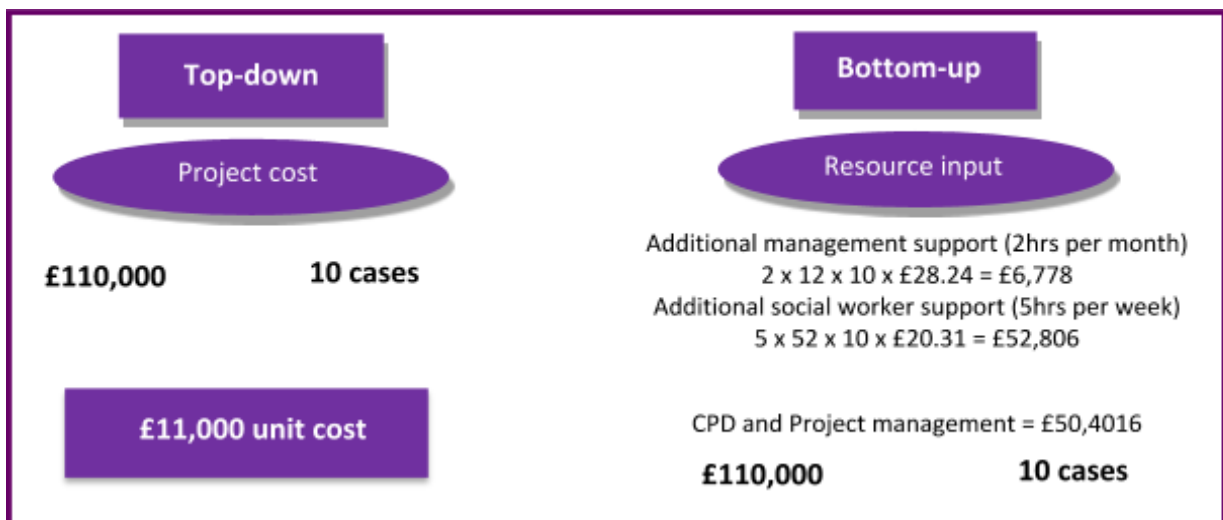
#### *Annualise costs*

- 3.3 It is always best to annualise costs to maintain consistency of comparison and improve the power of illustration. The context then becomes annual costs, annual benefits and an annual return on investment. This allows comparability with other projects of different durations. If your project cost is £55,000 and lasts 6 months the annual cost would be £110,000.

#### *Top-down and bottom-up costing*

- 3.4 **Figure 3.1** illustrates the two methods that can be used to calculate your NSW project costs.

**Figure 3.1: Costing Dimensions**



- 3.5 The first, and most straightforward, is the top-down approach. This is the overall delivery cost of the programme. In the case of Hertfordshire this was £110,000. Once you know how many individuals will receive the treatment/support you can calculate the unit cost of supporting one individual throughout the programme. In

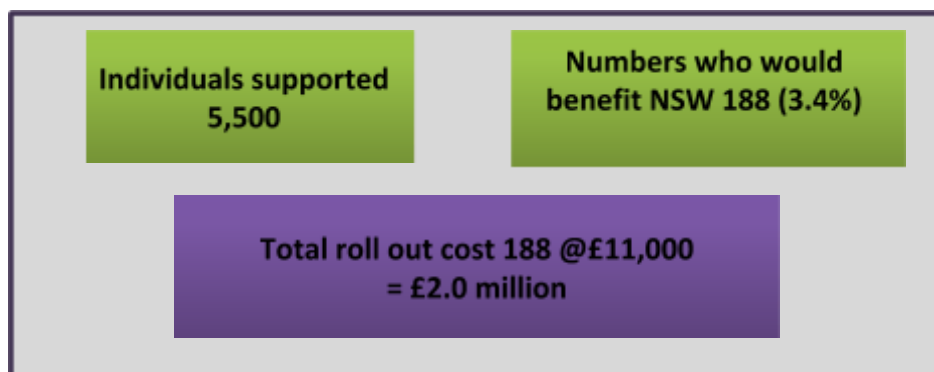
Hertfordshire's case, there were ten NSW cases which meant that the cost of supporting a NSW case was £11,000.

