

# **L**earning Communities in the City: **S**ocial Constructivism, Spaces and Connections in the New Urban Primary School

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# ABSTRACT

The main intention of the research is to develop a model for an inner city primary school building which is responsive to the urban context and reflects the educational theory of Social Constructivism. The underlying demand for an inner city primary school was identified as a result of a recent demographic shift which involves more families living in the centres of New Zealand's cities. Schools are an important part of a city's infrastructure, where quality schools can help to develop quality cities. There should be a close fit between current educational theory and contemporary school design. Social Constructivism views learning as the construction of knowledge through social interaction with peers, adults and the environment.

The design case study proposes a vertical school that is capable of supporting strong links with the community through developing a 'public living room' alongside retail outlets. While the vertical nature of the school limits some contact it is possible to develop a 'learning street' and other meeting places within the school. The plan also provides flexible classroom spaces and workrooms to meet curriculum objectives. A variety of indoor and outdoor spaces can be provided but it is proposed that the children also access the city's public open spaces and amenities. The city can be viewed as an extended classroom, as suggested in Strickland's 'City of Learning' model. The site for the proposed school was selected to ensure easy access to amenities and resources. Overall the research suggests an inner-city primary school building is possible and even desirable for those living and working in the city.

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INTRODUCTION



## 1.1 Context of Research

### *1.1.1 City and schools*

Schools are important elements of public, social and physical infrastructure. Indeed, it may be said that the quality of a city depends on the quality of its schools (Vincent, 2006). While the quality of a school might depend on a number of factors such as administration, staff, curriculum delivery and so forth, the physical environment also plays an essential part. This is the role for architecture.

### *1.1.2 A need for new schools in the inner city*

Over recent years in New Zealand, there has been a shift in demographics as more people have moved into the inner city and this is predicted to continue into the future. Associated with this shift is a predicted increase in school rolls over the next decade. The majority of children will attend schools in the three main cities, Auckland, Wellington and Christchurch (Education Counts, 2008). This suggests a need for new schools in the 'inner city'. Inner city primary schools have not been evident in New Zealand for many years and therefore represent a new building type. The challenge is to arrive at a new model for the school building and to integrate it into the existing urban fabric.

The New Zealand Government recognized the need to future proof existing schools and to build new ones by allocating an additional \$325.6 million in the 2009 budget to achieve this. The total budget for school buildings is now \$523 million which will be provided over four years. As new schools are being developed there is an opportunity to introduce a new model for a primary school in the inner city.

During 2010 the government has moved towards introducing Public Private Partnerships (PPP) to finance, design, build, operate and maintain new school property. This is already the case in Australia (NZEI, 2010). PPP has the potential

to explore multiuse programmes, which could complement a new building type for inner city primary schools within New Zealand.

### *1.1.3 Poorly evolved school buildings*

Hertzberger (2008) argues that “there can be few building types that have so poorly evolved during the past hundred years as schools” (p. 11). It would seem that architects have focused more on the exterior of the building rather than the spatial qualities of the interior. Educational theories or models regarding the way that children learn have changed significantly over the years, resulting in new education pedagogies. However the school buildings and classrooms have not developed to reflect these changes. The architect now must understand the implications of these new pedagogies and how they influence the design of the learning spaces (Leonard, 2006).

### *1.1.4 Education in New Zealand: The New Zealand Curriculum*

The New Zealand Curriculum (Ministry of Education, 2007) is the fundamental background document for all New Zealand schools. It consists of an overriding vision of young people who will be confident connected, actively involved, lifelong learners. This is underpinned by a set of principles, a list of essential learning areas, values and five key competencies. The key competencies are thinking; using language, symbols and text; managing self; relating to others; participating and contributing. The intention is to create a ‘thinking curriculum’. For teachers to deliver the curriculum effectively it is important that they adopt an appropriate philosophical and theoretical foundation for teaching. Social Constructivism is one such theoretical foundation and it is reflected in the effective pedagogy outlined in the Curriculum.

### *1.1.5 Social Constructivism*

The theory of Social Constructivism is an example of changing beliefs about how children learn and is consistent with the underpinning philosophies of the current New Zealand Curriculum framework. This educational theory recognizes the importance of children constructing meaning and gaining knowledge as they interact with peers, more knowledgeable members of society and the physical world around them. Children are now regarded as active constructors of knowledge rather than passive recipients of education. Teachers are facilitators of the learning process rather than just deliverers of the curriculum. Therefore the traditional 'classroom' spaces may no longer be appropriate as learning extends beyond the classroom. This is especially relevant to inner city schools where the context of the city can provide many meaningful learning experiences and opportunities to use local amenities. The children have the opportunity to interact with their immediate environment and to have authentic learning experiences within the city, as they construct new knowledge.

## **1.2 Problem Statement**

For the past 50 years, most New Zealand primary schools have been built in open green spaces on the outskirts of cities. This reflects the change in population distribution during the second half of the 20<sup>th</sup> century. Possibly as a result of this most people associate schools with these open green spaces and view spacious sites as important for children's development. Bringing schools into the city creates a challenge to this viewpoint and highlights the need for a new primary school building model. A radical shift in thinking is required to integrate a primary school into the dense urban fabric and to also create adequate spaces for play and social gatherings so that there are no barriers to children's development.

### **1.3 Research Intention**

*The main intention of the research is to develop a model for an inner city primary school building which is responsive to urban context and reflects the educational theory of Social Constructivism.*

### **1.4 Research Approach**

#### *Chapter 2: Literature Review*

The research draws together two strands; the educational theory of Social Constructivism and the practice of inner city primary school design. This requires a thorough literature review in both of these strands and identifying areas of commonality. The literature review focuses both on the external issues related to the school in the context of the city and then moves towards the internal issues related to the spaces within the school. Of particular interest is the City of Learning (COL) concept, developed by Roy Strickland where the city becomes an extended classroom providing different social settings for the construction of knowledge. The work of a number of researchers including Hertzberger (2008), Nair and Gehling (2009) and Walden (2009) is discussed. They argue that a closer fit is needed between current educational theory and contemporary school designs if students are to meet their learning goals. The emphasis on collaboration is consistent with Social Constructivism.

#### *Chapter 3: Review of Practice in Contemporary Primary School Building Design*

International examples of inner city primary school buildings were selected from a limited pool that have all been built within the last 12 years. Each of these examples is well integrated into the urban context and provides a model of different concepts discussed in the literature. The chapter includes a graphic analysis of some of the schools in relation to the density of the surrounding urban fabric; educational spaces in relationship to other spaces in the school; circulation

paths within the school building and the vertical configuration of two of the higher inner city schools.

#### *Chapter 4: Design Parameters*

The process for selecting a suitable site is discussed and a number of diagrams are presented investigating factors such as public transport routes, traffic density, major public amenities and so forth. A brief building analysis is included to determine whether to build a new building or retrofit the existing one. The chapter also includes a design brief and criteria for evaluating the design case study, taking into consideration the architectural and urban implications of Social Constructivism.

#### *Chapter 5: Design Case Study*

The case study is the design of an inner city primary school, which explores the use of space in learning and social interaction. The design investigates how new knowledge may be constructed both within the school building and by taking advantage of the surrounding city, as suggested by Social Constructivism. The design could be used as an exemplar for inner city primary school buildings in the Wellington and New Zealand context. It is not intended to create a school that could be relocated to other sites as all situations have unique parameters.

#### *Chapter 6: Conclusion*

The conclusion discusses how the research has met the intention of developing a model for an inner city primary school building which is responsive to urban context and reflects the educational theory of Social Constructivism. Limitations of the model are discussed and areas for future research are presented.

## **1.5 Scope of Research**

The physical context of the research is Wellington City but conclusions can be applied to the other cities in New Zealand. The research focuses on ‘primary schools’ as opposed to secondary schools, which are already common in the inner city. A limitation to the research is that there are no actual clients or user groups identified for the particular school, as it is a theoretical and purely speculative exercise. In practice it would be advantageous to involve all stakeholders in the design and planning process of a new school.

LITERATURE REVIEW



## **2.1 Current Literature**

Much of the literature on the educational theory of Social Constructivism and on the practice of inner city primary school design has been written in the United States, the United Kingdom and the Netherlands. The literature which was sourced from New Zealand was located through the Ministry of Education.

## **2.2 City and school relationships**

### *2.1.1 Schools as part of the city's infrastructure*

Schools represent significant capital expenditure and are an important component of the city's physical, economical, social and cultural infrastructure and can define a community's identity (Haar, 2002; Lackney, 2006). Sanoff (2009) argues that school facilities reflect community values and goals. The school facilities support the academic needs of the students but also the social, educational, recreational and personal needs of the wider community. Successful schools can strengthen a community's sense of identity and belonging, while unsuccessful schools can have the opposite effect. Vincent (2006) also supports this view and discusses how the quality of cities and the quality of schools depend on each other. Quality schools are able to attract and retain businesses and middle class families, which leads to greater resources and prosperity. Moffat (2002) reports that many families live where they do because of the schools. As a result of this, schools can become a vehicle for knitting the urban fabric together.

Vincent (2006) and other researchers at the Center for Cities and Schools, University of California identify a disconnection between schools and city planning. They advocate for a systems change where there is collaboration between governance structures, which will improve the relationship between cities and schools. Donnelly (2003) also identifies the reality that schools and local planners rarely plan together despite perceptions to the contrary. Currently there is little literature on how this collaboration could be achieved. Beaumont (2002)

discusses how the disconnection seems puzzling as the location of schools can dramatically change a city's future growth plan.

### 2.1.2 *"City of Learning"*

The City of Learning (COL) strategy was developed by Roy Strickland, the director of the urban design programme at the University of Michigan. It involves combining school, urban design and development and looking beyond the school building. Learning not only occurs in the school but also in the community, where local resources such as museums, parks, libraries and mentoring can be used in lesson planning (Moffat, 2002; Strickland, 2002; Strickland and Riesman, 2005). Moffat (2002) argues that "cities have resources for students you can't find anywhere else. We can draw from this wealth to make city schools something suburban schools can't be" (p.33).

Strickland and Riesman (2005) acknowledge the critical role that architects, urban designers and urban planners have in the reconstruction of public education. However it is important that they look beyond the individual failed school building to the community as a whole.

### 2.2.3 *Schools and the surrounding community*

The interface between the school and the local community is important and can benefit both parties (Lackney, 2006). The City of Learning concept considers how the school can use the resources in the local community but it is also attaches values to local community using the school's resources. Prasad (2007) discusses community schools where the facilities such as school hall, library, computer suites, sports facilities and performance areas are shared with the community. Community schools can also include other community facilities, such as a police office, after school care or primary health care services.

Jennings (2005) discusses an extension of the community school concept and introduces Community Learning Centres. These represent a new model for teaching in the 21<sup>st</sup> century intended to raise the learning of all students. These Community Learning Centres are headquarters for both formal and informal lifelong learning for the whole community and are open all year with extended hours. Lifelong learning is promoted in the New Zealand Curriculum. Dudek (2000) argues that school architecture must respond in progressive ways to social transformations. However the possibility of sharing facilities presents a design challenge as there are multiple user groups that will need to be catered for (Prasad, 2007).

## **2.3 Architectural Implications of Placing a New Primary School in the Central City**

### *2.3.1 School siting and size*

McDonald (2010) researched the changes in school siting standards over 75 years in the United States. Historically large school sites were recommended by the National Council of Schoolhouse Construction (NCSC) and as a result schools tended to be built in the suburbs. The assumption had been that large school sites were needed to cater for a variety of alternative educational programmes, greater use of the schools by the entire community and to have sufficient space for future building needs. The wider use of the school facilities by the community was believed to justify the cost of the grounds and facilities from public funds. However as land has become scarce in high density built up suburbs it is no longer feasible to have minimum size standards.

In 2004 the Council of Educational Facility Planners International (CEFPI) removed the minimum size standard to allow for more flexibility in school design. Fuller, Vincent, McKoy and Bierbaum (2009) also support the innovative design of inner city schools to use urban space more effectively. They also discuss the

fact that several Californian cities are working with educators to create new kinds of schools and affordable housing to encourage families to live in the city. This concept is highly relevant to the current research which looks at developing a new building type for an inner city primary school.

