

## Summary of Research Project

### **“Recycling prefabricated building components for future generations”**

**A study of the options open to developers seeking to re-use prefabricated elements dismantled from housing blocks of the style prevalent in the former GDR.**

The findings of the Research Project are of particular relevance to housing developers planning extensive demolition as part of new construction projects. They are also of interest to specialised planners and building firms whose work involves pre-manufactured components. Furthermore, private clients stand to benefit from alternative materials and methods that are more economical than traditional tower block architecture.

Research work is limited to studies pertaining to the more recently defined Federal States in the eastern part of Germany. Extensive areas of housing across this region - in particular residential blocks in large housing estates - are currently standing empty. Demolition is the key strategy being followed as a way of reducing the stock of housing. Isolated, small-scale housing units and the re-densification of housing are often planned in order to raise the value of property and correct deficits and disparities in the area of urban housing.

Research focuses on one alternative to the traditional strategy of demolition, which favours the razing of buildings and subsequent recycling of building materials. The alternative referred to is that of elemental recycling: the structure of a building is reduced to its component parts, which are then reused depending on their quality. The study demonstrates how buildings made of prefabricated concrete sections can easily be dismantled and reassembled as new buildings.

In the forefront of the study is a comprehensive analysis of the re-utilization potential of building components. The various possibilities are set out for using large slab-type elements to create architecturally sophisticated buildings. Construction of a test building yielded some useful insights into how these elements can be rendered reusable

at a realistic cost. It was also found to be possible to create buildings that deviate from the original construction grid.

The findings regarding the cost-effectiveness of component recycling indicate huge savings in the 300 cost group (DIN 274). Even conservative costing resulted in savings amounting to approx. one quarter of total building costs.

A comparison on ecological grounds of recycling components over the traditional strategy of building from scratch points to the environmental benefit to be derived from reusing materials.