

# BIM Value Benchmarking

## User Guide and frequently asked questions

*BIM Value Benchmarking* has been developed by the Sustainable Built Environment National Research Centre (SBEnc) and is hosted by NATSPEC.

### What does it do?

It is claimed that BIM will lead to more efficient delivery of constructed assets. *BIM Value Benchmarking* is an online tool for collecting contract information and calculating the value of benefits delivered by BIM. By comparing your project with data collected from many BIM and non-BIM projects it will be possible to benchmark the benefits delivered by BIM. By using *BIM Value Benchmarking* you will be able to identify the value delivered by your project in comparison to other BIM and non-BIM projects.

### Who is *BIM Value Benchmarking* for?

*BIM Value Benchmarking* is for use with construction projects in Australia and New Zealand. Clients, project managers and contractors are invited to contribute data and to benchmark their project(s) against other BIM and non-BIM projects. BIM Value Benchmarking focuses on main construction contracts that have achieved Practical Completion, as this is when the benefits of using BIM will be most obviously seen and measured. BIM Value Benchmarking can be used with many forms of contract including Construction only, Design and Construct, partnerships and alliances.

### How safe is my data?

All information is treated as confidential and is kept secure. KPI and benchmark reports do not identify specific projects (other than those belonging to the user). The SBEnc may use non-identifiable data for improving the tool and the production of research reports. From time to time SBEnc or NATSPEC may contact users to clarify data.

### How much does it cost?

*BIM Value Benchmarking* is free to use. The Demonstration module can be used without creating an account, just click the link. To use the full version of BIM Value Benchmarking you must create an account. You can only produce reports after you have added a project to BIM Value Benchmarking.

### More Information?

*BIM Value Benchmarking* should be intuitive to use, if you would like more information or encounter difficulties please contact the SBEnc:

T+61 8 9266 2126

E: [enquires@sbenrc.com.au](mailto:enquires@sbenrc.com.au)

## User Guide

*It is recommended that you print this short guide and refer to it whilst using BIM Value Benchmarking. BIM Value Benchmarking should be intuitive to use, if you encounter difficulties please contact the SBEnrc, email: [enquiries@sbenrc.com.au](mailto:enquiries@sbenrc.com.au) Telephone: 08 9266 2126*

The collection of accurate benchmarking data depends upon the reliability of contributors. Please ensure the data you enter is a true reflection of your project and contract. To explore *BIM Value Benchmarking* before entering real data please use the Demonstration module and separate guide.

<p><b>Step 1. Go to the homepage</b></p>	<p>bimvaluebenchmarking.natspec.org</p>
<p>Demonstration</p>	<p>If you just wish to explore BIM Value Benchmarking then select the 'Demonstration' button.</p> <p>If you want to become a full user of BIM Value Benchmarking and contribute data go to Step 2.</p>
<p><b>Step 2: Create account and login</b></p> <p>If you have an account then login. If not, create an account then login. Login opens the Main Page.</p>	<p>You must have an email address ending in .au or .nz Users and projects must be in Australia or New Zealand. Your username will be your email address.</p>
<p><b>Step 3: Create a project</b></p> <p>Click on 'Create / Select project'. Click on 'Create New Project'. Enter the required information. Click on 'Create Project'. Next, add a contract by clicking on 'Add contract to project'.</p>	<p>You can attach one or more contracts to a project. The Asset Type and Asset Category will allow benchmarking reports to be filtered once sufficient data has been collected for one asset type or category. Project Size is optional and uses only m<sup>2</sup> for buildings and km/laneway for road and rail projects. You may leave this item blank.</p>
<p><b>Step 4: Create a contract</b></p> <p>Enter the information on page 1 then click 'next'. Enter the information on page 2, and then click 'Create Contract'. Next, add metric data by clicking on 'Next Step'. You will not be able to click 'next' or 'Create Contract' until all the fields have been completed.</p>	<p>There are two pages of contract information to be entered. This information will be treated as confidential unless you agree otherwise. On page 2 at 'I work for' tick which party to the contract you work for directly or as a consultant/contractor. Then, select the role of the specific company you work for on this contract. You can go back and update contract information later if you need to. Only contracts that have achieved Practical Completion and Final Account will be used for benchmarking.</p>

