

Building Survey

MEASURED SURVEY OF THE FIRST-FLOOR CORRIDORS
WITHIN THE IQ BUILDING, UWTSD SWANSEA.

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BSC QUANTITY SURVEYING | MODULE: ACBA4017

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1. Introduction

This report evaluates a measured survey undertaken on the first floor of the IQ Building at the University of Wales Trinity Saint David, Swansea. The survey covered the main corridors and an adjoining communal breakout area outside several lecture rooms. The lecture rooms were not entered, although their door openings formed part of the measured wall layout. A handheld laser scanner was used alongside tape measurements and field sketches. The route was divided into seven sections to organise the work and relate each dimension to the correct area.

2. Part 1 – Planning the Survey

2.1 – Purpose and Intended Output

The purpose was to obtain a reliable dimensional record of the main first-floor circulation spaces. The intended output was a measured representation showing corridor runs, the communal area, door openings, wall returns, recesses, stair-related features and changes in direction. It could then support the preparation or checking of a scaled floor plan.

This was not a condition survey; defects, materials, structural condition and services were outside the scope. The exercise focused on spatial information and digital surveying. RICS guidance states that a measured survey should begin with a clear scope, required accuracy and intended deliverables (RICS, 2014). The priority was therefore a usable record of the visible layout rather than every fitting or surface detail.

2.2 – Survey Area and Required Detail

The survey included the accessible main corridors and the communal breakout area serving the lecture rooms. The communal space contained tables, chairs, sofas, a pool table and columns, which affected the scanning route but were not all required as permanent measured features.

The information recorded included long wall runs, corridor junctions, door openings, wall reveals, short returns, local offsets, an opening near the stairs and an angled wall. Lecture-room interiors, external elevations, the roof, ceiling voids, concealed construction and services were excluded.

The floor was divided into seven numbered sections. This reduced the risk of mixing measurements from different locations and separated the simpler corridors from the communal area and the irregular geometry in Section 7.

2.3 – Equipment and Method

The main instrument was a handheld laser scanner carried continuously through the surveyed spaces. Although it required no tripod or fixed stations, the operator still needed a planned route, a steady pace and sufficient coverage around corners.

A tape measure was used for selected checks. Graph paper and pencils were used for the field sketches, and a mobile phone recorded the survey environment.

Equipment	Purpose
Handheld mobile laser scanner	Continuous capture of the visible internal building geometry
Traditional tape measure	Measurement and verification of accessible dimensions
Graph Paper	Preparation of field sketches and recording of survey sections
Pencils	Recording and amending dimensions
Mobile phone	Evidence of attendance, equipment use and survey conditions

The proposed method was to complete a walk-through, confirm the survey boundary and follow a logical route through the corridors and communal area. Movement would slow at corners, doorways and changes in direction. The operator would remain within the circulation spaces and not enter the lecture rooms. Tape measurements would be repeated verbally before being written against the relevant section.

Important connecting areas would be passed carefully so that the scanner could maintain continuity between one section and the next. Where a feature was partly obscured, the route would be adjusted rather than assuming the hidden geometry.

2.4 – Site Assessment and Access

Access was available through the building's internal circulation system. The first floor remained in normal use, so staff and students could pass through the corridors and communal area during the survey.

The corridors were generally clear, but projecting walls, doors, furniture, columns and changes in direction affected the route. The communal area required particular care because its furniture reduced the available clear floor space. Fire exits, lecture-room entrances and circulation routes had to remain unobstructed.

Good artificial lighting supported safe movement and clear recording. Before scanning, the route was checked for narrow points, doors likely to open into the circulation space and locations where furniture could hide the wall line. Particular care was planned at

corridor junctions and at the transition into the communal area because these points linked several measured sections.

The work was completed as a pair: one student operated the scanner while the other monitored the route, assisted with tape measurements and recorded the figures.

2.5 – Risk Assessment Summary

The main hazards were walking while operating the scanner, tape measures across circulation routes, furniture, stairs and interaction with other building users. Risk controls followed the principle of identifying hazards and applying proportionate measures (HSE, n.d.).

