

## INVESTIGATION INTO THE CHOICE OF SINGLE OR MULTI-STOREY DESIGN SOLUTIONS FOR NEW-BUILD PRIMARY SCHOOLS AND THE IMPLICATIONS FOR THE QUALITY AND DELIVERY OF EDUCATION

July 2010

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### 1. BACKGROUND

- 1.1 In September 2007, Cambridgeshire County Council's Cabinet endorsed a series of policy recommendations to inform future new school specifications. A policy area not covered was that of the storey height of primary schools.
- 1.2 In July 2009, Cabinet considered a report on *Primary School Site and Design Principles*. The report was prepared in response to challenges posed by the developers of major new housing sites to single storey design solutions. Developers often perceived single storey schools to be more costly to construct and to require larger sites to be provided as part of the Section 106 agreements. Cabinet was informed that analysis undertaken by officers indicated that the building cost of single storey and multi-storey schools was broadly neutral and that, for multi-storey schools, the overall site area required was only marginally less as the major components of a school's site area were not buildings related. Cabinet also considered views expressed by officers from the Learning Directorate that single storey primary schools can offer better access to outside space; enable independent movement; are easier for children with special needs and enable better drop-off/collection of pupils. Cabinet's decision was to approve a policy that new primary schools should be single storey in line with existing/established practice on the grounds that they not only provided a successful teaching and learning environment, but that the changes sought by developers would not deliver the land and cost savings they were seeking.
- 1.3 Since these reports were considered, the pressure to provide sufficient school places to serve both the proposed housing growth and the existing population has increased significantly. The Council, in responding to this significant pressure on overall school capacity, has had to review some of its existing policies on the size of schools and access to playing fields and external areas where additional capacity is required in new and existing schools which operate from restricted sites. These policies were considered by the Children and Young People's Policy Development Group (CYP PDG) on 9 November 2009. As a result, some existing primary schools in Cambridgeshire will expand to provide 630 places and some of the new primary schools in the major development areas such as the North West fringe of Cambridge will be planned to be 630 places schools from the outset (the previous preferred maximum size for a primary school was 420 places). The Council has also recently concluded pre-application consultation for the design of a new primary school in Cambridge City in Gunhild Way, which is for a two-storey build. In addition, the expansion of Abbey Meadows Primary School to take

the school from 2FE (form of entry) to 3FE, approved by Cabinet on 15 June 2010, will be through a two-storey extension.

- 1.4 The current economic climate has placed increased focus on the overall viability and sustainability of planned housing developments leading to significant pressure from developers to reduce the size of land parcels and capital funding allocated through Section 106 agreements. The combination of circumstances requires the Council to revisit current policy in terms of single storey versus multi-storey buildings for new build primary schools.

## **2. RESEARCH BY THE UNIVERSITY OF CAMBRIDGE**

- 2.1 To ensure the debate surrounding school design was not dominated by cost and site size alone, independent research was commissioned to better understand the effect of the building environment on the quality and delivery of education experienced by children and school staff.
- 2.2 The University of Cambridge was commissioned to investigate the impact that storey heights for new build primary schools may have on the quality and delivery of education and to produce a report to inform the Council's future decision-making. The research took place between November 2009 and March 2010 and cost £6300, jointly funded with Cambridgeshire Horizons.
- 2.3 The scope of the research included:
- Literature Review of the history of school design
  - Key Informants Survey of current international experts within this field
  - Overview of emerging key themes and issues
  - Case studies of six schools:
    - Prior Western Primary School, Islington, London
    - Montessori School, Amsterdam
    - Willemsparkschool, Amsterdam
    - Brook Community Primary School, Hackney, London
    - Argyle Primary School, Camden, London
    - Sharrow Nursery Infant and Junior School, Sheffield
  - Stakeholder presentation.
- 2.4 The culmination of this work was a detailed report presented to Members and other key stakeholders on the 29 March 2010. Stakeholders were asked to submit any further comments by 16 April 2010.

## **3. KEY FINDINGS FROM THE RESEARCH**

- 3.1. Whilst the report did not conclude in favour of either multi or single storey buildings, it did provide a thorough overview of the advantages and disadvantages of multi-storey schools. These are summarised below.

### **3.2. Advantages of Multi-Storey primary school buildings:**

**Access** - to external spaces on a compact site, building vertically can enable more ground floor outdoor space to be utilised for school members and for

the local community. Additional outdoor spaces can be provided on balconies and verandas and by using roof space. Verandas can also provide shade and cover for outdoor areas underneath. Parental access can be facilitated through good use of large communal spaces/receptions at 'the heart of the school' an advantage being that parents enter the whole school rather than only one part and therefore can have a stronger sense of the connections between a diverse community.

**Visibility** - several storeys, especially if designed to create an interior range of site lines, can provide visual connections to the school community as a whole and to the outside neighbourhood. Children could be provided with views beyond the site as well as within by seeing different parts of the school from above and below. The multi-functional central spaces that are created when the school is organised around a central open stairway (such as at Prior Weston, London and The Montessori School, Amsterdam) offer flexible space for additional performance or other social or professional gathering events.

