Hann Tucker Associates
Consultants in Acoustics
Noise & Vibration Control

CLIENT INFORMATION BULLETIN 8C
August 2008

All Change!

Building Regulations Approved Document E, Robust Details & Code for Sustainable Homes

Approved Document E (ADE) of the Building Regulations was revised in 2003 and Robust Details were launched in 2004. The Code for Sustainable Homes became mandatory in May 2008. This Client Information Bulletin explains these requirements, and flags the implications for residential developments.

The Code for Sustainable Homes (CSH) has replaced EcoHomes and introduces minimum standards for a range of design categories. The standards in the Code are set above the minimum requirements of the Building Regulations. Up to 4 credits are available for achieving higher standards of sound insulation than those given in Approved Document E (ADE).

The ADE criterion for airborne sound insulation in new dwellings is $D_{nT,w} + C_{tr}$ 45dB. For impact sound insulation the criterion is $L_{nT,w}$ 62dB.
Credits are awarded as follows:

	1 Credit	3 Credits	4 Credits
Airborne Sound	ADE + 3dB	ADE + 5dB	ADE + 8dB
Impact Sound	ADE – 3dB	ADE – 5dB	ADE – 8dB

Detached dwellings automatically receive 4 credits and attached dwellings where separating walls and floors only occur between non habitable rooms receive 3 credits.

The overall aim is to achieve a significant improvement in the acoustic performance of party walls and floors, especially at low frequencies.

As a result greater consideration should be given to the basic construction of separating walls, floors and flanking constructions. A move to more massive and/or wider constructions is therefore inevitable. instructions is therefore inevitable.

Picture courtesy of Assael Architecture

The revision of Approved Document E "Resistance to the Passage of Sound" was substantial for many reasons, including:-

- Large numbers of complaints regarding domestic noise nuisance.
- Increased awareness of the adverse effects of noise.
- Significant social change – more people working from home; increased use of powerful home entertainment systems; rising occupier expectations.
- Poor compliance of buildings with previous sound insulation standards.
- Low occupier satisfaction with previous sound insulation standards.
- Government driven urban renaissance and use of brown field sites.
- Government requirement for improvements in the quality of life.

What are the main requirements of ADE?

Approved Document E contains four Requirements, referred to as E1, E2, E3 & E4 as outlined below:

E1 Party Walls & Floors

Applies not only to dwellings, but also to rooms for residential purposes including hotels, hostels, boarding houses, halls of residence and residential homes - but not hospitals.

Minimum on-site performance standards are **mandatory**.

Performance standards were revised in 2003, and are intended to be more onerous. Construction details were upgraded accordingly.

Demonstrate compliance by Pre-Completion Testing (PCT) or Robust Details (RDs).

E2 Internal Partitions

Applies to sound insulation of walls and floors within dwellings but excludes walls containing a door and walls separating bedrooms from en suite toilets.

Does **not** require PCT.

E3 Reverberation in Common Parts

Introduce acoustically absorbent finishes to control reverberation times in the common parts of residential buildings.

Does **not** require PCT.

E4 Schools

Covers sound insulation, reverberation and indoor noise levels. Guidance on meeting the Requirement is given in DfES Building Bulletin 93.

Airborne Criteria

The measurement unit for airborne sound insulation is $D_{nT,w} + C_{tr}$. The spectral adaptation term C_{tr} gives greater weighting to low frequency performance. As a rule of thumb the value of C_{tr} is about –5dB for masonry or concrete constructions, and about –8dB for lightweight constructions such as timber or studwork. The criteria are therefore more onerous for lightweight constructions.

Construction Guidance

Approved Document E provides guidance on the types of construction which will meet the minimum performance requirements.

In order to achieve the required performance the wall and floor constructions must incorporate appropriate junction details to control flanking sound.

A number of Robust Details have been proven by field testing to achieve the more stringent performance standards required for the Code for Sustainable Homes.

The Robust Details which qualify for 1 or 3 Credits are listed on the RDL website.

Higher performance standards necessitate more massive and/or wider constructions.

Pre-Completion Testing (PCT)

One of the main aims of the revision has been to improve compliance with the Requirements. The introduction of mandatory Pre-Completion Testing has significant implications on the residential building industry.

It is now the duty of the Developer to ensure appropriate sound insulation testing is carried out to demonstrate compliance with the relevant performance criteria. The locations for such tests will be selected by the Building Control Body, with the measurements made by approved specialist organisations at the Developer's expense.

Building Control should stipulate at least one set of tests for every ten dwellings, assuming no test fails. The sound insulation criteria have built in allowances for measurement uncertainty, so if any test does not achieve the criteria by any margin the test has failed. If a test fails the Developer will need to determine the cause. It will then be necessary for the Developer to undertake appropriate remedial treatment, to the satisfaction of Building Control. The rate of testing should be increased until Building Control is satisfied the problem has been solved.

UKAS Accreditation

Approved Document E and Code for Sustainable Homes state sound insulation testing should be carried out by a test body with appropriate 3rd party accreditation. Test bodies conducting testing should preferably have UKAS accreditation for field measurements.

HTA has full UKAS accreditation for sound insulation testing, for the requirements of Approved Document E and the Code for Sustainable Homes.

Robust Details (RDs)

Robust Details are constructions that have been found to perform consistently well, and can thus be used as an alternative to PCT.

It is important that all separating walls/floors and their associated junctions and flanking conditions are constructed entirely in accordance with the Robust Details, otherwise PCT may still be required. Only certain combinations of separating walls and floors are allowed.

Every dwelling built using Robust Details must be registered with Robust Details Ltd and a flat registration fee paid.

It still remains the Developer's responsibility to ensure every dwelling achieves the performance requirement stated in Approved Document E. In the event non-compliance is alleged, Robust Details Ltd will not be liable. Thus Robust Details only reduce the Developer's risk.

Internal Partitions

Some internal walls and floors within dwellings must employ constructions that achieve a laboratory acoustic performance of at least R_w40dB.

Reverberation in Common Parts

Common parts (e.g. halls, corridors, stairways) that give access to flats or rooms for residential purposes must now be acoustically treated so as to control sound reverberation. This will normally be achieved through provision of acoustically absorbent ceilings, although alternative methods exist.

The Building Regulations Approved Document E and Code for Sustainable Homes have significant implications for residential developments. The increased sound performance requirements and necessity for PCTs or RDs will result in higher building costs and potentially longer build programmes.

In our professional opinion, the requirements should go some way to resolving the problems encountered with regard to low occupier satisfaction. As a result, they should improve the quality of life for residents of new properties and as such must be considered worthwhile.

Developers be aware!

Hann Tucker Associates, the leading independent UK acoustic consultancy, can provide all the necessary advice and assistance on Building Regulations Approved Document E. We also have more staff approved to undertake Pre-Completion Testing than any other acoustic consultancy and full UKAS accreditation for field measurements. By using the specialist knowledge and expertise Hann Tucker Associates has gained during over 35 years of successful acoustic consultancy, including our appointment by the House Builders Federation on the Robust Details Project, suitable cost effective design schemes can be achieved.

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Head Office: Duke House 1-2 Duke Street Woking Surrey GU21 5BA
Tel: 01483 770595 Fax: 01483 729565
Email: Enquiries@hanntucker.co.uk

Northern Office: First Floor, 346 Deansgate, Manchester M3 4LY
Tel: 0161 832 7041 Fax: 0161 832 8075
Email: Enquiries@hanntucker.co.uk