Hazard	People at risk	Possible harm	Initial risk	Control measures	Residual risk
Operating the handheld scanner while walking	Survey team and building occupants	Collision, trip or fall	Medium	Walk at a controlled pace, observe the route and use a second person as a lookout	Low
Tape measure across a corridor	Survey team, staff and students	Trip or fall	Medium	Keep the measurement brief and retract the tape immediately	Low
Staff and students using the survey area	All building users	Collision or interruption	Medium	Communicate clearly and pause when routes become busy	Low
Furniture within the communal area	Survey team	Collision or incomplete survey data	Medium	Inspect the route and move carefully around obstructions	Low
Internal stairs	Survey team	Slip, fall or dropped equipment	Medium	Use the handrail where possible and carry equipment securely	Low

Electronic equipment and batteries	Survey team	Equipment failure or minor injury	Low	Inspect the equipment and use charged, undamaged batteries	Low
Warm internal conditions	Survey team	Fatigue, dehydration or reduced concentration	Medium	Take suitable breaks and remain hydrated	Low

Equipment was not left unattended, escape routes remained clear and the survey paused when necessary.

2.6 – Limitations

The survey did not represent the whole first floor because the lecture rooms were excluded. Doors were recorded only as openings within the circulation-area walls.

The scanner could capture only visible surfaces. Furniture, columns, doors and moving people could obstruct walls, while rapid movement around corners could reduce scan quality. Tape measurements could also be affected by poor alignment, reading errors or incorrect recording.

The session was time-limited, so the principal geometry and openings were prioritised. This meant that minor fittings and furniture were not individually measured.

The processed scan was supplied in paper form, which allowed dimensions to be reviewed but not interrogated like the original point cloud. Measurements taken from paper may also be affected by line thickness, drawing scale and rounding.

No photograph clearly showing the handheld device was captured; the site photographs, sketches and processed output therefore provide the supporting evidence.

3. Part 2 – Practical Survey

3.1 – Survey Execution

The practical survey was completed in two stages. During the first stage, another student and I undertook a traditional measured survey of the first-floor corridors and communal breakout area. We walked through the agreed survey area using a tape measure to record the main dimensions. One of us took the measurements while the

other prepared the field sketches and recorded the figures. We changed roles where necessary and verbally confirmed each reading before progressing to the next feature.

The surveyed layout was divided into seven numbered sections to keep the measurements organised. We recorded the principal corridor wall lengths, door openings, short wall returns, recesses, local offsets, stair-related features and the communal area outside the lecture rooms. The lecture rooms themselves were not entered or measured.

After the manual measurements had been completed, a group of students, including me, undertook a second walkthrough using the handheld laser-scanning device. We followed a continuous route through the same first-floor corridors and communal area. The device was moved at a controlled pace, with additional care taken around corners, corridor junctions, furniture and changes in direction.

The group walkthrough enabled the visible geometry of the surveyed areas to be captured digitally and later processed into a survey output. This provided a broader spatial record than the individual tape measurements, while our field sketches and dimensions remained available for comparison and checking. Photographs were also taken to record the first-floor environment and the route included within the survey.

3.2 – Changes and Problems Encountered

The route had to remain flexible because the building was occupied. When staff or students crossed the survey area, the operator paused until it cleared. This reduced disruption and prevented people from blocking the scanner's view.

Furniture was the main obstruction in the communal area. The route was adjusted around tables, chairs, sofas and the pool table without moving university property.

Recording connected dimensions also created a risk of confusion. Some field-sheet figures were amended, so each section was numbered and measurements were repeated verbally before recording.

Section 7 was the main geometric challenge. Its angled wall and offsets could not be described by one manual dimension. Several related measurements were taken, while the scan provided the stronger overall spatial record.

3.3 – Reflection

The exercise demonstrated that handheld scanning still requires planning and judgement. The operator must control walking speed, identify obstructions and decide

whether sufficient information has been captured. Working as a pair improved safety and recording quality.

For a future survey, I would prepare a clearer route diagram, use consistent symbols for openings and returns, record the exact scanner model and photograph the device in operation.

4. Part 3 – Measurement and Analysis

4.1 – Extracted Measurements

The field sheets were reviewed to identify representative measurements. Key wall runs included 6.60 m and 7.00 m in Section 1, 6.70 m and 5.40 m in Section 2, 9.30 m in Section 4 and 2.70 m in Section 5.

Openings included repeated values of approximately 1.85 m, a 1.55 m opening in Section 6 and a 1.50 m opening in Section 7.