**Security** - a compact multi-storey school may provide more security than a single storey site due to the fewer entrances needed and external ground level area to control.

**Cost** - less surface area may result in a less expensive project (but see below). Roofs are costly to repair so less roof space reduces long term costs for roof maintenance.

**Sustainability** - more compact buildings may be more energy efficient and sustainable in terms of building resources.

**Extended Schools** - There are considerable demands on space in order to meet the Extended Schools agenda. Building high can enable the accommodation of offices and other spaces to support Children's and Family Centres as well as adult and community learning.

### 3.3. **Disadvantages of Multi-Storey primary school buildings**

**Access** - external access to outdoors from upper storeys may be compromised although other solutions are possible (see above). Lack of direct access to outdoors may have increased disadvantages for younger children (and the implications for implementing the Early Years Foundation Stage curriculum). However in all of the schools that were visited for this research project, the youngest children always occupied the ground floor.

**If access is via several staircases, then time to move** from indoor to outdoor learning/playing zone can eat into the time available for the curriculum. Exiting the school entirely during an emergency requires special consideration in multi-storey schools.

**Parental access** - may be hindered by reduced opportunities for contact whilst picking up children or collecting them (but see above). If poorly designed, internal access can encumber connectedness and visibility through a building. Provision of resources to provide access for all children - lifts are costly and need to be maintained.

**Scale** - establishing a sense of place. There may be a tendency towards an institutional atmosphere, relating to scale, rather than a more domestic, friendly feel. This can happen especially where lengthy corridors predominate. Multi-storey schools need to find design and pedagogical solutions to make homely spaces through carefully detailed relationship between sense of place and scale. Tall buildings can provide intimate spaces but require careful imagination and planning.

**Pedagogy** - institutional feel or formality of the building can have an influence on pedagogical practice. Careful thought is required to give children and adults freedom of access to a variety of learning spaces and resources.

**Light/ventilation/acoustics** - greater challenge to draw on natural light and ventilation in multi-storey buildings and extra movement through a school may raise noise levels.

**Cost** - foundations can be costly; access (as above); maintenance e.g. cleaning windows, repairing roofs due to the need to deploy more specialized equipment.

#### 4. KEY FINDINGS FROM THE REPORT

4.1 The main findings are summarised below.

**1) Pedagogy.** The various recent reviews of the primary curriculum (The 'Rose' Review<sup>1</sup> and the Cambridge Primary Review<sup>2</sup>) have indicated the need to shift towards a greater variety of learning and teaching formats and emphasised cross-curricular learning and teaching and learning outside of the classroom. Building design can help to facilitate this especially in providing ample spaces for flexible use of in-between classrooms or learning bases. Multi-storey and single storey schools can equally be designed to allow for cooperative teaching strategies, the mixing of age groups and a variety of different sized spaces. The research shows that it is the actual habitation of buildings, the beliefs, values and principles held by adults and the extent to which children are viewed as having control over their environment which really makes a difference as opposed to whether they are designed over one level or a number of levels.

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<sup>1</sup> The Rose Review of the Primary Curriculum, by Sir Jim Rose, reported in 2009. It focuses on the curriculum rather than the whole of primary education, however, it highlights important areas where pedagogy and assessment intersect with the curriculum. The review can be download at: <http://publications.dcsf.gov.uk/default.aspx?PageFunction=productdetails&PageMode=publications&ProductId=D00499-2009&>. Since concluding the research, The Rose Review has been abandoned by the new coalition government. All primary schools have been informed that a more subject based curriculum is favoured by the new government and local government has been told to postpone conferences. References to the 'new curriculum' have been withdrawn from the Department for Education website until further notice, see <http://www.education.gov.uk/curriculum> for more information.

<sup>2</sup> The Cambridge Primary Review was led by Professor Robin Alexander of the Faculty of Education, University of Cambridge. It is a comprehensive enquiry into English primary education for 40 years. Further information can be found at <http://www.primaryreview.org.uk/>

**2) Size and Scale.** The Council's demographic forecasts previously indicated that the new town of Northstowe will require six 420-place primary schools (updated information indicates that some of these schools will now provide up to 630 places). These are large schools with each requiring extended school facilities, staff offices and meeting rooms. The research has demonstrated that schools of this size can be designed on several storeys resulting in integrated communities of learners and teachers of all ages. The research has also shown that regard to scale is important in school interiors so that the sense of size is reduced through the use of integrated smaller group and individual working areas. In particular, scale can be brought to child-size through attention to domesticated areas that recognise children's need to be 'hugged' by the building.

**3) Ease of access to the outside.** This can be facilitated or hindered through design at single or multi-storey levels. Newly built multi-storey schools pay particular attention to ease of access to the outdoors and as such may encourage more spontaneous use by classroom teachers than those operating in single-storey schools with access along corridors.