- 3.6 Alternatively, it is possible to build up the cost profile bottom-up. This involves identifying and segmenting delivery costs. In the illustration we calculate additional staff costs based on duration of support and staff hourly rates. We also identify other costs such as CPD and project management. The finer the granularity resource input assessment, the better the cost intelligence. For example, if costs subsequently prove to be higher than benefits, then the resource input assessment will make it easier to identify where potential savings might be made.
- 3.7 In Figure 3.1 illustration the top-down and bottom-up costs are the same. This rarely occurs in practice and usually means something has been missed in the resource costing or the project budget has not been fully spent.

### **Cost simulation**

- 3.8 It is possible to simulate costs and project to a potentially larger target group. An illustration of this is shown in **Figure 3.2**.

**Figure 3.2: Cost Projections**



- 3.9 In our Hertfordshire example, 10 clients were supported in the NSW project at a unit cost of £11,000. Hertfordshire have 5,500 individuals supported annually and estimate that 3.4% fit the NSW criteria for additional support. This means that an additional annual cost for a potentially full NSW cohort would be £2 million.

### **Steady state costs**

- 3.10 Cost estimation, whether top-down or bottom-up, should include only steady state costs. Excluded should be one off costs associated with the pilot project. This might include aspects of research and development.

**Top Tip 3:** Identifying the costs from a bottom-up approach is a much more time-consuming exercise compared to the top-down method. It is however worthwhile doing if only for a sample of cases. This is the best way of profiling cost inputs and assessing potential variation in support between client cases.

## 4 STEP FOUR: BENEFIT MAPPING

### *Map all project outcomes*

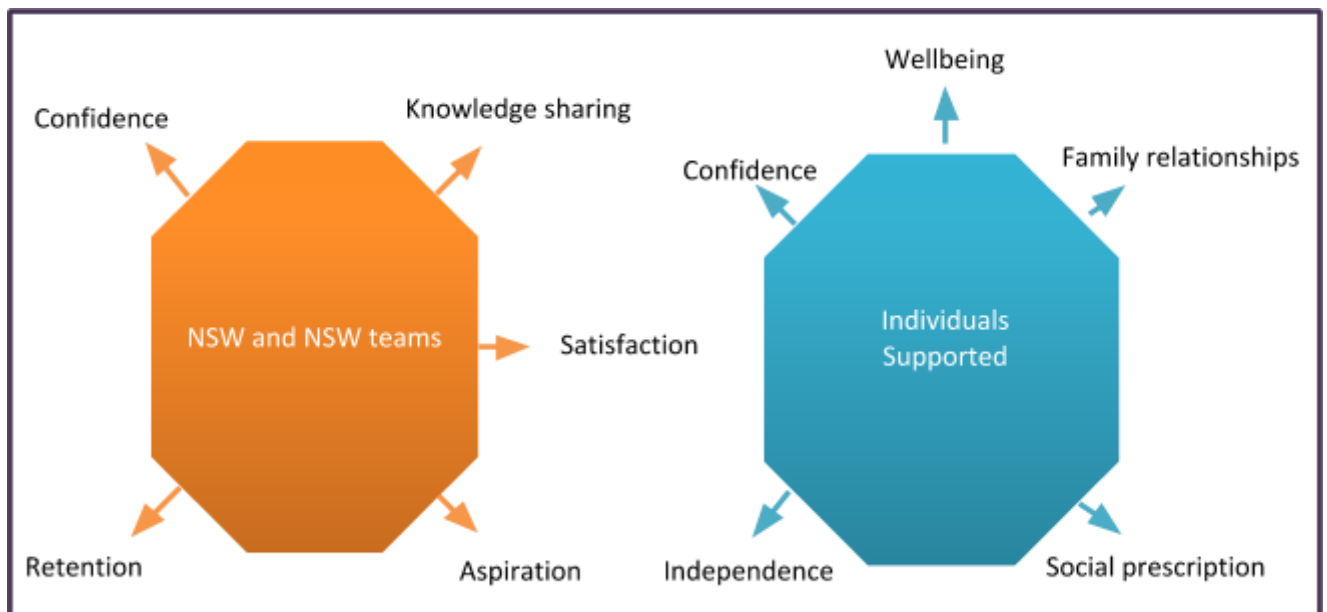
4.1 Within our cost benefit model, we have identified benefits as costs avoided. Prior to identifying what these cost savings might be, it is important first to map key benefit outcomes. These might not yet be evident but can be predicted from the NSW project theory of change or logic model. Construct a full list of the outcomes and the individuals/organisations who benefit from them.