Section 6 included communal-area dimensions of approximately 4.50 m, 4.80 m and 3.80 m, together with a 0.10 m reveal and offsets of 0.28 m and 0.60 m.

Section 7 included an 11.40 m baseline, a 5.60 m run, a 5.30 m return, a 6.00 m connecting length and a 5.70 m angled wall.

Section	Recorded feature	Dimension (M)
1	Main wall runs	6.6 and 7
1	Offset	0.5
1	Two openings	1.85 each
2	Wall runs	6.7 and 5.4
2	Door openings	1.85
3	Short wall returns	0.35 and 0.29
3	Wide opening	3.4
3	Recess	1.51 x 2.4
4	Long wall/ corridor	9.3
4	Opening near stairs	1.6
5	Short wall run	2.7
6	Communal-area walls	4.5 and 4.8
6	Internal wall run	3.8
6	Door opening	1.55
6	Reveal and offsets	0.1, 0.28 and 0.6
7	Main baseline	11.4
7	Connected wall lengths	5.6, 5.3 and 6
7	Angled wall	5.7
7	Door opening	1.5

7	Short return	0.13
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The long dimensions established the main layout, while shorter returns and offsets explained the positions of openings and wall changes. The final labels should be checked against the processed paper plan because some handwritten feature descriptions are less clear than the figures.

4.2 – Comparison with Traditional Methods

Tape measurement is inexpensive and effective for short accessible distances. It gives an immediate result and suits door openings, reveals and wall returns. Longer measurements may require two people and can be affected by alignment, sag or obstructions.

Manual surveying also depends on identifying every required dimension during the visit. An omission may require a return.

The handheld scanner captured a connected record of the visible spaces while the operator moved through them. This was particularly useful for junctions, the communal area and Section 7. It reduced the need to anticipate every measurement and allowed further dimensions to be extracted from the processed information.

The scanner was not automatically error-free. Results could be affected by movement, hidden surfaces, people, furniture and the route followed. The information also required processing before becoming a usable plan.

A tape would be quicker for one simple dimension. Across a larger irregular layout, the scanner was more efficient because it captured more information in one route. Its main advantage was completeness and reduced risk of missed dimensions.

In terms of accuracy, the tape depended on correct positioning, reading and recording, whereas the scanner depended on controlled movement, visibility and successful processing.

In terms of time, the tape was faster for an isolated check, but the scanner was more productive across the complete route.

In terms of completeness, the scanner captured more visible information, while the tape captured only the dimensions selected on site. Neither method could record concealed or excluded areas.

The most reliable approach combined both methods. The scanner provided the wider spatial record, while tape measurements and sketches supplied immediate checks and local detail.

5. Conclusion

The survey successfully recorded the main first-floor corridors and communal breakout area. The handheld scanner suited the connected and irregular layout, while tape measurements were useful for selected checks.

Occupancy, furniture and changes in direction required route adjustments, but teamwork and sectioned sketches allowed the work to proceed safely. The main lessons were to define the scope, plan the route, record information consistently and retain both digital and manual checks.

References

Health and Safety Executive (HSE) (n.d.) *Managing risks and risk assessment at work*. Available at: <https://www.hse.gov.uk/risk/> (Accessed: 16 July 2026).

Royal Institution of Chartered Surveyors (RICS) (2014) *Measured Surveys of Land, Buildings and Utilities*. 3rd edn. London: RICS.

Appendices

Appendix A – Photographic Evidence

Figure A1 – Communal breakout area



Figure A1: First-floor communal breakout area included within the measured survey.

Figure A2 – Main Corridor



Figure A2: Main first-floor corridor forming part of the handheld survey route.

Figure A3 – Corridor junction



Figure A3: Corridor junction and change in direction included within the survey.