**4) Quality of outside playing and learning environments.** Ground level environments are likely to be able to sustain more natural features that children rely upon for their imaginative play and learning. Trees provide natural shade and a wide range of rough and ready materials for construction and play. This is more difficult to achieve on higher level terraces. If building several storeys adds to the *quantity* of natural grounds available then this can be an advantage if they are still available in addition to verandas and terraces at higher levels. But the quality will always rely on a deep understanding of children's needs for play and learning in the outdoors.

**5) Legibility** of a building relates to how the layout of the building is understood by those who use it in order to enable successful navigation. A legible multi-storey school may be seen as one in which the overall pattern can be grasped by staff, children and parents, including areas, landmarks and pathways that are easily identifiable. Such landmarks may be architectural or personal, for example children's own artwork or links to their community may be used to identify a particular staircase and to distinguish it from other staircases. This legibility can be supported by design features but is also related to the pedagogy and organisation which exists within the school. This raises the importance of supporting children and adults to understand how a building works and fits together.

**6) Inclusion.** Primary schools are inclusive learning environments supporting a range of diverse interests, needs and aspirations. Inclusion is strengthened by connectivity, collaboration and communication. Design can certainly emphasise and permit this. Multiple levels can add variety and complexity to school interiors and if designed with transparency in mind, can offer views of an extended learning community. If single storey schools are built they will have to address the same issues. All new primary schools need to be accessible to children with Additional Educational Needs (AEN) and Special Educational Needs (SEN).

**7) Sustainability.** New primary schools are required to meet design guidelines on sustainability. Multi-storey schools may have an advantage over single storey schools in terms of footprint and the extent of external walls requiring insulation, but this is a complex subject and requires accurate research to audit.

## **5. CONCLUSIONS**

- 5.1 The Council needs to ensure new primary schools are built to meet the forecast growth in new housing and school age population. Given the current economic climate and the demands on Section 106 agreements to meet the capital costs of schools, there will inevitably be a focus on finance and land. However, all factors relating to the viability and success of new schools, particularly those relating to teaching and learning, need to be considered.
- 5.2 The County Council is already considering larger primary schools in response to the urgent need to provide additional school places. The changes to education policy post 1997, including the Early Years Foundation Stage, inclusion of children with SEN and provision of extended services, all contribute to the need for primary school sites to provide more facilities and, therefore, have larger footprints. As a result, a single storey school of this size (3FE 630 places) with a range of extended school and other services provided from the site has the potential to be very sprawling with a disconnected feel. Having a wider range of design options would assist in providing solutions to these issues that have a direct impact upon teaching, learning and child well-being. The use of multi-storey buildings may be a solution to some of these issues.
- 5.3 The building design may have the potential to help resolve some financial viability issues of major developments when the school is first built but this is more likely to arise from creative solutions to co-locating a range of services rather than because one or other method of construction in itself delivers financial savings.
- 5.4 The overall success of any school building needs to be supported by good pedagogy to ensure the way the building is intended to be used is not forgotten; that there is an attractive range of all types of spaces for the pupils and staff to use; that good management practices are in place and the school is well organised. The need for designers to work with the promoters and leadership teams of new schools will become increasingly important to ensure that the design solutions available support the teaching and organisational approaches of the users of the building.
- 5.5 Whilst none of the case studies were new schools specifically built within new housing developments, they demonstrate how each design has adapted to the site constraints and the local areas they serve. The report traced how the design of schools had over time reflected the communities they served from the first maintained schools constructed in the old urban areas of towns and cities in the latter part of the 19<sup>th</sup> Century to the schools built from the 1920s and 30s onwards, which for a large part of the 20<sup>th</sup> Century, reflected the growth of suburbs. This could prove to be a particularly relevant finding as,

while the new developments planned in Cambridgeshire are mostly higher density developments than those suburban developments of the recent past; neither can they be described as sharing the characteristics of our older urban areas. All new primary schools need to be considered in relation to the individual context and community they will serve.

- 5.6 New primary schools built to serve new housing developments also have different social challenges. A new school in a new development needs to operate as a focal point for the community as a service and information centre. New housing developments often have different characteristics than existing communities in that there is often a higher rate of children with SEN, a higher rate of population churn and a disconnected and disparate feel to the community. New schools in these environments often need to act as a community anchor where support services can be located alongside the education provision.
- 5.7 Taking into account of all of the above and the fact that the research does not conclude firmly in favour of either single or multi-storey primary schools, officers recommended that Cabinet agrees a proposal that the Council implement a change in policy and allows a range of design solutions, including multi-storey primary schools, *where appropriate*. The design and architectural layout of these schools will be considered on a case-by-case basis to ensure all school buildings are appropriate to their own unique set of circumstances and sit comfortably within the overall development context.
- 5.8 Cabinet approved a change to current County Council policy at its meeting on 5 July 2010.