One of the implications of smaller sites is that the large open green spaces that children have historically had access to in suburban schools are no longer feasible. McGuirk (2008) argues that future urban schools challenge designers to create a building that sits within the streetscape rather than in an 'open compound of play'. However there is also the problem of where the children will play. Designers have to develop different ways of thinking about play and social gathering. These will challenge the traditional model of the school playground as discussed by Hertzberger (2008). Traditionally large open spaces were seen as a facility for getting rid of energy after sitting in the class for a couple of hours rather than an opportunity to practice social behaviour. Smaller school sites challenge architects to create the spatial conditions required for social interaction and for developing physical skills.

A number of authors such as McCann and Beaumont (2003); Eisberg, Friedman, Lollini and Slingluff (2006); Fuller et al. (2009) refer to the concept of 'smart growth schools' to counteract large schools that are physically removed from the communities that they serve. They suggest that smart growth schools should be small in size, fit in well with the scale and design of surrounding neighbourhood and make good use of existing resources. The small scale also fits in well with 'new urbanism' concept where small scale developments integrate living and working environments (Fielding, 2001).

### *2.3.2 Overcoming spatial constraints*

McDonald (2009) reports that it is necessary to look at new models for school design for smaller sites, such as a two storey design. The Task Force on the Future Growth and Development in Maryland (2009) presented a report on vertical schools. They defined a vertical school as a school building that is four or more storeys. The task force acknowledges that vertical design presents challenges such as circulation, supervision and safety and that these issues have to be addressed in the design. If play areas have to be broken up into multiple spaces because of the site restrictions, problems arise with supervision and safety. One way to overcome this problem of not being able to accommodate all the children in one or two spaces is to stagger breaks. Vertical schools have also been developed in other countries, such as the United Kingdom and Hong Kong where space is also limited. Overall there appears to be a gap in the literature related to the architecture of inner city primary schools and the corresponding spatial constraints.

Using amenities in the community is another option for overcoming spatial constraints. Fuller et al. (2009) suggest planning for shared use of school facilities and outdoor recreational spaces, which is also an integral part of the City of Learning concept (Strickland, 2002). The concept recognizes the importance of students learning beyond the classroom and interacting with the wider community. This is also related to the educational theory of Social Constructivism.

## 2.4 Social Constructivism

### 2.4.1 *Social Constructivism in relation to other theories of learning*

In recent times there has been a change in the way that children's thinking and learning are viewed. In the past the emphasis was on teachers as instructors where they transmitted knowledge and facts that the children were expected to retain and recall. The children were passive in the learning process (Vialle, Lysaght & Verenikina, 2005). Nair and Gehling (2009) refer to this type of teaching as the 'factory model' and Walden (2009) referred to the schools that were built when this view was predominant in the 1970s as 'learning factories'. Currently children are viewed as active participants in the learning process, where knowledge is constructed through interaction with teachers and other students. This theory of how children learn is known as constructivism and was developed through the work of Dewey, Piaget and Vygotsky (Beck & Kosnik, 2006).

The two main strands of constructivism are Cognitive Constructivism, which is based on the work of Piaget and Social Constructivism, which in turn is based on the work of Vygotsky. Piaget believed that children are active constructors of meaning and as they move through developmental stages their own understanding becomes more sophisticated (Vialle, Lysaght & Verenikina, 2005). Piaget viewed learning as a personal process (Powell & Kalina, 2009). However Vygotsky believed that learning and development is constructed through social interaction with other children and adults. Vygotsky's theory is also referred to a socio-cultural approach to learning and development, where learning is culturally, socially and historically mediated (Vialle, Lysaght & Verenikina, 2005).

Vygotsky introduced the theory of the zone of proximal development where children learn a concept when they are supported by others, such as peers, teachers or other community members. Cooperative learning is one way that this can occur and is an important part of creating a Social Constructivist class room

(Powell & Kalina, 2009). Brown and Thomson (2000) promote the use of cooperative learning in New Zealand schools and argue that it is consistent with the intentions of the Curriculum Framework. The Curriculum Framework (2007) states that, 'learning is inseparable from its social and cultural context' (p.34). It also states that 'students learn as they engage in shared activities and conversations with other people, including family members and people in the wider community' (p.34). Both of these statements reflect the concepts of Social Constructivism.

#### *2.4.2 Urban implications of Social Constructivism as an educational approach*

As learning extends beyond the school walls the city becomes part of the learning journey. Hertzberger (2008) argues that children's experiences on the way to and from school become an important source of educational opportunities in addition to what they learn at school and home. The siting of the school is essential to ensure that there are a variety of diverse routes each offering different sensory, cultural, social and physical experiences. For example different shops, businesses, cafes, open spaces, water and so forth. Being exposed to different scales in the physical landscape will allow children to develop an appreciation of space (Schaudt, 2002).

Shaw (1995) investigated extending the application of the theory of Social Constructivism in social settings beyond the classroom. In particular he used the concept of the individual being both teacher and learner as a way to develop urban communities. By providing appropriate activities such as learning to use technology effectively in different social settings it is possible to develop connections and positive outcomes in neighbourhoods. This supports the concept of lifelong learners which is promoted in the New Zealand curriculum. The city offers a diverse range of social setting where knowledge can be constructed with some associated activities considered more appropriate than others. As children interact with adults in social settings beyond the classroom this also provides the

adults with the opportunity to further construct their own knowledge. The community as a whole therefore benefits from the experience.

#### *2.4.3 Architectural implications of Social Constructivism as an educational approach*

In *Schools for the Future*, Walden (2009) states that the importance of the design of school spaces is often underestimated and students must feel comfortable within their school environment to learn effectively. He argues that spaces must support the educational theory that is used for students to meet their learning goals. In this research the educational theory that is being focused on is Social Constructivism.

Nair, Fielding and Lackney (2009) argue that traditionally schools have provided little space for students to work together. However now that social discourse and collaborative learning have been identified as critical for the development of well-rounded citizens it is important to provide spaces where the social collaboration can occur. They suggest developing ‘Watering Holes’ throughout the school where children can gather and socialize. Watering Holes are one of Dr. David Thornburg’s “Primordial Learning Metaphors”, which also include Campfires, Caves and Life.

Prasad (2007) discusses the ‘hidden curriculum’ of a school which is related to education and the process of socialization. The hidden curriculum refers to the knowledge that children gain from being at school such as reading people’s body language, social and friendship skills. He also argues that the design of a school must support the pedagogy of both the formal and the hidden curriculum and well designed buildings ‘will help the best people to do their job even better’ (p.177). Hertzberger (2008) acknowledges the importance of the social aspect of schooling as children learn to do things together, work things out and understand each other and argues that the school space must encourage this. He presents the model of a

school as a 'city-in-miniature' and discusses the idea of learning streets within the school as opposed to corridors. He then goes on to state that 'not only does the school become a small city but the city becomes an exceedingly large school' (p.9). This supports the idea of the City of Learning presented by Strickland (2002). Siting a school in Wellington's inner city presents the opportunity to explore how this concept can work. Hertzberger encourages architects who design schools to take the idea of a school as a micro city into account and to develop appropriate spaces within the school.

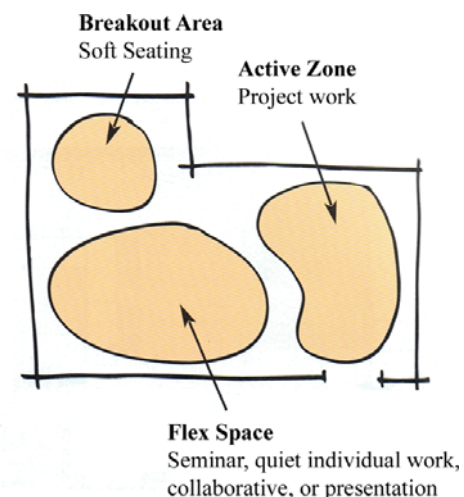
Nair and Gehling (2009) discuss the theory of public space in relation to school design where good public space needs a marketplace, thoroughfare and a meeting place. In schools the market place would be the classrooms, the library or the hall. The thoroughfare encourages people to move through and has a destination at each end. The meeting place is the spaces or furniture that encourages people to stop and chat or to watch and reflect. Corridors within schools have not traditionally been a good public space as people have not been expected to use them as meeting places. Corridors that become good public space are often referred to as 'learning streets' in the literature for example Hertzberger (2008); Nair, Fielding and Lackney (2009).

Nair (2009) argues that the current American Recovery and Reinvestment Act that is injecting money into the modernization and new construction of schools provides the opportunity to not only build schools but to reinvent them. He believes that the current classrooms are based on the teacher-centered model rather than the child-centered approach. He suggests creating personalized learning communities with learning studios and common areas for a range of collaborative and hands-on activities. This is a move away from the learning factories discussed by Walden (2009) and an opportunity to transform, therefore responding to Hertzberger's concern about poorly evolved school buildings.

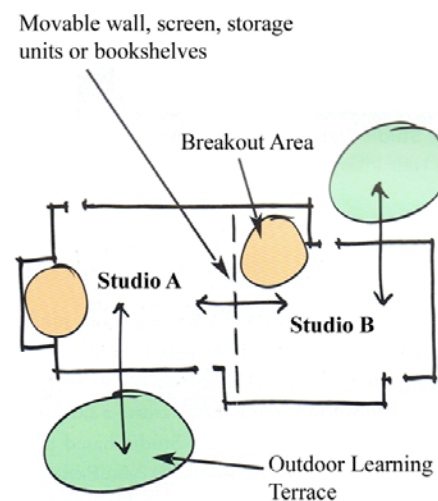
While Social Constructivism emphasises the importance of social interaction in the construction of knowledge, this needs to be carefully directed and controlled to have the best learning outcomes. Hertzberger (2008) discusses the open schools that were trialled in the United States, where there were no spatial divisions between groups and children tended to roam and intermingle. Open schools were not successful because as Hertzberger argues young children need a ‘home base’ or ‘nest’ where they know that their things are safe. He states that ‘Without this there can be no collaboration with others. If you don’t have a place that you can call your own you don’t know where you stand’ (p.35). The home base concept is also discussed by other researchers such as Dudek (2000) and Nair and Fielding (2009).

Nair and Fielding (2009) present different design patterns for classrooms in the 21<sup>st</sup> century where it is important to provide spaces for whole class, small groups or individual work. One of these patterns is the learning studio, which is also referred to as the ‘L’ shaped classroom. This concept was first introduced by Dyck in 1994 who argued that the shape managed to accommodate small learning groups, while also providing a sense of distance and separation (cited Lippman, 2005). Two adjacent ‘L’ shaped classrooms can also be joined to provide a more flexible learning studio.

[Figure 2.1] ‘L’ Shaped Classroom



[Figure 2.2] Learning Studio



From *The Language of School Design* (p.29), by Nair, P, Fielding, R. & Lackney, J. 2009, USA: Designshare.

## 2.5 Summary

The literature discusses the importance of schools within a city's infrastructure when attempting to create quality environments or communities. Contemporary school design is influenced by recent educational theories about teaching and learning. Social Constructivism is the educational theory that is the focus of the current research. This theory suggests that knowledge is socially constructed as children interact with their peers and adults. This theory has implications for the design of spaces within schools to allow social interaction to occur by providing good public spaces but also a secure homebase. Interactions with the wider community are also viewed as important and this is related to the City of Learning concept introduced by Strickand. This concept combines the school, urban design and development and considers the city as an extended classroom.

The City of Learning concept is very relevant to the current research, which explores developing a model for an inner city primary school, which is responsive to the urban context and reflects the educational theory of Social Constructivism. Access to city amenities and resources can compensate for the lack of space within in the school, especially space for play. Site selection for the case study design was influenced by ease of access to city amenities. The urban context presents challenges due to the limited availability of land. The literature discusses vertical schools that have been developed to accommodate schools on smaller sites. Identified problems with the vertical design include circulation, supervision of play spaces and safety issues, which were taken into consideration in the design process.

The lack of literature related to inner city primary school design within New Zealand provides an opportunity to research this topic. Exploring a new building type also provides the opportunity to explore the internal layout and circulation to encourage social interaction and construction of knowledge.



PRECEDENTS



### 3.1 Current Practice and Important Precedents

There is a growing need for primary schools to be built within cities to cater for the local community. However land in urban areas is scarce and school designers are challenged to make the most creative use of the land that is available. Although there are no precedents for inner city primary school buildings within New Zealand there are a few that have been identified in the literature from other countries. However overall there was very little documentation in the literature related to inner city primary school design. The recent practice of primary school design within New Zealand will be discussed later in the chapter.