<p><b>Step 5: Metrics</b></p> <p>Click the tick box for each metric that you want to use.</p> <p>Enter the corresponding data in each blank cell (if the data is 0, enter 0).</p> <p>Click 'Save metrics'</p> <p>Next, if this contract used BIM add enablers by clicking on 'Next Step';</p> <p>Otherwise, click on 'Return to Main Page'.</p>	<p>Data entered when you created the contract will be automatically carried-forward to the Metric Page. If you need to change any of this data, go back to the Contract Page.</p> <p>You do not need to provide data for all metrics.</p> <p>RFI (Request for Information) refers to requests or similar between the two parties to the contract only.</p> <p>A clash refers to actual physical clashes between elements or components found during construction. (If a clash results in an RFI then count both).</p>
<p><b>Step 6: Enablers</b></p> <p>Step 6 only applies to contracts on which BIM was used.</p> <p>Click on each metric in turn.</p> <p>For each metric click on the tick box by each of the enablers that you used.</p> <p>Save and repeat for each metric.</p>	<p>Providing information on enablers will allow benchmarking reports to tell you which enablers are being widely used with each metric.</p> <p>You do not have to enter any enabler information.</p>
<p><b>Step 7: Reports</b></p> <p>You can get to the reports module after entering Enablers or from the Main Page.</p> <p>From the dropdown boxes on the left-hand side select:</p> <ul style="list-style-type: none"> <li>One of your projects</li> <li>One of the contracts attached to that project</li> <li>The metric you want to report</li> <li>The type of graph you want (you can toggle between bar chart and scatter graph).</li> </ul> <p>To save and print your report click 'Download and Print PDF'. Print and save the downloaded PDF.</p> <p>Repeat for each metric you want to report.</p>	<p>Your reports will not be saved in BIM Value Benchmarking, use the 'Download and Print PDF' button and save the report on your computer.</p>
<p><b>Step 8: Logoff</b></p> <p>Once you have finished use the 'Logoff' button at the bottom of the screen to logoff.</p>	<p>You can logoff or return to the main page at any time by clicking the corresponding button at the bottom of the screen.</p>

## Metrics

Metric	Description	Data required	Calculation	Units
Contract Sum variation	This is a measure of Cost Predictability. It refers to the percentage difference between the initial contract sum and the final contract sum (or final account). The metric does not distinguish between causes of cost changes, though it is possible that BIM will contribute to an overall reduction in additional costs.	A. Contract Sum B. Final Contract Sum (final account)	$\frac{(B - A)}{A}$	%
Contract duration variation	This metric considers the difference between the contracted date of practical completion and the actual date of practical completion. It calculates a percentage that indicates how much contract duration varied to that that was initially anticipated. The metric does not distinguish between causes of delays and the calculation does not take into account non-working days such as public holidays and RDO's. It is possible that BIM will contribute to an overall reduction in time delays.	C. Date of Commencement D. Date for Practical Completion (contracted) E. Date of Practical Completion (actual)	$\frac{(E - C)}{(D - C)}$	%
Cost per unit quantity	Cost per unit compares the final contract sum with the quantity of units, based on the asset type. Data is collected for this metric however benchmark reports will not be available until a sufficient number of contracts for an asset type and category has been entered to make the metric meaningful. BIM may contribute to more efficient and effective delivery of constructed assets and thus a reduction in unit cost.	B. Final Contract Sum (final account) F. Quantity (units defined by asset type e.g. km laneway, building GFA).	$\frac{B}{F}$	\$/unit
Time per unit quantity	Cost per time compares the actual contract duration with the quantity of units, based on the asset type.  Data is collected for this metric however benchmark reports will not be available until a sufficient number of contracts for an asset type and category has been entered to make the metric meaningful. BIM may contribute to more efficient and effective delivery of constructed assets and thus a reduction in time per unit of production.	G. Duration (E - C) F. Quantity (units defined by asset type e.g. km road lane, building GFA).	$\frac{(E - C)}{F}$	Days/unit