### *Soft and Hard outcomes*

4.2 Translating benefit outcomes to costs avoided takes us into the territory of what might be described as ‘soft’ and ‘hard’ outcomes.

4.3 Examples of soft outcomes linked to NSWs, NSW teams and individuals supported are set out in **Figure 4.1**. These relate to aspects such as confidence, wellbeing, satisfaction, independence, aspiration etc. while they are fundamental to most NSW projects they are difficult to translate into cost savings. They also take us into the realms of Social Return on Investment (SROI) which we have excluded from this CBA specification. Although these outcomes will not feature in our cost benefit calculation it is useful to keep them in mind to balance against what will be an underestimation of project benefits. It should also be noted that they may be addressed indirectly through other more easily measurable outcomes.

**Figure 4.1: Soft Outcomes**



4.4 Hard outcomes are more easily translatable into costs avoided or benefit savings. Examples relating to a range of beneficiary organisations are listed in **Table 4.1**.

**Table 4.1: Hard outcomes by beneficiary organisations**

Hard outcomes by beneficiary organisations			
Local authority	Health	Education and employment	Criminal justice
<ul style="list-style-type: none"><li>● Care homes</li><li>● Care packages</li><li>● Placement stability</li></ul>	<ul style="list-style-type: none"><li>● GP visits</li><li>● A&amp;E visits</li><li>● Crisis situations</li></ul>	<ul style="list-style-type: none"><li>● Employment</li><li>● Qualifications</li><li>● Volunteering</li></ul>	<ul style="list-style-type: none"><li>● Police callouts</li><li>● Crime</li><li>● Prison</li></ul>

4.5 The hard outcomes identified relate to outcome savings on care home places, GP visits and police callouts etc. It is important to cluster them by beneficiary organisation as savings can then be deconstructed to specific Local Partners.

**Top Tip 4:** Focus most of your attention on the hard outcomes and identify as many as is consistent with your theory of change. Be realistic and assess the likelihood and prevalence of outcome manifestation.

## 5 STEP FIVE: MONETISE BENEFITS

### *Estimating costs avoided*

5.1 Having identified the full range of hard outcomes associated with your NSW project it is necessary to monetise them into costs avoided i.e. benefit savings. In order to do this, you need to identify an appropriate unit cost which is widely regarded as a reliable estimate for each benefit saving.

### *National estimates*

5.2 The best single source of benefit unit costs is 'Unit Costs of Health and Social Care' published by the Personal Social Service Research Unit (PSSRU)<sup>1</sup>.

5.3 Established at the University of Kent the PSSRU produce an annual database which brings together data from a range of sources to estimate national unit costs for a wide range of health and social care services including the cost of:

- GP visits;
- Emergency hospital admissions;
- Bed days;
- Day care.

5.4 As an example, see **Table 5.1** which has been taken from the latest (2017) Unit Costs of Health and Social Care report.

**Table 5.1: Monetised benefits**

NHS reference costs for mental health services	Mean £
Mental health care clusters (per bed day)	£404
Mental health care clusters (initial assessment)	£319
Alcohol services – admitted (per bed day)	£417
Alcohol services – community (per care contact)	£98
Drug services – admitted (per bed day)	£489
Drug services – community (per care contact)	£120
Drug services – outpatient (per attendance)	£105
A&E mental health liaison services	£196
Criminal justice liaison services	£176

<sup>1</sup> <http://www.pssru.ac.uk/project-pages/unit-costs/unit-costs-2017/>



5.5 An additional useful source from which you can draw financial estimates is the New Economy Unit Cost Database<sup>2</sup>. While this draws on some of the work from PSSRU, it also includes costs covering:

- Housing;
- Employment & economy;
- Education & skills;
- Crime;
- Fire.