The five inner city primary schools that have been selected from the limited choice have all been built within the last 12 years, are well integrated into the urban context and each is a model of different concepts discussed in the literature. The primary schools that have been selected for discussion regarding current practice are as follows:

- Hampden Gurney Church of England Primary School, London.
- De Eilanden Montessori Primary School, Amsterdam.
- St Aloysius College Junior School, Glasgow.
- St Mary and St Pancras Church of England Primary School, London.
- Tenderloin Community School, San Francisco.

Unfortunately there were no architectural drawings available for St Mary and St Pancras Church of England Primary School, London.

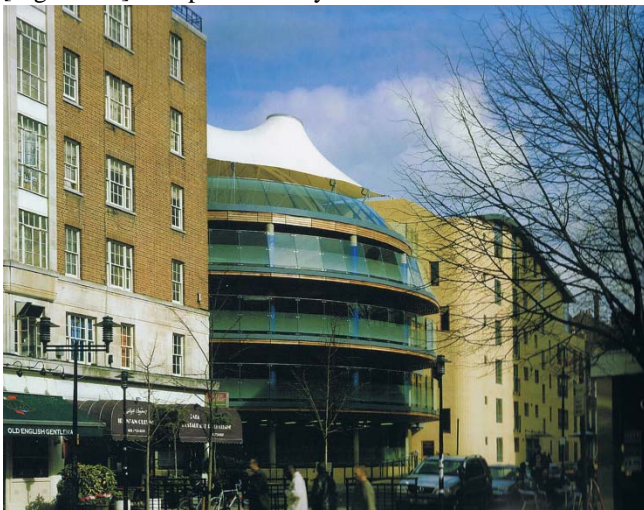
This chapter includes a general description of each of these schools followed by a systematic analysis of each plan. However, unfortunately, there were no architectural drawings available for St Mary and St Pancras Church of England Primary School, London. Examples of new and remodeled primary school buildings in New Zealand are then discussed, although these are not inner city schools.

### *Hampden Gurney*

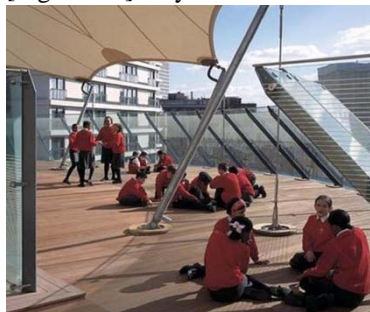
Hampden Gurney was built in 2001 and is a six storey school for 240 pupils, designed by Tony McGuirk of Building Design Partnership (BDP). The school design was the first to implement the multi-level vertical school concept, which later became a hallmark for BDP (CABE, 2009). The school sold part of the existing land for the construction of 52 residential apartments, which provided the funds for the new school building but meant that playground space was unavailable. To compensate for the lack of play area at the ground level, play decks were provided on three levels, adjacent to the classrooms and linked by a bridge across a central light well. There is also a play area below ground level for ball games and team sports.

The school is located on a corner site and its vertical aspect and curved street frontage ensure that it is a prominent building on the streetscape. The trustees also wanted the school to play an active role in the social life of the community and this has been achieved. Passers-by can observe the children as they play on the decks and the children also have an interesting view of city life as they look down from above.

[Figure 3.1] Hampden Gurney



[Figure 3.2] Play Deck



Retrieved May 26 from [www.cabe.org.uk](http://www.cabe.org.uk).

From *School Builders* (p.80), by Curtis, E. 2003, Great Britain: Wiley-Academy.

### *De Eilanden Montessori Primary School*

Multi-storey school design has also been used in the Netherlands by Herman Hertzberger. An example of this is the De Eilanden Montessori Primary School completed in 2002, accommodating 280 students. The school represented a new type of school building as the school was combined with a housing block, which was designed by a different architect. The combination of the more conservative housing estate and more vibrant school creates an interesting contrast on the already highly desirable site due to its location, which is surrounded by water.

The Montessori philosophy focuses on the free choice of purposeful activity where children use their own enthusiasm to make these choices. Different age groups are together in a room and have access to learning material that have been provided and displayed for all age groups. This has spatial consequences as children either work individually on their 'learning mats' or with others on self-chosen projects without disturbing each other (Hertzberger, 2008). In the De Eilanden Primary School the differences between the classroom and the corridor becomes blurred as the students work in all corners. The school hall is a double height, multi functional space that Hertzberger refers to as an 'urban plaza'. This reflects the concept of a school as a micro-city or as a model of the outside world. The elongated steps that connect the levels also double as seats and a place for social interaction.

[Figure 3.5] De Eilanden Montessori



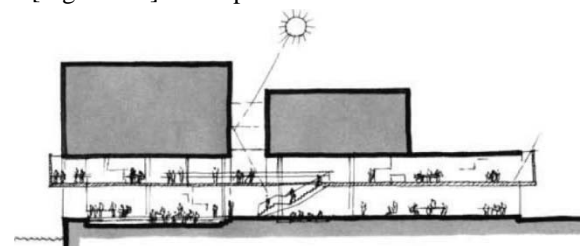
From A Design Manual Schools and Kindergartens (p.174-175), Dudek, M. 2007, Berlin: Birkhäuser Basel.

[Figure 3.6] Multipurpose Space

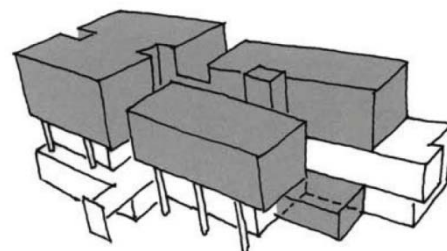


From A Design Manual Schools and Kindergartens (p.174-175), Dudek, M. 2007, Berlin: Birkhäuser Basel.

[Figure 3.3] Concept Section



[Figure 3.4] Axonometric



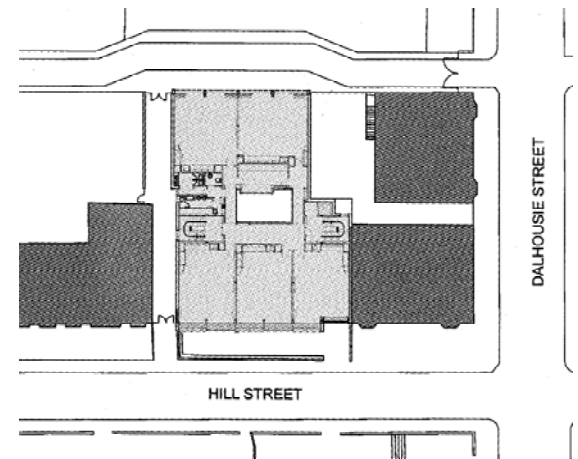
From A Design Manual Schools and Kindergartens (p.174-175), Dudek, M. 2007, Berlin: Birkhäuser Basel.

## *St Aloysius*

The St Aloysius Junior School in Glasgow was designed by Elder and Cannon Architects and completed in 1998, accommodating 400 students. The challenge for the architects was to fit the school into a shallow urban grid on a very tight site and to maintain the integrity of the streetscape. This involved two radical ‘traffic’ interventions. The first of these opened a pedestrian link between the main school and the playgrounds. The second intervention restricted access into the lane which bisected the site therefore creating a safe point for dropping off children.

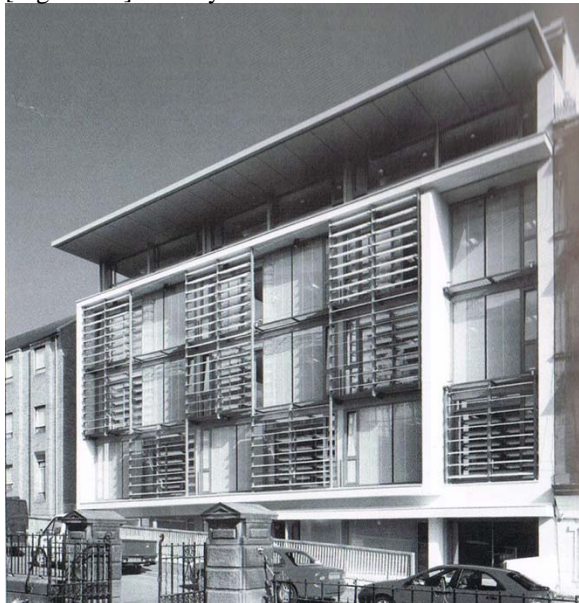
The school’s headmaster wanted to create a ‘good’ building with a variety of scales where children could learn effectively. To accomplish this there are two facades each with a different purpose and character. The main south façade is a formal entrance for visitors and represents classical modernism. It is located between two unimposing buildings but sits opposite a 19<sup>th</sup> century Italianate mini-palazzo residence. As a result, the new building adds character and diversity to the streetscape. The north façade where the children enter is informal and child orientated. (Melvin, 1999)

[Figure 3.7] St Aloysius



From *School Builders* (p.97), by Curtis, E. 2003, Great Britain: Wiley-Academy.

[Figure 3.8] St Aloysius



From *School Builders* (p.98), by Curtis, E. 2003, Great Britain: Wiley-Academy.

[Figure 3.9] Central Atrium



One of the main features of the building is the amount of natural light that enters the building through a clerestory window and is dispersed through a central atrium into the classrooms. The atrium serves as the main social orientation space and has a different character on each floor. The first floor is an activity area that is overlooked by balconies and galleries from the floors above. The classrooms are still very ordinary as the teaching style remains teacher orientated, in the manner of Nair's and Gehling's (2009) 'factory model'. However, this configuration reflects the Scottish Jesuit teaching practices. The importance of social interaction outside the classroom has been acknowledged by the other spaces.

### *Tenderloin Community School*

Prior to 1999 over 1000 primary school children that lived in Tenderloin would bus to over 47 different primary schools within the city. The community including parents, doctors and architects worked together to build a local school that would accommodate of 540 students. The late architect, Joe Esherick, eminent California architect, of Esherick Homsey Dodge and Davis (EHDD) donated his design time to the project. It was decided that rather than being a fenced off fortress the school should become an integral part of the community. The school includes a primary school, pre-school, community centre with medical, dental and counseling offices in addition to rooms for adult education, a community kitchen and garden. The community garden and playground are on an open roof top. The school is an excellent example of the community schools discussed by Prasad (2007). Passers-by are also able to view what is happening in the school through the use of video walls, graphic walls, tiles designed by the children and display cases of children's work on the street frontage.

[Figure 3.10] Tenderloin Community School



From Educational Facilities (p.34). 2002, Australia: Images Publishing.

To further emphasise the community or social aspect of the school the hallways include rest areas and bay windows where people can stop and interact. This represents the ‘learning street’ model, which is discussed in Chapter 2. The architect stated that ‘it was the hope of the community that the school would become a new safe symbol of the neighborhood’ (American Institute of Architects, 2002, p.34).

### *St Mary and St Pancras*

The St Mary and St Pancras Church of England Primary School was designed by Shepheard Epstein Hunter and built in 2006. The school has a roll of 210 students and an extra 30 children in the nursery. It replaced an existing school and was funded through the Diocese of London leasing the air rights above the school building to a student housing developer (CABE, 2009). In this case the mixed use development has had some negative effect on the design as it has limited the amount of direct daylight or ventilation into some areas of the school (figure 3.11).

The design has managed to use the limited outdoor space well and the playground is on ground level. There is also a netball court and a landscaped nature garden with grass lawns, plants and trees. The playground has a connection to the local community through having a street frontage. There is also a semi public area at the main entrance which creates a threshold between public and school space. There is an internal atrium space that allows the school to identify a sense of community as it links all the teaching spaces and also becomes an additional teaching space when required. The actual classrooms are relatively conventional.

[Figure 3.11] St Mary and St Pancras



Retrieved May 26 from [www.cabe.org.uk](http://www.cabe.org.uk)

[Figure 3.12] Multipurpose Space



Retrieved May 26 from [www.cabe.org.uk](http://www.cabe.org.uk)

### 3.2 Graphic Analyses of Inner City Primary School Precedents

The graphic analyses will assist in developing an understanding of the spatial structure of the primary schools by illustrating the following:

- The density of the surrounding urban fabric
- Educational spaces in relationship to other spaces in the school
- Circulation paths within the school building
- The vertical configuration of Hampden Gurney and St Aloysius

Note that St Mary and St Pancras Church of England Primary School, London was not included in the graphic analyses.