Number of Requests for Information (RFI) per million dollars of contract value.	It has been argued that BIM will reduce the number of RFIs on construction contracts by allowing design teams to identify and resolve issues before they reach the construction site. Calculating the number of RFI's per million dollars of final contract sum allows contracts of different sizes to be compared and takes into account the potential of larger projects to generate more RFI's though possible less per \$M than smaller projects.	H. Number of RFI's (contractor to client) B. Final Contract Sum	$\frac{B}{H}$	RFI/\$M
Clashes in construction	Clashes occur when two building components are found to occupy the same physical space during construction, which can negatively impact cost and time. BIM has the capacity to reduce the number of clashes found on site by enabling their identification and resolution during the design stage. Calculating the number of clashes per million dollars of final contract sum allows contracts of different sizes to be compared and takes into account the potential of larger projects to have more clashes though possible less per \$M than smaller projects.	J. Total number of clashes found during construction B. Final Contract Sum	$\frac{B}{J}$	Clashes/\$M
Safety incident rate	This metric uses the industry standard OHS measure of 'Lost Time Per Million Hours Worked'. Safety is commonly a major concern in construction projects and it is argued that BIM can improve safety by enabling better planning.	M. Total number of lost time injuries on site per million hours worked	n/a	Injuries/Mhr
Sustainability (Australia only)	This metric compares the Green Star rating or ISCA IS rating of this project with the average rating across other Australian projects. The Green Star rating is used for building projects, while the ISCA IS rating is for infrastructure projects.	N. Green Star rating (for buildings) or P. ISCA IS rating for infrastructure	n/a	no.
Satisfaction	Satisfaction is most often measured qualitatively through surveys and satisfaction scales feedback. This metric measures the rating given by participants when asked to rate their satisfaction with contract outcomes from 1-5 (1 = strongly disagree; 5 = strongly agree). This metric will produce a graph that compares the satisfaction ratings of the participants.	K. Indicate your agreement with the following statement: "The contract efficiently and effectively achieved the desired outcomes.""	1-5 agreement rating	no.

## Frequently Asked Questions

### 1. *What does BIM Value Benchmarking do?*

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### 4. *Can I use BIM Value Benchmarking on my phone and tablet?*

This is not recommended; BIM Value Benchmarking will work best on a desktop computer.

### 5. *Is it essential that contracts have achieved Practical Completion and Final Account?*

Only contracts that have achieved Practical Completion and Final Account will be used for benchmarking so that like can be compared with like.

You have the option of setting-up a contract and returning later to enter all the information once Practical Completion and Final Account have been achieved.

### 6. *Do I need to provide data for all nine metrics?*

No, just provide as much data as you are able and willing to do. All the data you provide will be treated as confidential unless you agree otherwise.

### 7. *Should the metric data apply to the whole project or just the contract?*

All the metric data you provide should apply only to the contract you created. For example, the number of RFI's should be the number between the two main parties to the contract.

8. *We use different terminology, does this matter?*

No, *BIM Value Benchmarking* uses terms common to the construction industry. If you use different terms then you should use your judgement to decide on the equivalent. For example, some companies use 'change instructions' rather than 'variations', though they are essentially the same thing.

9. *What is the difference between the bar chart reports and the scatter graph reports?*

The bar chart report has three bars that show the benchmark metric for your contract, the average for all contracts using BIM and the average for all contracts not using BIM. This lets you compare the performance of your contract against the industry as whole.

