The AECB Building Standard & Low Energy Buildings Database

Create a high-performance building at little or no extra cost

The AECB Building Standard is aimed at those wishing to create high-performance buildings using widely available technology at little or no extra cost. We estimate that this low-risk option will reduce overall CO2 emissions by 70% compared to the UK average for buildings of each type – a highly significant result given the relative ease and low cost with which this standard can be met. Individual self-builders and large-scale residential and non-residential developers could make a valuable contribution to low-carbon building by meeting the AECB Building Standard.

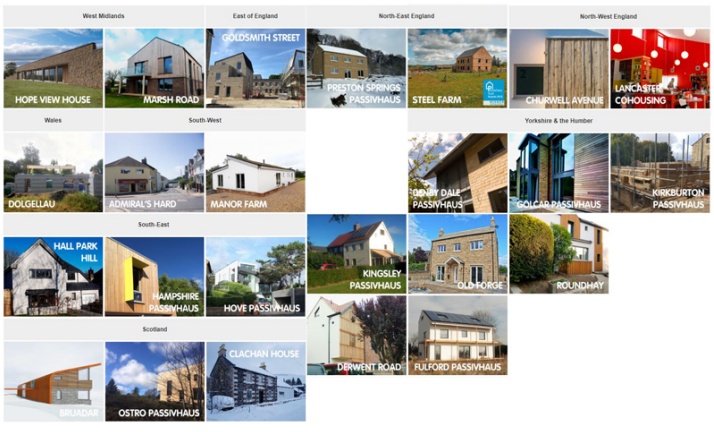
Find Out More

The Low Energy Building database

The AECB holds information on over 400 low energy projects (new builds and retrofits) on the Low Energy Buildings Database (LEBD). It is an online resource that anyone can view for free to learn about real projects and how they turned out.

For those working in the world of low energy buildings, there is so much to be gained from understanding how projects achieve high standards, and the real life challenges that sometimes have to be overcome to get there.

Find Out More



AECB Building Standard Further Information

The AECB Building Standard can be said to be achieved where a building that is designed and modelled using PHPP[1] in accordance with current Passivhaus methodology meets the following requirements:

Parameter	Target	Notes
Delivered Heat and cooling	≤ 40kWh/(m².a)	According to PHPP * and Passivhaus methodology.
Primary Energy demand	Varies kWh/(m².a)****	ditto
Air tightness (n50)	≤ 1.5 h^{-1} (≤ 3 h^{-1})	With MVHR (with MEV) **
Thermal Bridges ***	$Psi_{external}$ <0.01 W/mK	Calculated if > 0.01 W/mK
Summer overheating	<10%	<5% recommended

* Passive House Planning Package.
** it may not be possible to meet the heat demand target without MVHR for some buildings.
*** Standard Passivhaus methodology is used. If no calculation is submitted, then the decision as to whether a detail is thermal bridge free may be queried at the discretion of the AECB.
****PE demand varies by country according to each nations PE ratio. As of PHPP 9.6 UK PE is 135 kWh/(m².a) **Note:** The Primary Energy requirements have changed because PHI have updated PHPP – the latest version of PHPP recognises national variations in Primary Energy factors. If your project was started using an older version of PHPP i.e. the calculations use PHPP 9.1 or earlier, then please continue to use the same 120 kWh.m2.yr PE limit that your version of PGPP requires for 'Classic Passivhaus' in order to certify your project.

Thermal bridges

The AECB Building Standard uses the Passivhaus approach of using external dimensions to simplify modelling. It also requires that thermal bridges are minimised and there are the necessary guards against mould and condensation. Psi-values shall comply with Table 1.

Winter comfort requirements

Whilst the Passivhaus approach simplifies the achievement of winter comfort conditions by requiring surface temperatures including glazing to be greater than 17°C, this is unlikely to be achieved with all AECB Building Standard buildings, which are likely to have higher window U-values than required for Passivhaus. To prevent user dissatisfaction the designer will need to consider comfort, for example limiting glazing areas and careful positioning of heat emitters as well as heat distribution within rooms and the building as a whole.

Summer comfort requirements

AECB Building Standard certification requires summer overheating risks to be calculated using PHPP. Target values shall accord with current Passivhaus requirements.