#### *Hampden Gurney*

Figure [3.13] Urban Grain



Figure [3.14] Classrooms in Relationship to Other Spaces

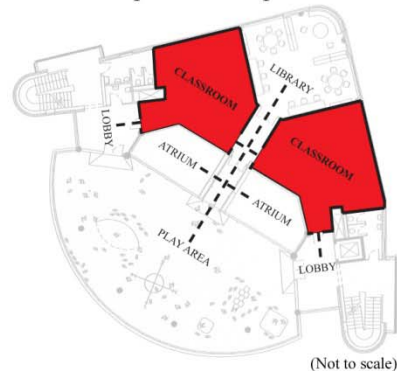


Figure [3.15] Circulation

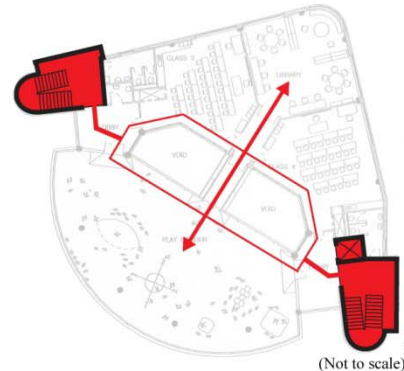
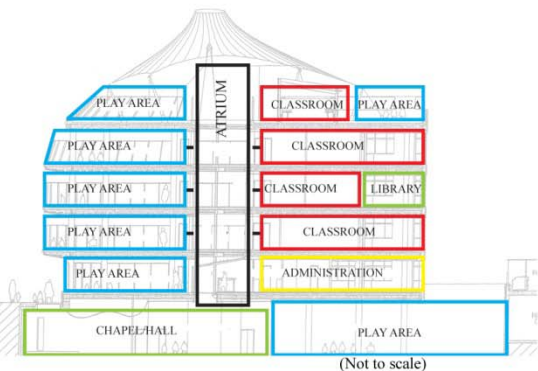


Figure [3.16] Vertical Configuration



#### *St Aloysius*

Figure [3.17] Urban Grain



Figure [3.18] Classrooms in Relationship to Other Spaces

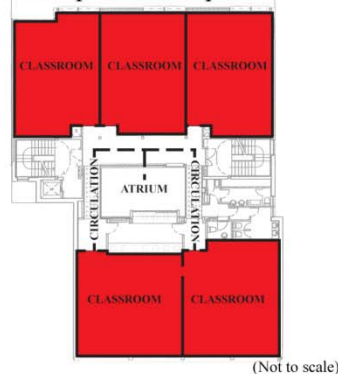


Figure [3.19] Circulation

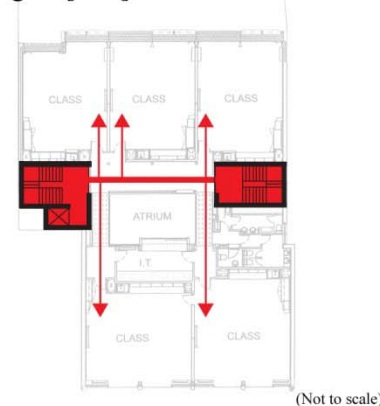
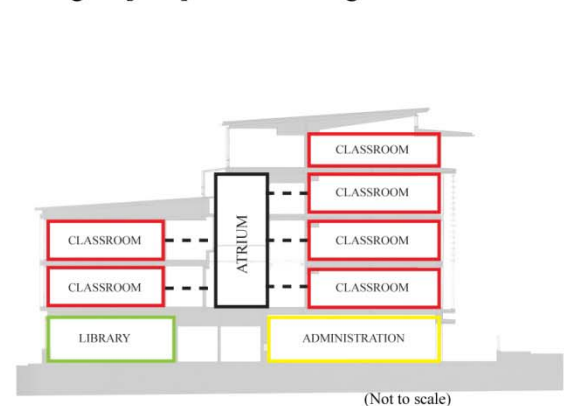


Figure [3.20] Vertical Configuration



## *Tenderloin Community School*

Figure [3.21] Urban Grain

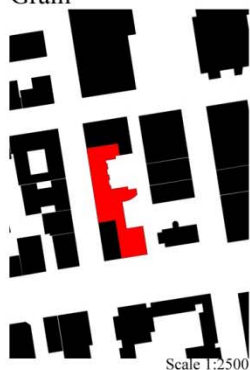


Figure [3.22] Classrooms in Relationship to Other Spaces

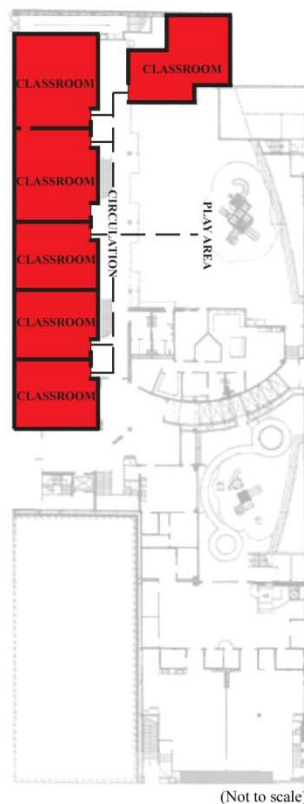


Figure [3.23] Circulation



## *De Eilanden Montessori Primary School*

Figure [3.24] Urban Grain

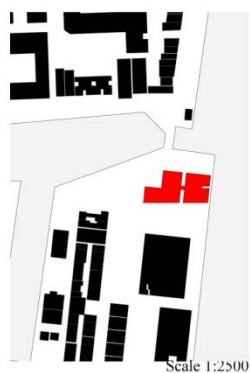


Figure [3.25] Classrooms in Relationship to Other Spaces

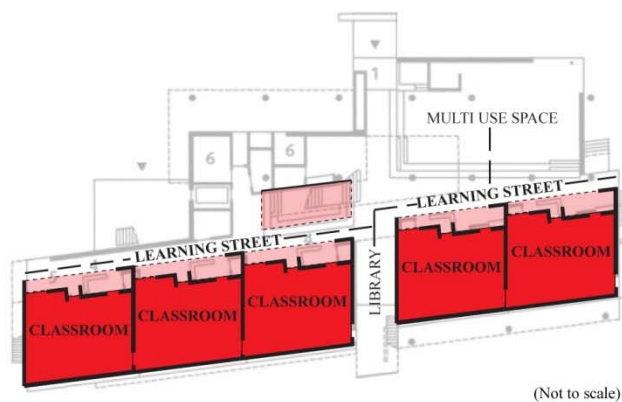
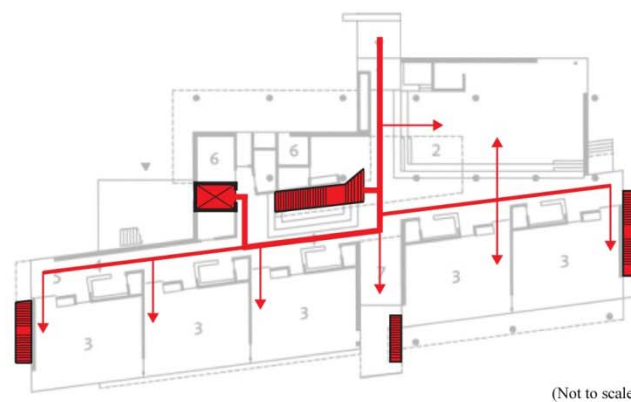


Figure [3.26] Circulation



All of the schools, apart from De Eilanden Montessori Primary School, are located in dense urban block and are built up to the neighbouring buildings. This means that the facades are restricted to the public one or two public street edges. The Montessori Primary School, which is built on the waterfront, has all of its facades exposed.

The classrooms in Hampden Gurney are more articulated than in the other schools, which are more conventional and rectangular. All of the classrooms break out onto circulation spaces, where they can access other spaces within the school such as the library, multiuse space or play areas. Circulation in Hampden Gurney and St Aloysius primary schools is carefully controlled within a confined space around the atrium. The spaces are not wide enough to become ancillary work spaces or learning streets as is the case in the Montessori Primary School.

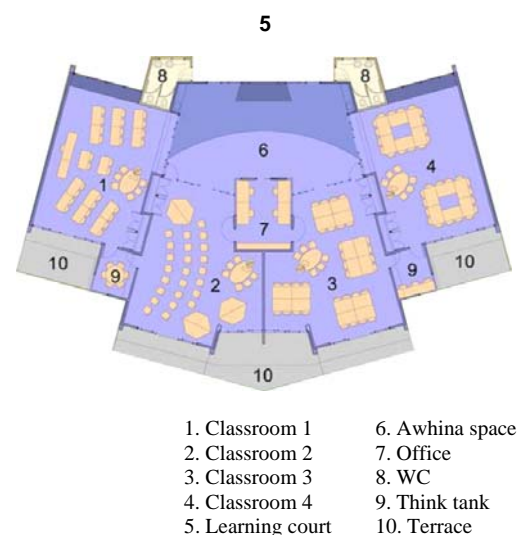
The ground floor location of the common spaces, such as the library and hall, in Hampden Gurney and St Aloysius primary schools could result in congestion if the whole school moves up and down the building at the same time. The location of common spaces within the other two schools is not as important for vertical circulation as there are fewer floors.

### 3.3 New Zealand Primary School Design Practice

The Ministry of Education provides examples of new and remodeled primary school properties that have been completed in the last 10 years. The goals of the schools in all the examples was to develop a collaborative community of lifelong learners with teachers as learning facilitators using independent inquiry based learning. Inquiry based learning is a specific pedagogy that is based on constructivism. This involved designing flexible and multi use spaces that supported this approach. In most examples there was no longer a conventional rectangular classroom with a specific ‘front of room’. In contrast designs included big irregular or ‘L’ shaped rooms with corners, alcoves and breakout spaces that could cater for large and small groups. Awhina, or common spaces were used in most examples in addition to a breakout pod or ‘think tank’ room shared between two or more classrooms (figure 3.26). High visibility between learning spaces was apparent. All of these features reflect best practice for schools of the future discussed in Chapter 2.

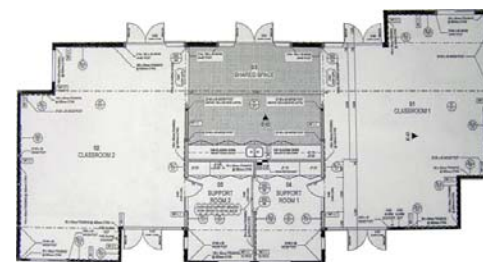
Clendon Primary School in Manukau City has a learning street that provides sheltered access to all parts of the school. The street is an important learning and social space for groups of children. There is also a high level of community involvement at the multi-cultural school and different cultures are able to share their beliefs and customs in the street. The school reports that the street has produced social, community and learning outcomes, which supports the benefits of the learning street discussed by Hertzberger (2008); Nair, Fielding and Lackney (2009) in Chapter 2.

[Figure 3.27] Oteha Valley Primary School, Typical Learning Pod Plan



Retrieved June 3 from [www.minedu.govt.nz/](http://www.minedu.govt.nz/)

[Figure 3.28] Snells Beach Primary School, Typical Learning Pod Plan



Retrieved June 3 from [www.minedu.govt.nz/](http://www.minedu.govt.nz/)

[Figure 3.29] Te Matauranga, Learning Street



Retrieved June 3 from [www.minedu.govt.nz/](http://www.minedu.govt.nz/)

[Figure 3.30] Te Matauranga, Learning Street



Retrieved June 3 from [www.minedu.govt.nz/](http://www.minedu.govt.nz/)

### 3.4 Relationship of Research to Current Practice

In an international context, the design joins a limited number of built examples of vertical school buildings. In a local context, the design addresses the issue of site selection and develops a new building type for New Zealand. Another important outcome from the research is a demonstrated link between the educational theory of Social Constructivism and the design of schools, particularly their internal layout. The research also highlights how the school and city can work together to provide the best educational opportunities for the children. This emphasises the importance of selecting a site where these goals can be met. Overall the research demonstrates how international practice for urban primary schools can be applied in the Wellington and New Zealand context.