The scatter graph shows the individual metric score for all contracts recorded in *BIM Value Benchmarking*, using different colours for your contract, contracts using BIM and non-BIM contracts. This allows you to see the range of scores being achieved by the industry for BIM and non-BIM contracts for the metric you selected. To maintain confidentiality, you will not be able to identify any of the contracts shown in the scatter graph (other than your own contract).

10. *Why are the nine metrics being used?*

The metrics are derived from previous research by the SBEnrc that was published in '*Delivering Value with BIM: a whole-of-life approach*'. This work was used to create the information website BIM Value hosted by NATSPEC: [bim.natspec.org/tools/bim-value-tool](http://bim.natspec.org/tools/bim-value-tool)

The nine metrics were chosen because they most easily describe contract outcomes and much of the data required to calculate each should be relatively easy to establish. The metrics will allow broad benchmarks to be calculated that should show a general trend in the benefits of using BIM, if any, in comparison to non-BIM projects.

Initially only seven of the metrics will be reported. Benchmark reports using the metrics for unit time and unit cost will be made available after sufficient data has been collected by Asset Type and Asset Category to produce valid results.

11. *Why do I need to provide so much information?*

The more information collected, the more reliable the benchmarking reports will be. It is easier to collect the data in one go rather than contact you later for additional information.

As the quantity of data collected grows additional reporting functions will be added to *BIM Value Benchmarking* so that reports can be filtered by type of contract, type of asset and other criteria. Until this time reports will reflect all the data in BIM Value Benchmarking.

12. *How were the Asset Types and Asset Categories chosen?*

These are the same as those used by the Australian Construction Industry Forum in their industry reports.

13. *Why is BIM Value Benchmarking only available to Australian and New Zealand users?*

Around the world countries use different units of measure and currencies that could not be easily incorporated into the first version of *BIM Value Benchmarking*. The SBEnc's partners are in Australia and New Zealand, so the focus is on these countries. If you would like to support the development of *BIM Value Benchmarking* for another country please contact the SBEnc.

14. *What is the difference between BIM Value and BIM Value Benchmarking?*

*BIM Value Benchmarking* builds on the information provided in BIM Value. These two different tools are based on research carried out by SBEnc in close collaboration with industry partners and affiliates. BIM Value and *BIM Value Benchmarking* have been designed to be complementary tools. The first is an interactive decision-support tool allowing users to identify benefits of using BIM, metrics for benefit measurement and enablers for delivering benefits. The latter collects metric and other data to create benchmarking reports that will measure the benefits being delivered by BIM across the industry.

## **About the Sustainable Built Environment National Research Centre**

SBEnc has the mission of producing world-class research based on a collaborative and strategic approach. SBEnc and its predecessor the Cooperative Research Centre (CRC) for Construction Innovation have been carrying out cutting-edge research about BIM and how to maximise its benefits since 2001. This research includes both technical and strategic aspects of BIM implementation. Technical aspects include BIM guidelines, case studies and tools. Strategic aspects include procurement and contracts, skills development and national strategies. SBEnc has also endeavoured to leverage its international network to produce research that is relevant not only to Australia but to the global community as well. For more information about SBEnc and their BIM projects go to: [www.sbenrc.com.au](http://www.sbenrc.com.au).

## **About NATSPEC**

NATSPEC is a not-for-profit organisation aiming to improve the construction quality and productivity of the built environment through leadership of information. This organisation has been delivering information to the Australian industry for over 40 years, including a number of comprehensive construction specification systems, which have been endorsed by both government and professional bodies. In more recent years, NATSPEC has positioned itself as a provider of information that aims to help implement BIM in the construction industry. This effort has also been largely based on a close collaboration model with other organisations such as the SBEnc, the Australasian Procurement and Construction Council (APCC) and the Australian Construction Industry Forum (ACIF). For more information about NATSPEC and their BIM projects go to: <http://bim.natspec.org/>

**If you would like more information on *BIM Value Benchmarking* please contact the SBEnc**

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