

Built environment Experimental studies Critical Appraisal Tool (BECAT) Checklist

**Checklist for conducting critical appraisal of non-human
built environment experimental studies**

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NHS Scotland Assure

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Built environment Experimental studies Critical Appraisal Tool (BECAT)

If support is required when completing this appraisal, then refer to Built environment Experimental studies Critical Appraisal Tool (BECAT): Guidance document.¹

Appraisal Details

Study reference:

Study subtype(s): laboratory testing (in vitro) field (in situ) COmputerised Simulation/ MOdelling (COSMO)

Appraiser:

Date of appraisal:

Checklists

Table 1.1 - minimum quality criteria: screening items

Minimum quality criteria	Yes	No	Unclear	N/A
S.1 Are there clear research questions, aims or objectives?				
S.2 Do the collected data answer the research questions, aims or objectives?				

If 'No' or 'Unclear' is answered on either of the screening items, then do not proceed with the checklist.

Table 1.2 - Built environment Experimental studies Critical Appraisal Tool (BECAT) checklist

Checklist Item	Yes	No	Unclear	N/A
1.1 Is the built environment feature or aspect being studied clearly defined?				
1.2 Are potential sources of bias from study design or methods identified and addressed?				
1.3 Are other factors outside the main variable of interest identified and addressed?				
1.4 Are funding sources and conflicts of interest declared?				
2.1 Is the environment described and with sufficient detail?				
2.2 Are environmental conditions described and quantified with appropriate detail for interpreting the results?				
2.3 Are the materials, systems, or components under study described with sufficient technical detail?				
2.4 Are intervention methods and procedures described clearly and in sufficient detail?				
3.1 Are data collection procedures systematic and described in sufficient detail?				
3.2 Are measurement tools and equipment described in enough detail to understand their capabilities and limitations?				
3.3 Is the choice of measurement tools explained and appropriate for the study?				
3.4 Are appropriate data quality control or validation measures used to ensure data reliability?				

Checklist Item	Yes	No	Unclear	N/A
4.1 Are study outcomes clearly defined, measurable, and described using appropriate units or criteria?				
4.2 Are the measurement methods appropriate and fit-for-purpose for the outcomes being assessed?				
4.3 Are the analytical methods appropriate for the data, clearly justified, and described with enough detail for interpretation?				
5.1 Are results clearly presented and interpreted in a way that aligns with the study aims?				
5.2 Are study limitations acknowledged?				
5.3 Are results contextualised against relevant standards, guidelines, or prior research?				
5.4 Is enough methodological detail provided for others to reproduce the study?				
5.5 Are data, protocols, or models accessible, or is access clearly explained and justified?				
For laboratory testing (in vitro) studies only				
6.1 Are laboratory environmental conditions controlled, reported, and appropriately representative of the intended real-world application?				
For field (in situ) studies only				
6.2 Is the real-world context described in sufficient detail?				
For COmputerised Simulation/ MOdelling (COSMO) studies only				
6.3 Are computational or physical models validated against empirical data or credible benchmarks, and is their applicability to the intended setting explained?				

Overall appraisal

very minor methodological limitations or risk of bias

minor methodological limitations or risk of bias

moderate methodological limitations or risk of bias

serious methodological limitations or risk of bias

serious methodological concerns: failed screening questions

¹ Public Services Delivery Scotland, NHS Scotland Assure, Healthcare Scientist Technical Team. Built environment Experimental studies Critical Appraisal Tool (BECAT): Guidance document. 2026