### ***Local estimates***

5.6 As an alternative to national estimates it is possible to use local data to cover local authority variables such as costs of care packages or temporary accommodation etc. If you are doing this check against national estimates to make sure they are in the same ballpark. They should be similar. If they are not there is probably a definitional discrepancy. If in doubt use the national estimate. Be very wary of creating your own estimates. This falls outside the 'widely acceptable' sphere of consistency and quality assurance.

**Top Tip 5:** Check the definition of the unit costs and make sure it fits your situation, you cannot rely on the label. Also note the duration of the unit cost. There are a range of permutations from hours to years.

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<sup>2</sup>

<http://www.neweconomymanchester.com/our-work/research-evaluation-cost-benefit-analysis/cost-benefit-analysis/unit-cost-database>

## 6 STEP SIX: SPECIFYING COST BENEFIT PROFILES

### Micro analysis

6.1 The best way to bring your costs and benefits together is at an individual case level. This allows you to conduct what we call micro analysis. This will essentially generate a unit cost benefit assessment. Examples of ten cost benefit profiles relating to the ten individuals supported on the Hertfordshire NSW project are set out in **Figure 6.1**.

**Figure 6.1: CBA Profiles**

<b>Case 1</b>	<b>Case 2</b>
<b>Costs</b>	<b>Costs</b>
Total cost = £11,000	Total cost = £11,000
<b>Benefits</b>	<b>Benefits</b>
<ul style="list-style-type: none"> <li>▪ Bed days (10) £4,040</li> <li>▪ GP home visits (7) £1,694</li> <li>▪ Learning disability support in long-term residential care (20 weeks) £28,720</li> <li>▪ Day care for people requiring learning disability support (30 days) £2,310</li> </ul>	<ul style="list-style-type: none"> <li>▪ Ambulance services (6) £714</li> <li>▪ NHS community mental health team visit (8) £352</li> <li>▪ Elective inpatient stay £3,903</li> </ul>
Total benefit = £36,764	Total benefit = £4,969
FROI = 3.34	FROI = 0.45
<b>Case 3</b>	<b>Case 4</b>
<b>Costs</b>	<b>Costs</b>
Total cost = £11,000	Total cost = £11,000
<b>Benefits</b>	<b>Benefits</b>
<ul style="list-style-type: none"> <li>▪ Crisis resolution team (12 days) £11,520</li> <li>▪ GP visits (5) £185</li> </ul>	<ul style="list-style-type: none"> <li>▪ Loss of accommodation £7,348</li> <li>▪ Police Officer call out (3) £183</li> <li>▪ Alcohol services – admitted (12 days) £5,004</li> </ul>
Total benefit = £11,705	Total benefit = £12,535
FROI = 1.10	FROI = 1.14

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<b>Case 5</b>	<b>Case 6</b>
Costs	Costs
Total cost = £11,000	Total cost = £11,000
Benefits	Benefits
<ul style="list-style-type: none"> <li>▪ Residential care home £91,370</li> <li>▪ Bed days (3) £1,212</li> </ul>	<ul style="list-style-type: none"> <li>▪ Community mental health team (48 hours) £1,920</li> <li>▪ Day care (20 hours) £1,540</li> </ul>
Total benefit = £92,582	Total benefit = £3,460
FROI = 8.42	FROI = 0.31
<b>Case 7</b>	<b>Case 8</b>
Costs	Costs
Total cost = £11,000	Total cost = £11,000
Benefits	Benefits
<ul style="list-style-type: none"> <li>▪ Detection for psychosis £3,380</li> <li>▪ Drug services – admitted (8 days) £3,912</li> <li>▪ Ambulance services (5) £595</li> </ul>	<ul style="list-style-type: none"> <li>▪ Criminal offence (2) £1,340</li> <li>▪ Police Officer call out (4) £244</li> <li>▪ Temporary accommodation (10 weeks) £3,680</li> <li>▪ Secure mental health service (14 days) £7,210</li> </ul>
Total benefit = £7,887	Total benefit = £12,474
FROI = 0.72	FROI = 1.13