The case studies reflect many of the issues discussed in the literature and introduce concepts and features that can be integrated into the design case study. One of the main concepts is vertical schools combined with other programmes such as housing or retail to assist with affordability. Other concepts include the use of play decks or roof space to compensate for the lack of street level play grounds. The case studies provide good examples of how schools can be integrated into the urban context and streetscape, while also taking an active role

in the social life of the community. The entrance into the school is carefully considered in addition to traffic issues, such as safety for dropping off children. The St Mary and St Pancras Church of England Primary School's use of a semi-public space as an interface between the school and community is an interesting concept to be considered.

The case studies also present examples of internal spaces designed to promote social interaction. These spaces include the blurring of corridors and classrooms creating learning streets. Atriums, plazas or awhina spaces are also used for circulation and meeting with others. The elongated steps that connect levels in the De Eilanden Montessori Primary School can also double as seating for the children. This presents a good solution for vertical circulation while also providing opportunities for socializing. All of the case examples have moved away from the school building as a 'learning factory' and contain elements that can be incorporated into the design case study.



DESIGN PARAMETERS



## 4.1 Overview

The pre-design stage involved using the precedents to act as a guide to possibilities for site selection in relation to size and creative use of the available space. It also included identifying the unique features of the city that can be used, taking into account Social Constructivism and the idea of the City of Learning. This guided the identification of an appropriate location for an inner city primary school in Wellington. Once a site had been selected the existing building was evaluated to decide if it was more practical to retrofit the existing structure or to rebuild on the site. A brief was developed identifying the key spatial requirements for the new school building again considering the overlaying educational theory of Social Constructivism.

The chapter is divided into sections starting with a description of the site selection process followed by a brief analysis of the chosen site. A description of the existing building on the site is given including a discussion whether to reuse the existing structure or to develop a new building. A site specific design brief is presented in relation to the urban context, followed by a design brief for the school building. Finally the criteria for evaluating the design are presented.

## 4.2 Site Selection

The site selection initially involved identifying an area in Wellington's inner city where there is an increase in high density apartment living and therefore there is an underlying demand for a new school. The affordability of the site was also taken into consideration, for example sites located on the waterfront would not be financially viable for a school. Two areas of predicted residential growth were identified in the inner city; Te Aro and Pipitea. Te Aro was selected because it already has a large existing residential population (Statistics New Zealand 2006)

The site selection was further refined taking into account the following factors:

- Proximity of major facilities such as the Wellington City library, Te Papa and open green spaces.
- Proximity of other primary schools.
- Cluster precincts, i.e. areas of existing activity that could be used by a primary school to learn about the city. Examples of the precincts include Civic Square and the Waterfront, where there are many educational activities
- Areas of inner city high density living, including both recently completed and proposed apartment buildings.
- Block permeability to investigate the ease of walking around different areas of Te Aro.
- Existing educational facilities in the area.
- Traffic density on different roads to assess safety.
- Public transport routes and frequency of buses.
- Areas identified for development in the near future and therefore receptive to change

The information was sourced from the Wellington City Council.

# Te Aro Analysis

Figure [4.1] Zoning Map

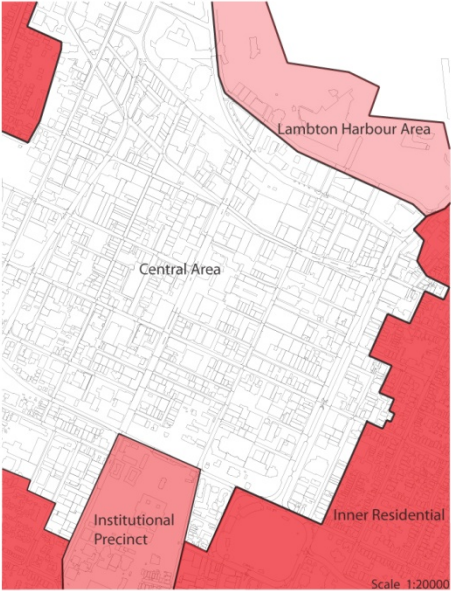
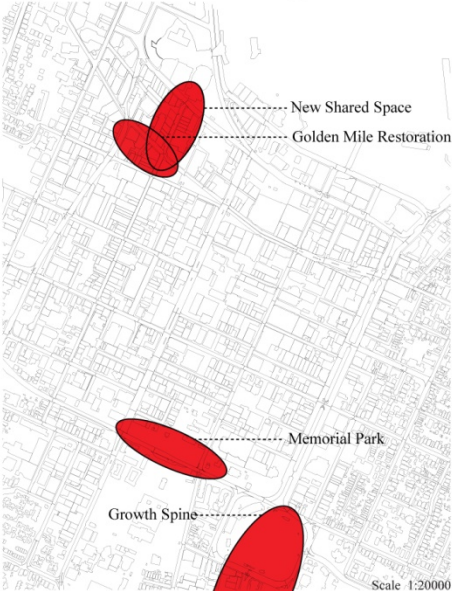
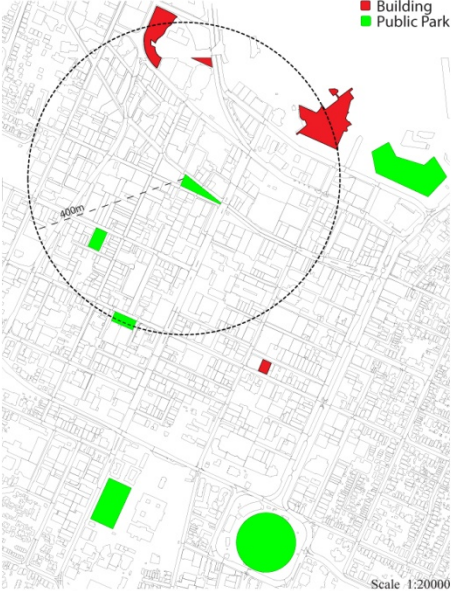


Figure [4.2] Areas of Change



Areas targeted for future development therefore an opportunity to integrate a primary school.

Figure [4.3] Major Amenities



Identifying local amenities which can be used by a primary school within walking distance.

Figure [4.4] Cluster Precincts



Areas of existing activity that could be tapped into by a primary school to learn about the city.

Figure [4.5] Nearby Schools



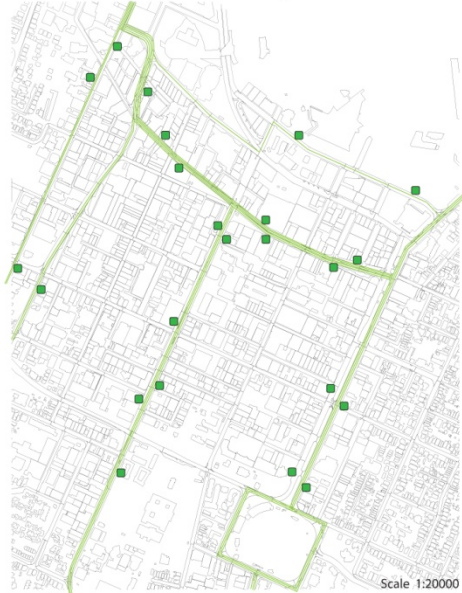
Existing primary schools located on the periphery of the city.

Figure [4.6] Traffic Density



Avoid locating a primary school adjacent to roads with high vehicle density.

Figure [4.7] Public Transport



Public transport routes around Te Aro.  
Locating a primary school close to a bus route would be beneficial.

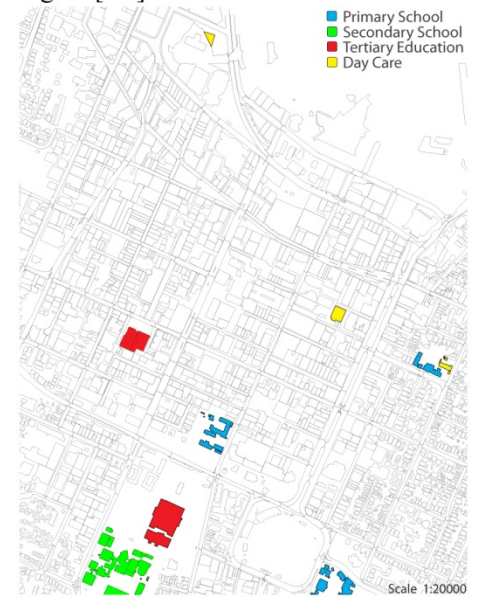
Figure [4.8] High Density Living



Demographic shift of people moving into the city.



Figure [4.9] Educational Facilities



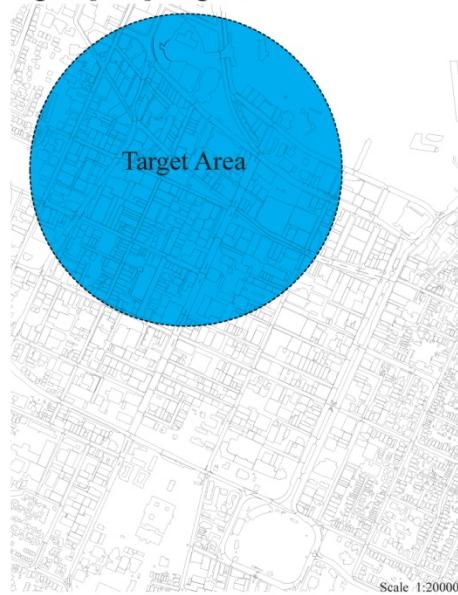
Educational facilities already located in and adjacent to Te Aro, creating links to an existing learning community.

Figure [4.10] Block Permeability



The relationship of block sizes and the permeability of blocks to investigated different journeys to school.

Figure [4.11] Target Area



Selected target area for a primary school in Te Aro

The site selection process identified the zone within Te Aro, which is considered inner city (figure 4.10). Two possible areas within this zone were identified where there are plans for change. These are the North and South areas indicated in figure 4.9. The northern area is closer to active areas of the city and major amenities such as the library, Te Papa and the Waterfront (figure 4.1 and 4.3). Access to local amenities is particularly important to the school in relation to the City of Learning concept. The southern area of Te Aro already has access to primary schools (figure 4.2). When targeting a possible site within the northern it was necessary to avoid main arterial routes for safety reasons (figure 4.7) but also to consider proximity to public transport (figure 4.8). The northern part of Te Aro was targeted for the site of the primary school. Another advantage of this target area is that it can also cater for some of the residential population from Lambton Quarter. A search of this area was carried out to identify possible sites that could accommodate a multi level school for at least 220 students.

The search lead to the lower end of Cuba Street, which was appropriate as it is an area of diverse activity including residential, commercial, hospitality and so forth. Some of the buildings in this area are degraded and the block is less dynamic than those in the surrounding areas. As a result sites in this area could be more affordable for a primary school. Introducing a new model for an inner city primary school building would be more acceptable and possibly even desirable in this area. The school could add to the existing diversity and possibly act as a catalyst for development of surrounding sites, especially retail. The area is also part of the Golden Mile Restoration project, where there are plans to create a new shared space between Manners and Wakefield streets (Appendix A). Pedestrians will have right of way, which will make it a safer area for children within the city. The goal is to create clearer pedestrian links to Civic Square and the waterfront, which also will be good resources for a school.

