# Technical challenges in converting office to homes

In anticipation of the temporary expansion of permitted development to include change from office use to Residential Luke Tozer gave a talk to Urban Design London at Palestra, on the technical issues associated with such conversions.

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The main issue is how to meet the various non planning regulations that cover housing when converting existing office buildings but it also provokes broader questions of when doing so how to make good places for people to live. Since planning approval is still required in relation to transport, highways, flooding, land contamination and external details here we look at what is required for conversions without the need for planning consent.

The main areas where compliance needs to be demonstrated are Building Regulations, the Disability Discrimination Act and other legislation.

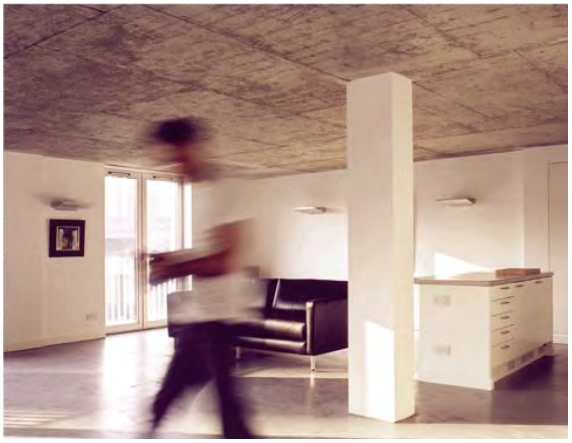
**Building Regulations**

Part A – Structural Safety:

B1 Office and storage design loadings (4.5kN/m2) are in excess of residential floor loadings (1.5kN/m2), so in most instances existing office structures can support conversion without structural improvements being required.

Part B – Fire Safety:

For means of escape in the case of fire, the travel distances for residential are lower than those for office and other non residential uses: For flats, the horizontal travel distance to an escape stair is 7.5m in one direction, or 30m in more than one direction, where as for offices it is 18m in one direction and 45m in more than one. This means more stairs are usually required. There is also the requirement for separation of ground floors from upper floors and the structure would generally require 60mins of fire protection.



The common areas of the building, once completed, will be subject to the Regulatory Reform Order (RRO) Fire Safety Act 2006 and require a Fire Risk Assessment to be carried out (FRA).

Part E – Resistance to sound

Early sound testing of the existing structure is recommended to see what improvement is required, however generally floor and ceiling constructions will need upgrading to comply and avoid noise transfer between residences. This applies to reverberant sound and common parts too. A sound test certificate is required upon completion.

Part F, G & H – Ventilation, Sanitation and Waste

Offices typically comprise large floor plates with relatively few vertical risers, usually concentrated at the cores and where the WCs are located. In residential schemes greater numbers of bathrooms, WCs and kitchens are needed meaning more vertical penetrations.

Generally offices require more cooling load for services where as for residential the greatest load is space heating. This means much if not all of the existing AC ducting and roof top plant may be superfluous and could be removed. However since background ventilation is still required to keep rooms habitable and avoid suffocation and many office buildings have sealed facades, either external vents are required (which would require planning) or some mechanical background ventilation would be needed. It is unlikely that the existing office plant

would be suitable for reuse in a residential layout.

Refuse and recycling storage requirements are also likely to increase over those provided for office use.

Part K – Protection from falling

Existing stairs are usually OK in terms of width and pitch, although additional guarding may be required. In air conditioned office buildings existing windows may not open which would be less desirable in a home. If open able windows are introduced as an external alteration they would require planning.

Part L – Conservation of fuel and Power

This represents potentially the biggest impediment to conversion. Office buildings often have highly glazed facades with high heat loss. Insulating glazing and upgrading fabric consequential improvements are likely to be needed which could involve additional internal secondary glazing or replacing the existing windows (which could require planning approval).

Energy Performance Certificates (EPC's) are required for newly constructed dwellings or those created by conversions. The SAP rating shown on the EPC is the same number as required by Building Regulations under Regulation 16 and Building Control bodies are unable to issue final certificates until these are received. Part L is due to change in 2014 to become 25 per cent more onerous, making compliance with existing buildings significantly more difficult. It may well be that renewables are required in order to achieve compliance.

Part M – Access to and use of Buildings

Generally offices will have been required to meet part M for level access.

In terms of other legislation, offices will generally have had to deal with DDA compliance so this should have relatively minor physical impact in a conversion. Depending on the age of the building there could be asbestos present, in pipework lagging etc, that could add significantly to the costs. There may also be issues with the cleaning and future maintenance obligations when ownership is divided but these are usually dealt with through service charge agreements.

**Broader issues in conversion**

So, having covered regulatory compliance, what are the broader issues inherent in conversion of office building stock without planning? One is the lack of need for a mixture of dwelling size and type. With repetitive floor plates and no planning requirements it is likely that a proliferation of 1 and 2 bedroom flats will be provided along with larger penthouses as this arrangements provide the best investment return. Another is the lack of need for external amenity space, either private and attached to the dwelling or communal and provided on the roof or in the grounds. Rarely would you expect this to create suitable family accommodation so it could be that former office buildings become mini ghettos without the noise of children.

Looking at it as an architect the challenge is how to create high quality accommodation. The impact that the floor plate proportion of the existing building has on dwelling layouts should not be underestimated. A narrower, smaller floor plate with a relatively high proportion of perimeter will lend itself better to conversion, allowing greater opportunity for good daylight to habitable rooms.

Centrepoint with its skinny floor plan and highly glazed envelope yields high quality apartments rather more easily than a large, very deep plan tobacco warehouse for example. In our work on office to residential conversions in London and Amsterdam we worked hard to introduce new openings to let

**ABOVE: Office to residential conversion**
**LEFT ABOVE: Bermondsey Street, London both by Pitman Tozer Architects**
**LEFT BELOW: Brouwersgracht, Amsterdam – canal view**

natural light into the buildings. This is hard to do without making external alterations requiring planning consent. If you are completely restricted by the existing external envelope then to a large extent your hands are tied.

Then there is the issue of the type of office stock in the areas outside of inner London which have been exempted that are likely to be converted. Some boroughs have more stock suitable for conversion than others. In many outer boroughs office buildings of 4 storeys and less will be proportionately more expensive to convert than taller buildings where penetrations and risers can serve more floors and more apartments per riser.

It will be interesting to hear how schemes come forward in Croydon verses Hillingdon for instance. Whether the anticipated rush for prior approval applications materialises waits to be seen. On 31st May I received a self congratulatory letter from RBKC clarifying all such schemes in the Royal Borough require planning consent. They seemed rather pleased they had won complete exemption from the headache of the prior approval requirement outside of their normal processes (and fees).

Each of the technical aspects of conversion are possible to overcome, although in many existing office buildings the cost of implementing such a conversion could prove so costly as to be uneconomic. The viability depends on the type, quality, proportion, height and condition of the existing building, along with the difference between residential and office values in the location.

How many schemes come forward in the next 34 months in London remains to be seen. Perhaps with the pressure of high residential property values and poor supply, which incubated the latest unhealthy phenomenon of rent-to-rent, (where flats are rented, then subdivided and re-rented at a higher occupancy), will produce a rash of 'shell conversions'.

These basic C3 conversions and common parts might be developed where individual landlords cram as many bedrooms into a space as they can manage to rent out. Hardly the stuff of housing fit for the 21st century or how in the long term to address the thorny issue of affordability in London. Time will tell if this is the unforeseen consequence of removing this part of housing from the planning system and letting the market provide. ■

**BELOW: One World Trade Centre, Ground Zero, New York City – designed as offices but perhaps a future housing project?**