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Case 9	Case 10
Costs	Costs
Total cost = £11,000	Total cost = £11,000
Benefits	Benefits
<ul style="list-style-type: none"> <li>▪ Long-term residential care £74,672</li> <li>▪ Ambulance services (2) £238</li> </ul>	<ul style="list-style-type: none"> <li>▪ Employment £10,410</li> <li>▪ Bed days (2) £808</li> <li>▪ GP visits (3) £111</li> </ul>
Total benefit = £74,910	Total benefit = £11,329
FROI = 6.81	FROI = 1.03

***The costs***

- 6.2 On the cost side of the equation we have adopted a top-down method. The total NSW project cost for one year is £110,000. A total of ten individuals will have been supported over a 12-month period creating a total unit cost for every case of £11,000.
- 6.3 If you had identified your cost bottom-up and observed that the individual cases had different combinations of resource input, then the unit costs would vary by case.

***Predictive benefits***

- 6.4 Our starting point for calculating unit benefits is the long list of hard outcome unit costs assembled in the previous step. Now comes the truly predictive element. Based on your best knowledge of each supported case you need to allocate both the type of unit cost and the frequency of occurrence.
- 6.5 For each service user, there will be a set of benefits based on that individual’s profile. Some service users, through NSW support, may have fewer incidents with the police, others may have avoided a placement breakdown. It is key to capture the additionality – the benefits that would not have been observed without the programme. Once the benefits have been identified and financial values attributed to them, you can construct your CBA profile. In our ten examples, unit additional benefits range from £3,460 (Case 6) to £92,582 (Case 5).

***Fiscal Return on Investment***

- 6.6 For each case the division of benefits by cost will generate a Fiscal Return on Investment. For example, in case 1 the Fiscal Return on Investment is 3.34. this means that for every £1 invested in the project there will be potential saving of £3.34.
- 6.7 In Figure 6.1 the returns on investment range from 0.31 to 8.42.

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**Top Tip 6:** Remember that predictive benefits are additional to what would have happened anyway. Avoid the temptation of making total benefits artificially higher than total costs. It is highly unlikely that all cases will have a positive return on investment, although not impossible!

## 7 STEP SEVEN: ESTIMATE OVERALL FROI

### Macro analysis

- 7.1 The individual cost benefit profiles established at Step Six form the building blocks for the NSW project level assessment or macro analysis. This will reveal the return on investment for the project overall and is therefore the target FROI we are seeking to generate.
- 7.2 With respect to every NSW case supported, their return on investment will be equal to their estimated total benefits divided by their total costs. At an aggregated level this can be expressed as:

$$FROI = \frac{\sum(Benefits_1 + Benefits_2 + \dots + Benefits_{10})}{\sum(Costs_1 + Costs_2 + \dots + Costs_{10})}$$

- 7.3 **Table 7.1** shows the overall FROI based on the 10 CBA profiles used in the model. The overall FROI here is 2.44 which means that for every £1 spent, the net additional saving is £2.44. The overall FROI, of 2.44, is regarded as the ‘headline’ figure. This figure is important as it helps to answer key questions such as:

- Is the programme financially viable?
- How much does it cost/save?

**Table 7.1: Macro cost benefit assessment**

Case	Total benefit	Total cost	FROI
1	£36,764	£11,000	3.34
2	£4,969	£11,000	0.45
3	£11,705	£11,000	1.10
4	£12,535	£11,000	1.14
5	£92,582	£11,000	8.42
6	£3,460	£11,000	0.31
7	£7,887	£11,000	0.72
8	£12,474	£11,000	1.13
9	£74,910	£11,000	6.81
10	£11,329	£11,000	1.02
<b>Project level</b>	<b>£268,615</b>	<b>£110,000</b>	<b>2.44</b>
<b>Average</b>	<b>£26,861</b>	<b>£11,000</b>	<b>2.44</b>