Site

Figure [4.12] New Zealand



Figure [4.13] Wellington Region



Figure [4.14] Central City

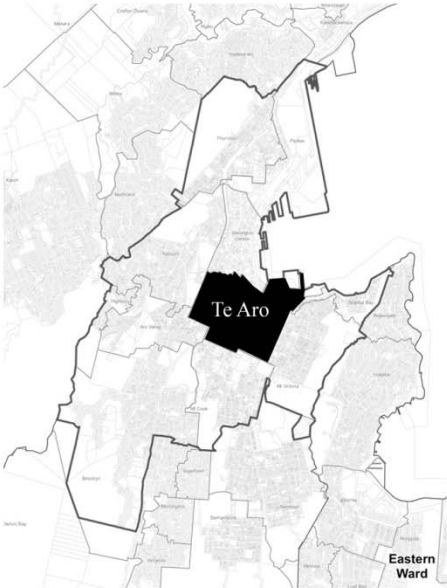


Figure [4.15] Te Aro

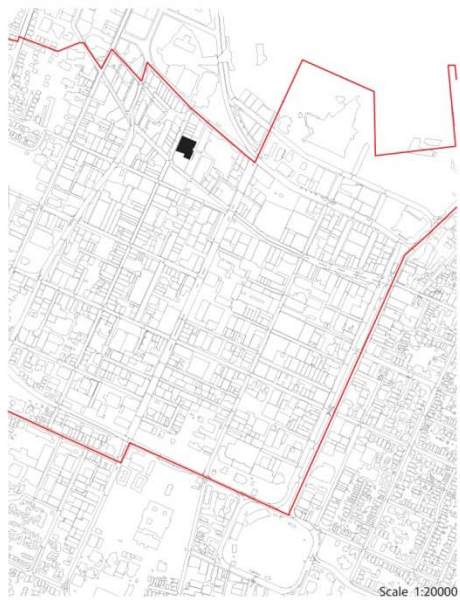


Figure [4.16] Location Plan



Figure [4.17] Survey Plan

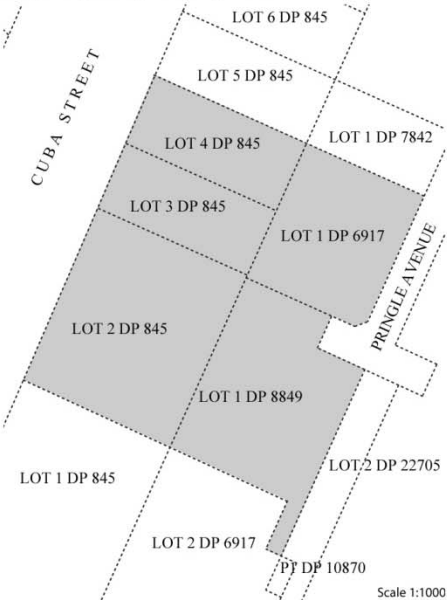


Figure [4.18] Figure Ground Plan

Scale 1:5000



As the lower end of Cuba Street does not fall into the Cuba Street Character Area there is no specific design guide that has to be adhered to. However it is necessary to create a site specific design brief and to conduct a site analysis which together guide the design process. Cuba Street runs on a north-south axis and therefore sites on the eastern side of the street have the better orientation in relation to afternoon sun. Afternoon sun is preferable because it will provide light and warmth for the play spaces at lunch time. One particular site appeared appropriate for either a new building or retrofitting of the existing structure. This was the 1960s addition to the James Smith department store complex. The addition is more degraded than the surrounding buildings and therefore presents an opportunity for development.

[Figure 4.19] 1960s addition to the James Smith building



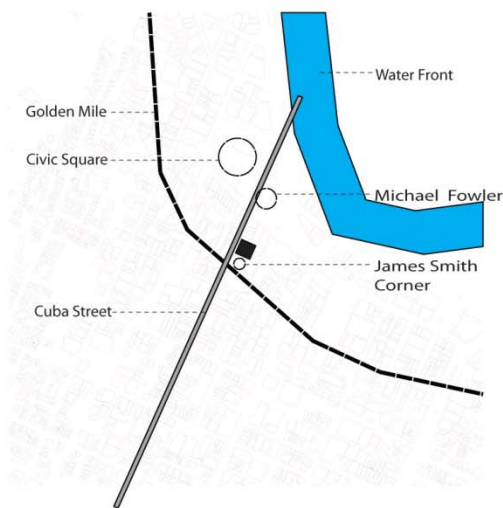
Photograph: James Silverwood. 12 July 2010

### 4.3 Site/Urban Analysis

Figure [4.20] Figure Ground Plan

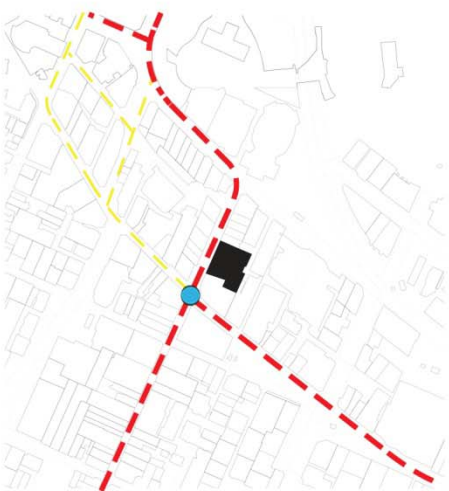


Figure [4.21] Significant Elements



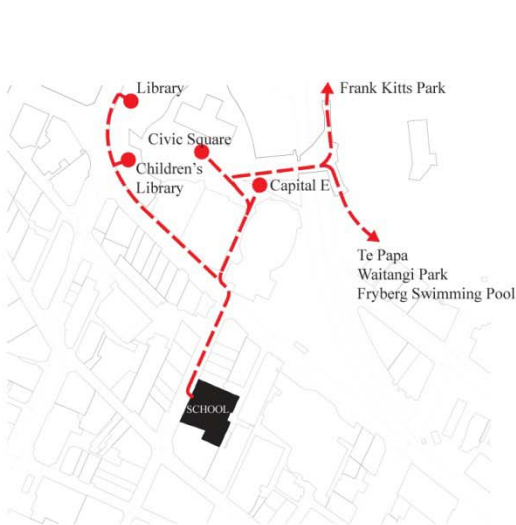
*Significant areas of the inner city in the immediate vicinity of the chosen site.*

Figure [4.22] Future Pedestrian Flow



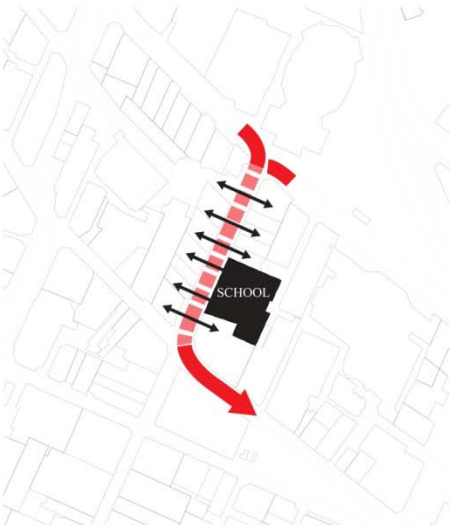
*Wellington City Council prediction of future pedestrian traffic flow.*

Figure [4.23] Access to Amenities



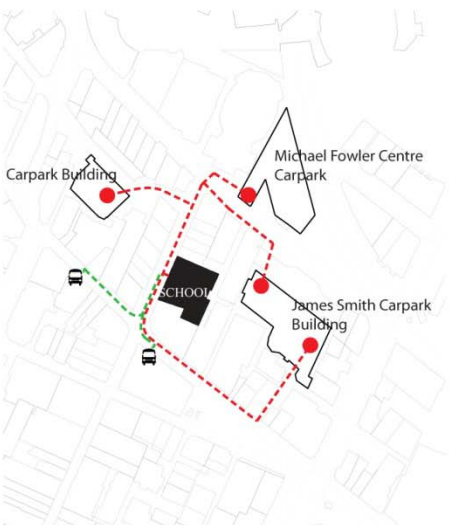
*Easy access to the city's amenities, only requiring crossing one minor road.*

Figure [4.24] Pedestrian Zone



*Proposed traffic and pedestrian shared zone in Cuba Street where pedestrians will have right of way.*

Figure [4.25] Possible Drop Off/Pick Up System



*Designated school carpark is unnecessary due to location of public carparking buildings and bus stops.*

The diagrams from the site analysis present some considerations related to the site in the urban context. The site is part of a large block that has few desirable lanes running through, which limits its permeability (figure 4.18 and 4.20). The site is also close to some significant Wellington landmarks, such as the Golden Mile (figure 4.21). The council predicts that some of the main pedestrian flow will move down Cuba Street and Manners Street, which means that it will become a more active area in the future (figure 4.22). There is only one arterial road to cross for the children to access major local amenities and the Waterfront (figure 4.23). The new public open space on Cuba Street will be a shared zone where cars will be driving below 10km/hr (figure 4.24). The site is surrounded by three public car parks that could be used by parents, dropping their children at school. There is a bus route planned with bus stops very close to the school (figure 4.25).

### 4.3 Existing Building

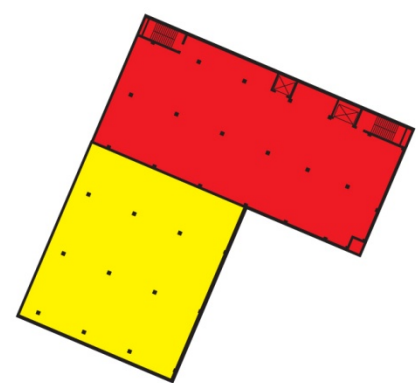
The selected building is one of five buildings that make up the James Smith's complex, a historical landmark located on the Cuba Street/Manners Street intersection. The original part of the building was built in 1907 and designed by architects Penty and Blake (Kernohan, 1994). The building was remodelled in the 1930s by King and Dawson following the Art Deco style. The selected building in Cuba Street was added in the 1960s in two stages and was designed by Mitchell and Mitchell. Kernohan (1994) reports that the 1960s additions 'have an anonymous face and contribute little to the coherence of the whole' (p.121). Therefore alterations to this building would not detract from the character and coherence of Cuba Street and could actually enhance the streetscape.

A brief analysis of the existing structure was carried out with the main intention being to determine whether to retrofit or to build a new primary school. The analysis included:

- The two stages of development of the existing building
- The building's entrance and street threshold
- Location of vertical circulation cores
- Vertical access and the New Zealand Building Code.
- Building's footprint in relation to other building on the street
- Ability to accommodate additional levels if required.

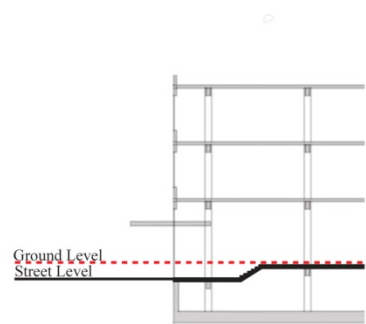
# Existing Building Analysis

Figure [4.26] Two Stage Development



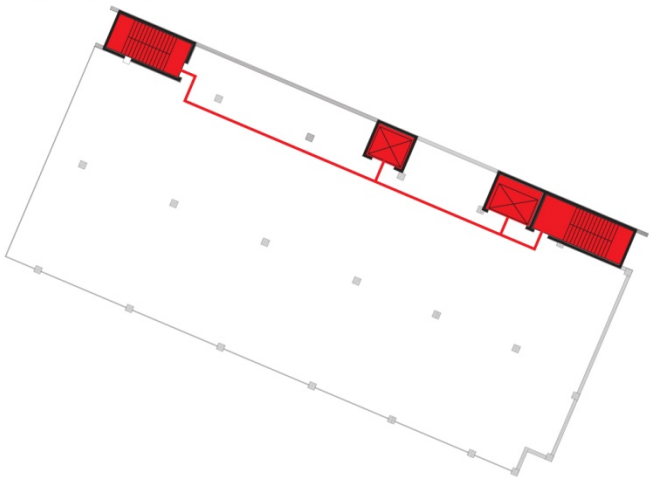
The building was developed in two stages. If the building is to be divided it would be logical to consider the stages as different entities.

Figure [4.27] Risen Ground Floor



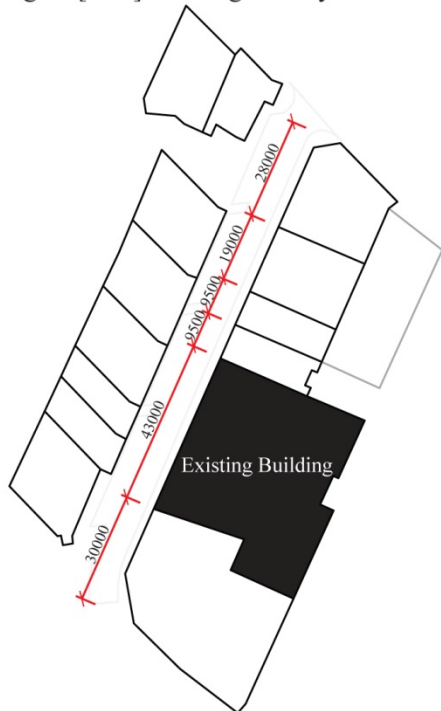
The ground floor is higher than street level, which inhibits the transition from the street into the building.