Notes on compliance:

Compliance with the AECB Building Standard cannot be assumed unless the building has been modelled in PHPP, construction quality has been verified and the supporting data has been publicly declared.

Declaration takes place by:

You must create a user account at the low energy buildings website and create a project entry for your building project. Once you have created your project listing you can begin to provide the evidence required for self certification of your project.

- Uploading the PHPP Verification sheet to the Low Energy Buildings Database.
- Uploading a set of key construction details (drawn details and their photographic equivalent) to provide evidence of construction quality
- Uploading a all other relevant data scheduled in checklist provided below

AECB Building Standard certification: Step-by-step

How are AECB Building Standard projects certified?

Client
For your piece of mind AECB recommends that a suitably experienced person or a certified Passivhaus designer/consultant certifies the project. Ideally they are already a part of your design team, which means many costs associated with meetings and site visits can be absorbed without incurring significant additional cost.

Architects, Engineers and Consultants
A self-certification route has been developed whereby the self-certifier takes responsibility for certification and for underwriting the AECB Building Standard claim. The certifier may be a suitably experienced person or a certified Passivhaus designer/consultant, or the building's energy assessor.

Contractors
It is advised that you ensure a suitably experienced person or a certified Passivhaus designer/consultant, or the building's energy assessor, has been appointed to act as certifier, and that design conformance has been demonstrated prior to commencing on site.

AECB Building Standard certification: Trading Standards and legal considerations

- *The claim that a building is designed to the AECB Building Standard can be independently verified.*
  Where a certificate is provided by the AECB, the responsibility for certification rests with the professional signing this certificate and not with the AECB.
  The AECB reserves the right to recall any certificate in the event of proven malpractice or false claims.
- *Trading Standards and legal considerations:*
  By making a project's claim explicit and a matter of public record the self-certification process has been designed to provide a degree of consumer protection under trading standards – without the AECB having to get involved in quality control and legal matters.
- *Duty of care:*
  Responsibility for certification and claims regarding building performance rest with the person signing the certificate. There is also a duty of care placed on the client to ensure that the consultant is competent and suitably insured.

The Role of the AECB in the certification process

Records: The AECB will retain electronic copies of such details as required to verify that a building meets the AECB Building Standard but it does not necessarily check for compliance.
Queries: The AECB reserves the right to query submissions at its own discretion. Self-certifiers shall respond to all queries to the AECB's satisfaction. In the event of a failure to respond to queries within 20 working days then the AECB reserves the right to disallow the claim of AECB Building Standard compliance.
Declaration certificate: Though the AECB provides a declaration certificate it does not audit or take responsibility for the certification process. In this respect the responsibility for certification lies firmly with the certifying consultant making the declaration. To this end the declaration certificate, and all other relevant information must be completed by the certifying consultant.
In the event of a non-conformance claim the onus lies with the certifying consultant, not with the AECB.

What design tools are required?

If you want to start designing your AECB Building Standard project today you can purchase the latest version of PHPP here

Supporting evidence requirements

	Drawing & photographic record	Drawings.PDF A4 format	Photographsjpeg format.
1	All elevations of completed building	One elevation per page. Scale bar to be included.	one photo. for each elevation
2	Floor to wall junction – continuity of insulation visible	✔	✔
3	Floor to wall junction – airtightness measures visible		✔
4	Intermediate floor to wall junction – airtightness measures visible	✔	✔
5	Roof to wall junction – continuity of insulation visible	✔	✔
6	Roof to wall junction – airtightness measures visible		✔
7	Typical window in wall detail – jamb with wall insulation measures visible	✔	✔
8	Typical window in wall detail – jamb with airtightness measures visible		✔
9	Typical treatment of services penetration in fabric – with airtightness measures in place	✔	✔
10	Typical MEV or MVHR installation showing ducts & duct insulation		✔
11	Hotwater storage and pipework – showing tank and pipe insulation		✔
12	Windows/doors – showing opening light with seals and glazing spacer bars		✔
Other			
13	Air pressure test certificate (pressurisation and depressurisation results)	✔	
14	PHPP verification sheet as pdf	✔	
15	Copy of building users manual	✔ optional	

AECB building knowledge

Find out more about the Building Standard