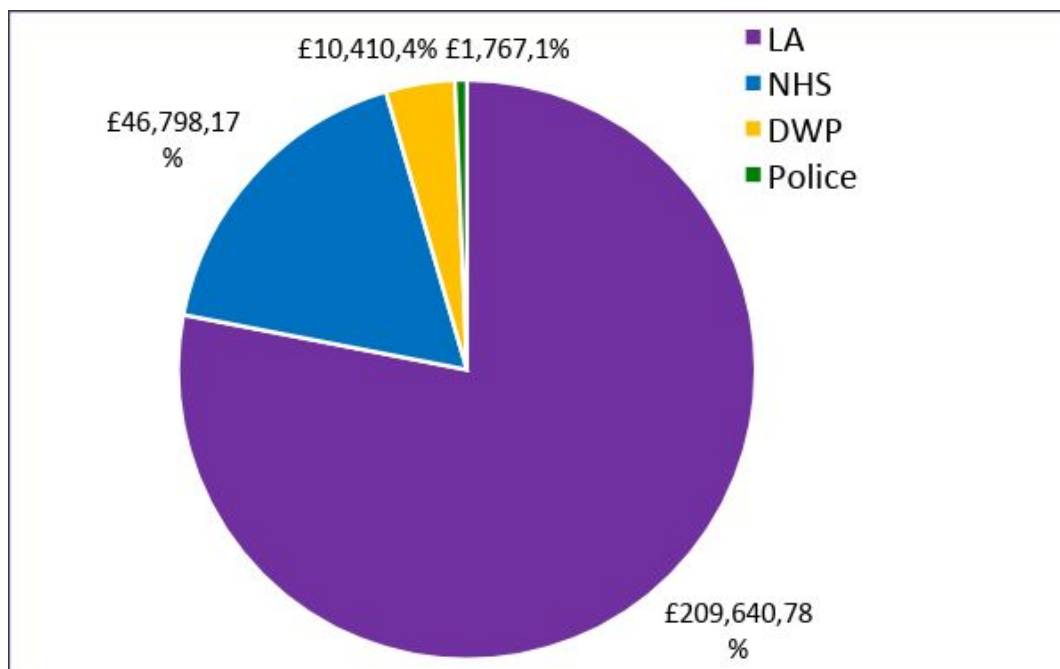
**Top Tip 7:** Remember the FROI you have created is predictive rather than actual. Be careful how you couch this finding in any wider analysis or business case.

## 8 STEP EIGHT: IDENTIFY BENEFIT BENEFICIARIES

### *Who gets the savings?*

- 8.1 We have identified that the NSW project has an overall FROI of 2.44. This is excellent news. However, we need to work out where the savings rest. Who can collect them?
- 8.2 Attribution of savings is achieved by analysing the overall additional benefit profile. From the previous section we know that the benefit savings from the project were £268,615. We also established from our benefit mapping exercise at Step Four the organisations responsible for delivering each outcome area. These are brought together in **Figure 8.1** which shows the distribution of savings across partner organisations.

**Figure 8.1: Benefit beneficiaries**



- 8.3 In this scenario, over 75% of the benefits go to the local authority. One reason behind this is linked to the types of benefits attributed to the local authority. In two CBA profiles, benefits included avoiding placement breakdown or a costlier placement. This totalled a sum of £166,042, 79% of the total local authority benefits.
- 8.4 Analysis of benefit beneficiaries is a powerful tool to potentially secure partner funding. In this example if we assume that the cost of the project is sustained by the local authority then 22% of the benefits (£59,000) are shared by NHS, DWP and the Police. None of these organisations contributed to the cost but share the benefits. They are probably not aware of this. It is however something that you should bring to their attention.
- 8.5 In this example the local authority is the main funder and the main beneficiary. This is not always the case. In a number of studies we have conducted in this area of work

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the local authority is the main funder, but the NHS and Police are the main beneficiaries thus generating a case for urgent dialogue.

**Top Tip 8:** Seek to find an opportunity to share this analysis with your partners. Avoid a heavy sell for contributions, at least to begin with. Let them work out the potential opportunity for themselves.



## 9 STEP NINE: OBTAINING ACTUAL DATA

### *This is an illustration*

9.1 Congratulations on completing your predictive cost benefit analysis. You now have some idea of your likely costs, potential benefits and possible return on investment. This must not be the end of the line. Remember the analysis is illustrative. This therefore represents the starting point in the process to generate your own data.