Figure [4.28] Circulation



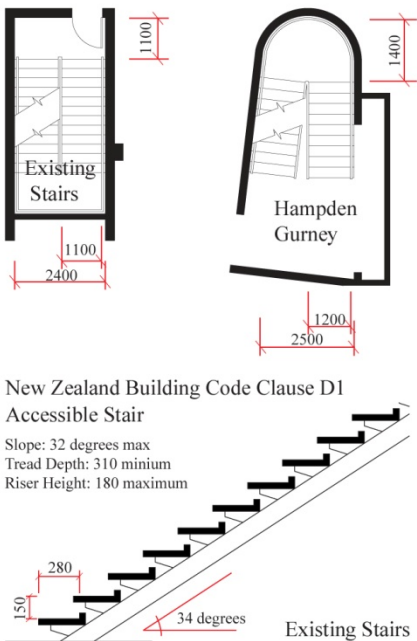
Location of vertical circulation cores.

Figure [4.29] Building Density



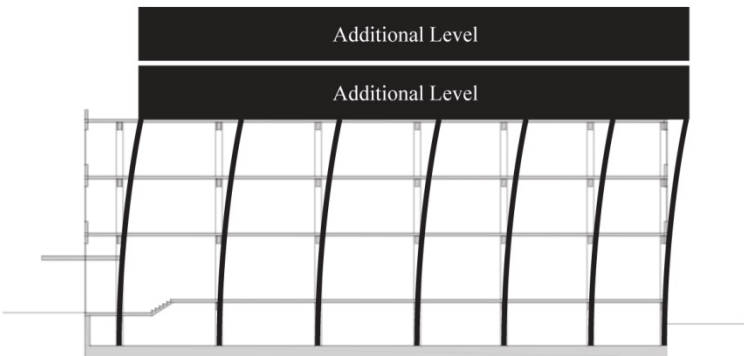
The existing building's length along Cuba Street in proportion to other buildings.

Figure [4.30] Vertical Circulation



A comparison of the existing building's staircases to both Hampden Gurney and the NZ building code.

Figure [4.31] Additional Levels on Existing Structure



The structural feasibility of adding additional levels to the existing building is uncertain.

It was apparent that it would be better to develop a new public building with a unique identity for the children rather than retrofitting the existing structure. The building analysis highlighted some problems with the existing building. These included the elevated ground floor and the current stairwells which do not meet the building code. Preserving the current facade would limit the opportunity to introduce a new building type or a multiuse programme. Due to the depth of the site an atrium would have to be introduced to bring natural light into the building and educational spaces. The structural feasibility of adding additional levels to the existing building to cater for the school needs would also need to be established. Overall the decision was made introduce a new building type that could add to the streetscape and could assist in the revitalisation of the lower end of Cuba Street.

## 4.4 Site Specific Design Brief

### 4.4.2 Link way Between Cuba Street and Pringle Avenue

Create a link between Cuba Street and Pringle Avenue.

*Reason: to help increase block permeability and help to begin to create a network of lanes.*

### 4.4.2 Thorough fare through the James Smith Building

Create a sheltered pedestrian link through the James Smith complex.

*Reason: Again to help increase block permeability and provide a sheltered interconnection, increasing the activity and quality of the James Smith shopping complex.*

### 4.4.1 Network of lanes

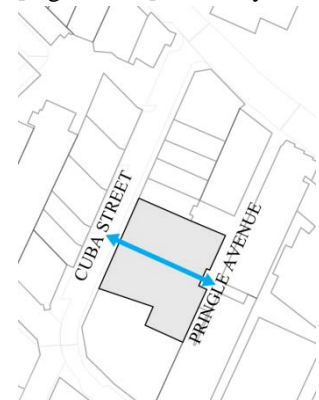
The network of lanes created by combining the link way from Cuba Street to Pringle Avenue with the existing lanes in the block.

### 4.4.1 Building Alignment

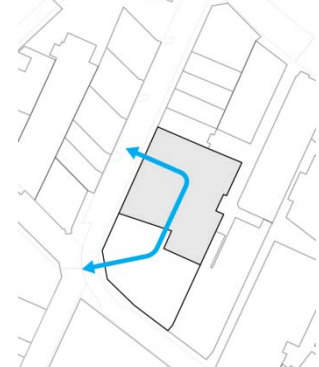
Building to be aligned in relation to the Te Aro grid

*Reason: To create a sense of conformity and uniformity within the lower end of Cuba Street.*

[Figure 4.32] Link way



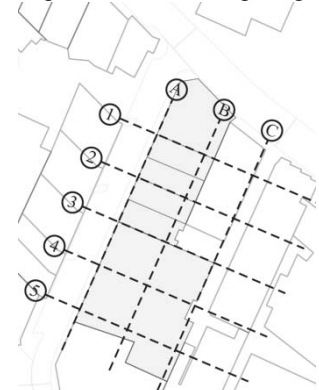
[Figure 4.33] Building



[Figure 4.34] Lane Network



[Figure 4.35] Building Alignment

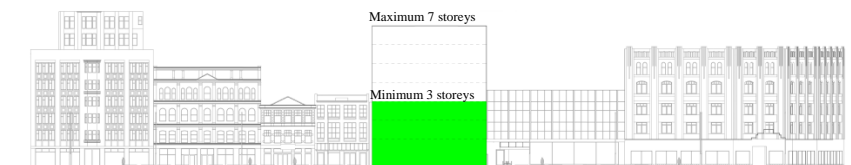


#### 4.4.2 Building Height

Maximum building height to be seven storeys and the minimum height to be three storeys

*Reason: To maintain scale and continuity of street walls without dominating the streetscape.*

[Figure 4.36] Building Height



#### 4.4.2 Retail Frontage

Retail outlets on the ground floor with street frontages or access from the street.

*Reason: To continue the retail frontage along Cuba Street.*

[Figure 4.37] Retail Frontage



#### 4.4.2 Parapet Heights and Regulating Lines

Architectural elements such as openings on the facade to be aligned with similar elements on adjoining buildings.

*Reason: To visually integrate the building into the streetscape and to respect surrounding heritage facades.*

[Figure 4.38] Regulating Lines

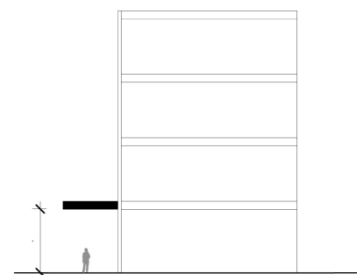


#### 4.4.2 Shelter

To continue a canopy along Cuba Street.

*Reason: To provide shelter from the elements and to create character and sense of cohesion along the built edge.*

[Figure 4.39] Shelter

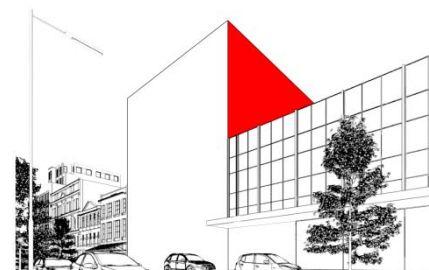


#### 4.4.2 Side Elevations

Provide a distinct architectural treatment to the side facades if the building extends above the adjacent buildings.

*Reason: To create visual interest from street level and assist with the identity of the school.*

[Figure 4.40] Side Elevations



## 4.4 Design Brief

### Users

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#### *Students*

- 220 Students
- Year levels: 0-8

#### *Staff*

- Number of facilitators/teachers: 8
- Principal
- Reception staff
- Teacher Aids

### School Building

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#### *Learning Studios/Classrooms*

- Number of learning studios: 8
- Think tanks
- Environmental education and outdoor classroom space

#### *Library*

#### *Hall/Multi-purpose area*

#### *Administration*

- Reception
- Principal
- Sickbay

#### *Resource Area/Staffroom*

#### *Play space*

- Open-air
- Internal play areas

#### *Toilets*

- Disabled toilets
- Boys and Girls toilets on each floor
- Staff toilets

## 4.5 Criteria for Evaluation of Design Case Study

### *4.5.1 Urban Context*

As the school is a public building it has a responsibility to enhance the streetscape. This can be achieved by introducing a new building type which adds to the diversity of the surrounding building rather than detracting from them. It is important that the design is coherent and relates well to its context. The height, bulk and form need to be carefully considered, as does the street edge. The site specific design brief covers the urban issues related to the site and context.

### *4.5.2 Threshold between City and School*

There needs to be a transition or interface between the city and school where the children have the opportunity to interact safely with members of the wider community. This supports the educational theory of Social Constructivism. The intention is to create a relationship between the school and the urban context where both benefit. There is a possibility of shared facilities with the community through a mixed use programme or incorporating community facilities such as after school care into the school. It is also important that parents and caregivers can easily access the school to encourage them to be an active part of the school community and their children's education. The school should have an active role in the social life of the community.

### *4.5.3 Internal Layout and Vertical Circulation*

Within the school the spaces should enhance the opportunities for students to interact informally and work together in groups of varying sizes. Spaces also need to be provided for whole class and whole school activities. The use of 'learning streets', meeting places, cave spaces should be considered. The layout should be planned to ensure that children are able to easily orientate themselves within the building and find their way around. The movement of children from the street to

the school building and between levels should be organised to have least impact on general school life. Means of emergency egress need to be considered and positioned so as not to impact negatively on the educational spaces within the school. After-hours access is to be provided if the school is to be used for other purposes.

#### *4.5.4 Play spaces*

Play spaces should be incorporated and consolidated as much as possible for safety and supervision reasons. Spatial challenges should be incorporated into the design to allow children to develop spatial awareness and orientate themselves within the building. The children should also be able to access public open spaces within the city to compensate for possible lack of play spaces within the school.