Appendix B – Field notes

Figure B1 – Sections 1 to 5

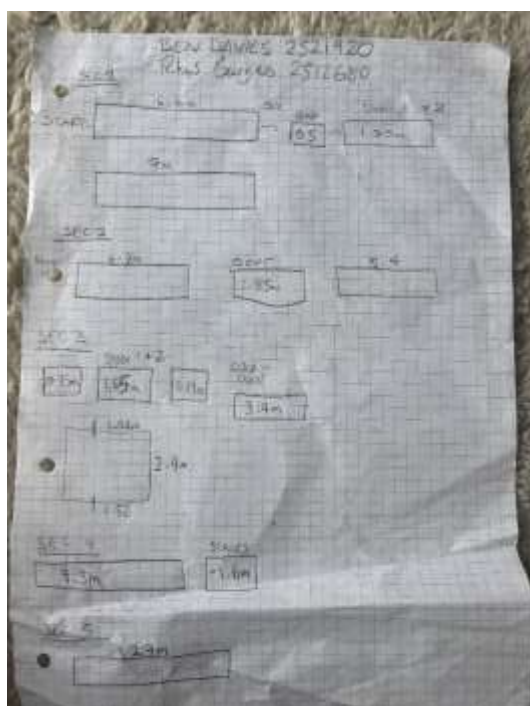


Figure B1: Handwritten measurements for survey Sections 1 to 5.

Figure B2 – Sections 6 and 7

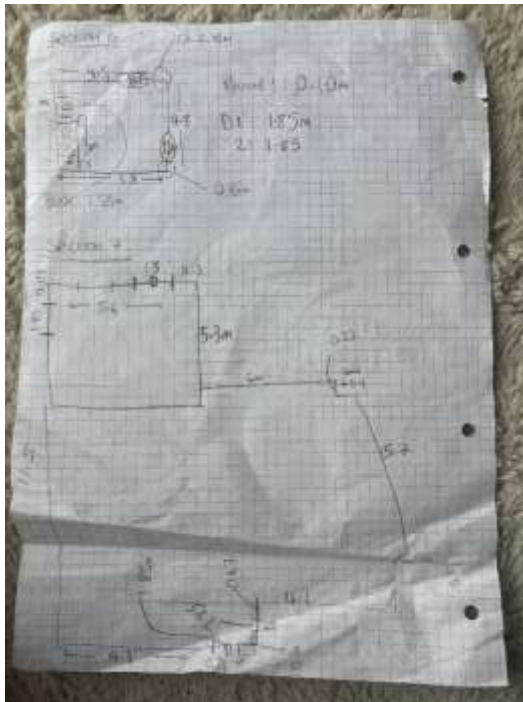


Figure B2: Handwritten measurements for survey Sections 6 and 7.

Appendix C – Processed Survey Output

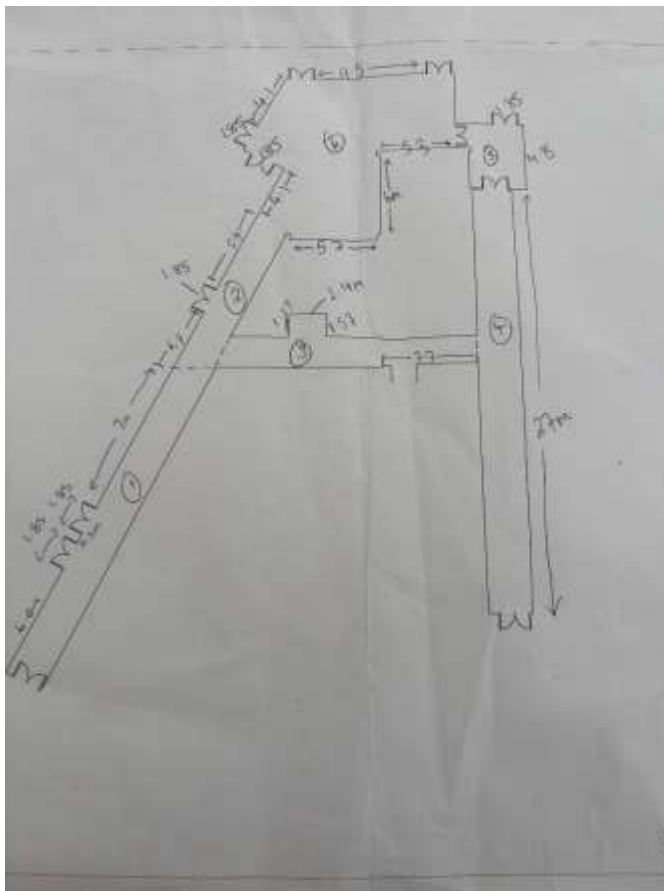


Figure C1: Processed survey output showing the measured first-floor corridors and communal area.