### **Costs**

9.2 You already have a reasonable handle on the top-down costs. You will however need to establish a client monitoring system to identify the resource inputs associated with bottom-up costing.

### **Benefits**

9.3 In order to generate your own benefit information, you need to establish two client datasets:

1. Forward tracking
2. Comparator group

#### **1. Forward tracking**

9.4 Forward tracking involves monitoring the individuals supported from the point they enter the project to the point they exit. If a period of support is likely to be prolonged, analyse the results after 12 months. If the number of cases supported is high, monitor a representative sample, maybe 20-30.

9.5 The monitoring system you put in place needs to be capable of identifying the type of outcomes featured in the predictive analysis and their frequency. Analysis and annualisation of this data will generate your gross benefits. These however need to be adjusted to additional 'benefits' before they can be slotted into the CBA.

9.6 Also note that if you are using a sample of cases to estimate your benefits they will need to be weighted upwards. This is done by calculating the average benefit for the sample and multiplying it by the total annual cases supported.

#### **2. Comparator Group**

9.7 Comparator analysis is required to deduct the business as usual effect i.e. establishing additionality or a counterfactual. If the project had not gone ahead some of the observed benefit outcomes would have happened anyway. These need to be netted off. The only way to establish additionality is to directly compare the outcomes for a similar cohort of individuals who did not receive this support.

9.8 There are three broad methods for establishing a comparator group:

1. Randomised Control Trial (RCT);
2. Quasi Experimental Design (QED);
3. Historical baseline.

**1. RCT**

- 9.9 This is the most rigorous approach and would involve identifying a client portfolio with similar characteristics and randomly assigning them into two groups. One would receive NSW support and the other would not.

**2. QED**

- 9.10 This is similar to RCT, but without randomisation. You would seek to match your sample with a similar group not receiving NSW support. This might be with another team within the authority not operating NSW.

**3. Historical baseline**

- 9.11 This is the least rigorous but often the most practical and would involve comparing outcomes for the same supported cohort before and after NSW support.
- 9.12 Whichever approach is adopted as the business as usual counterfactual it is necessary to subtract the outcomes achieved for the comparator group from the NSW supported group to establish net benefits. This will then become the benefit profile that will be used in your cost benefit analysis.

**Top Tip 9:** Design a realistic monitoring system that is fit for purpose and will work for you. Employ a sampling methodology. It is better to have some data than no data.

## 10 STEP TEN: CONCLUDING REMARKS

10.1 You are now ready to embark on your journey into the world of economic impact and cost benefit analysis. We have provided a framework which you can follow to generate both forward looking predictive cost benefit analysis and a backward facing actual cost benefit assessment. While we provided tips along the way we would like to leave you with some concluding remarks to always bear in mind when conducting your analysis.

i. Not an exact science:

10.2 CBA is not an exact science and as such it is paramount to be realistic when constructing and reflecting on your CBA model. One should always resist the temptation to over claim the benefits of your project when projecting the benefits. Failure to do so could generate unrealistic expectations of your project and raise uncertainty around the precision of your model.

ii. An underestimation:

10.3 When reflecting on your CBA model, always remember that the FROI methodology is an approximation and will underestimate the total impact of the programme as it excludes the economic and social benefits.

iii. Clarify assumptions:

10.4 The CBA model is implicitly built on a set of assumptions. Indeed, each step in the guide introduces a new layer. Always clarify these assumptions and make sure it still depicts a close approximation of your project.

iv. Quality data:

10.5 The key to effective CBA is quality data. Rubbish in rubbish out! Make sure the data sources you use, particularly from your monitoring systems are robust.

v. High unit costs:

10.6 Always be wary of high unit costs. Projects with high unit costs are always vulnerable to a negative return on investment. If in this situation check the feasibility of a positive benefit profile.

vi. Cashable savings:

10.7 Savings identified are potential savings. They only become real when the monies are withdrawn. If not withdrawn they have been re-invested.

vii. You are not yet an expert:

10.8 This guide has introduced you to the potential witchcraft of cost benefit analysis. You are not yet an expert. Handle with care! If in doubt seek professional advice.