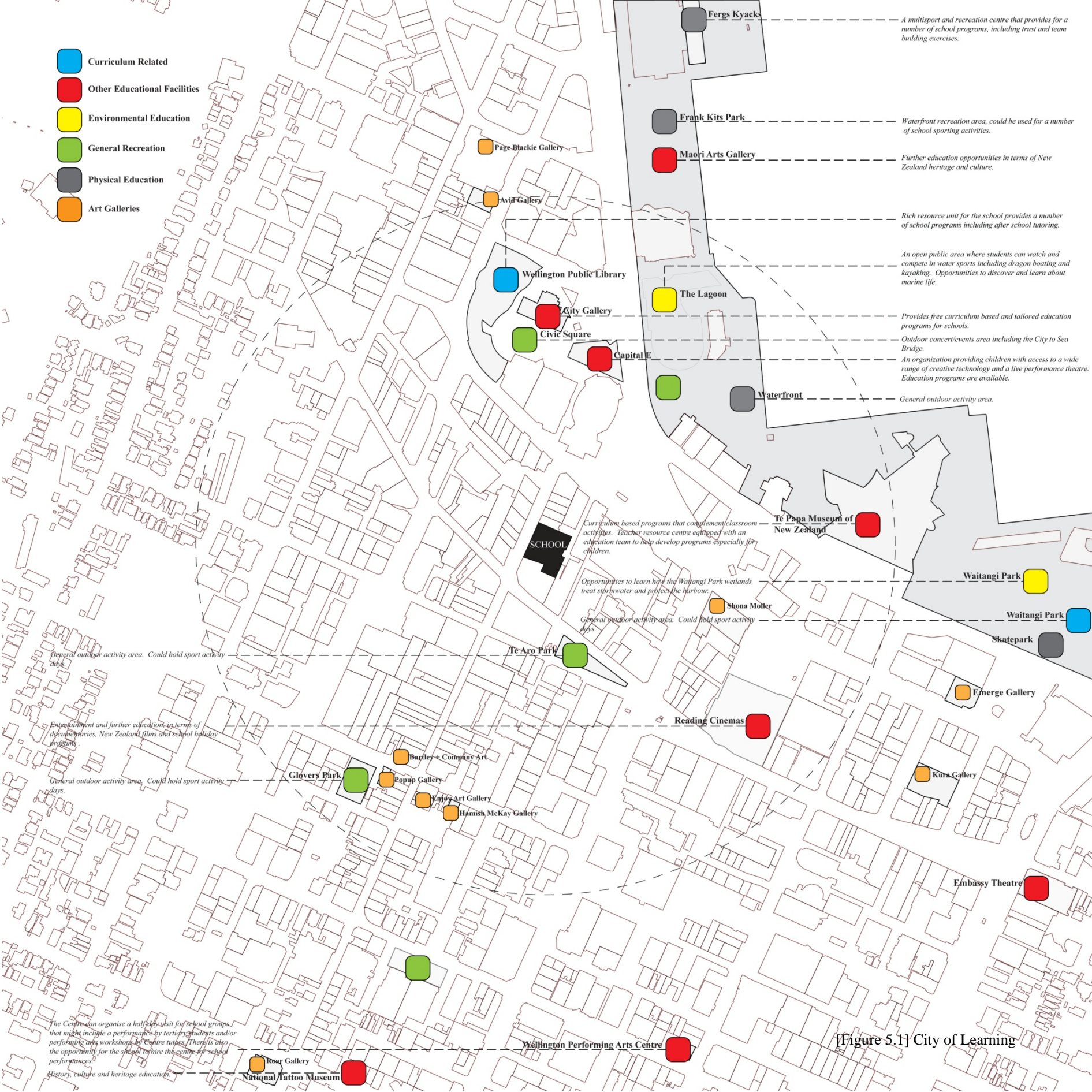




## 5.1 Overview

Exploring a new building type for the city context and taking into account recent changes in education poses a real challenge in the design process. Education in the 21<sup>st</sup> century moves away from the factory model of delivering information to students in a standardized environment to providing children with opportunities to co-construct knowledge both within and beyond the school. Social Constructivism is the theory that reflects this idea of constructing knowledge and leads to the importance of the physical environment that allows the social interaction to take place. School is often the first experience that many of the children have of belonging to a public institution and it is important that this experience is a positive one. The design can assist in the transition from the home environment to the school environment within the context of the city. The school and the individual classrooms create a home-base for the children where they can return after using the city's resources. Equally, the city operates as an extended classroom.

The chapter is divided into sections, which starts with a discussion regarding how the school design meets the responsibility of the school as a public building and how it fits into the streetscape. The ground floor 'public living room' has its own section as the interface between the city and the school. The following section addresses design issues as a progression through each level of the school. The chapter concludes with a section related to the design journey and a critical reflection of the design.



- Curriculum Related
- Other Educational Facilities
- Environmental Education
- General Recreation
- Physical Education
- Art Galleries

A multisport and recreation centre that provides for a number of school programs, including trust and team building exercises.

Waterfront recreation area, could be used for a number of school sporting activities.

Further education opportunities in terms of New Zealand heritage and culture.

Rich resource unit for the school provides a number of school programs including after school tutoring.

An open public area where students can watch and compete in water sports including dragon boating and kayaking. Opportunities to discover and learn about marine life.

Provides free curriculum based and tailored education programs for schools.

Outdoor concert/events area including the City to Sea Bridge.

An organization providing children with access to a wide range of creative technology and a live performance theatre. Education programs are available.

General outdoor activity area.

Curriculum based programs that complement classroom activities. Teacher resource centre equipped with an education team to help develop programs especially for children.

Opportunities to learn how the Waiangi Park wetlands treat stormwater and protect the harbour.

General outdoor activity area. Could hold sport activity days.

General outdoor activity area. Could hold sport activity days.

Entertainment and further education in terms of documentaries, New Zealand films and school holiday programs.

General outdoor activity area. Could hold sport activity days.

The Centre can organise a half-day visit for school groups that might include a performance by tertiary students and/or performing arts workshops by Centre tutors. There is also the opportunity for the school to hire the centre for school performances.

History, culture and heritage education.

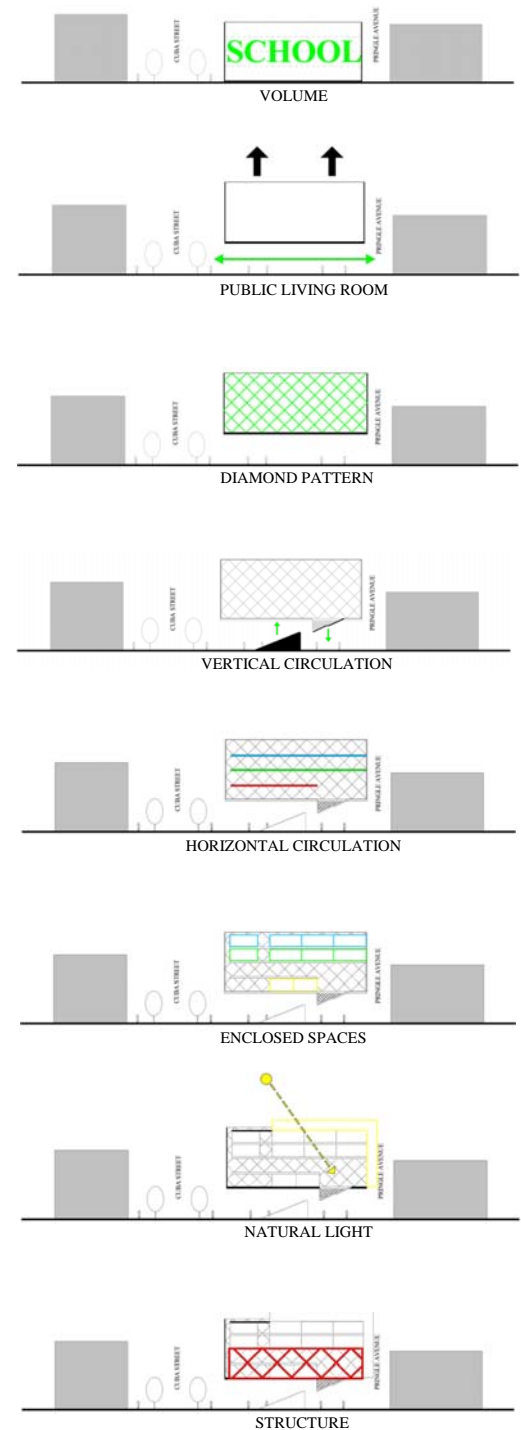
[Figure 5.1] City of Learning

## 5.2 The School as a Public Building

The school is a public building and as such has a responsibility to enhance the streetscape but at the same time has its own distinctive identity. The design focused on creating a building which was different to the surrounding commercial and residential buildings but which also continued key attributes of Cuba Street. As many of the buildings in the area have heritage frontages there was an opportunity to signify the building's special status by introducing a different architectural language. This was explored by elevating the building 9 metres above street level which created a civic scale public open space below. This elevation created an undercroft and provided another surface or “façade” as viewed from the street. In contrast, on surrounding buildings architecture is typically compressed into a single facade. As the school extends above the surrounding buildings it is more dominant in the streetscape, and this is also beneficial for a public building.

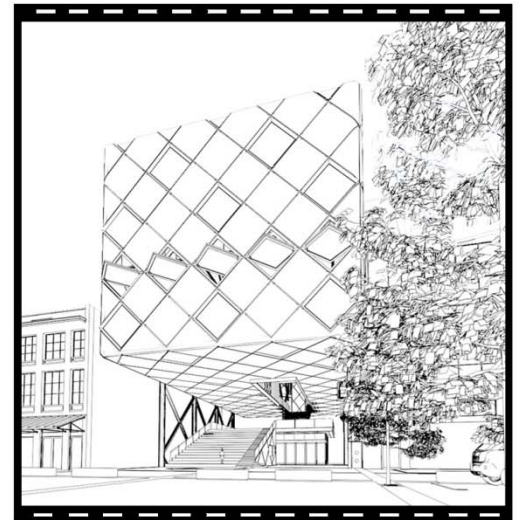
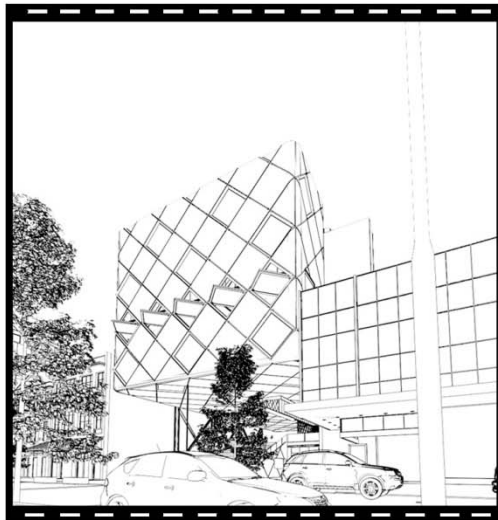
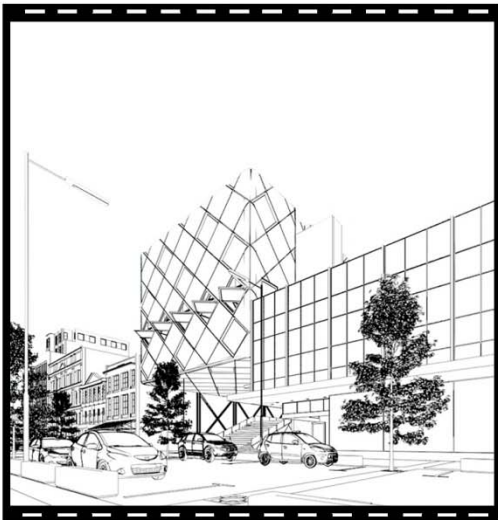
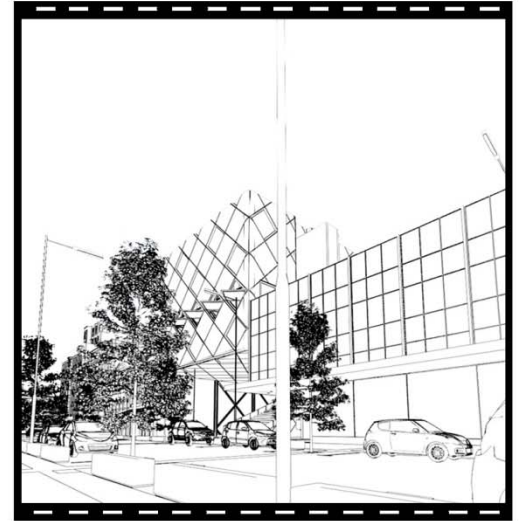
One of the design intentions was to ensure that the school was easily identifiable by the children. A simple geometric form, the diamond was selected as a symbol to contrast with the surrounding standardized rectangular forms. The diamond pattern was then impressed onto the ‘skin’ of the building with the intention of creating a landmark and home-base for the children to help them orientate themselves within the city. The children could say that they go to the “diamond school in the city”.

[Figures 5.2] Diagrammatic Development of the School Building

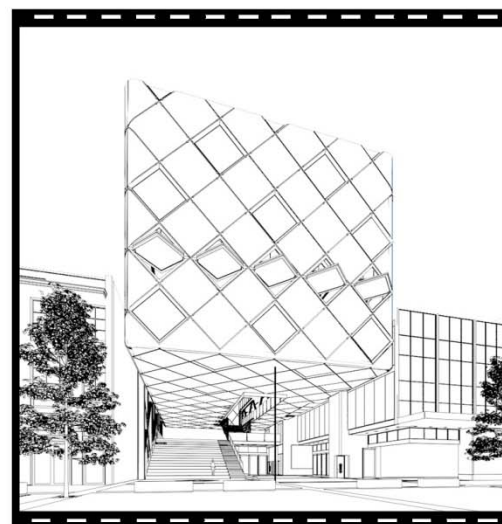
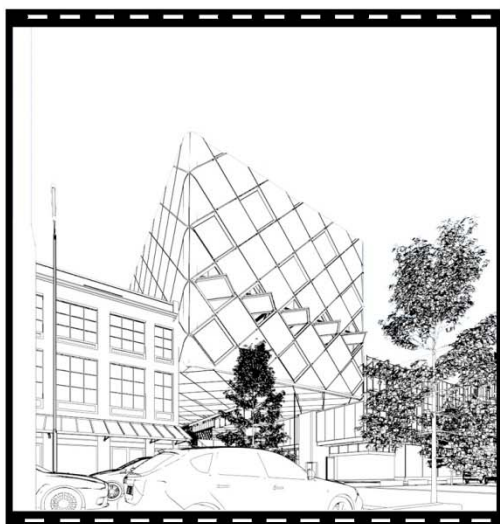
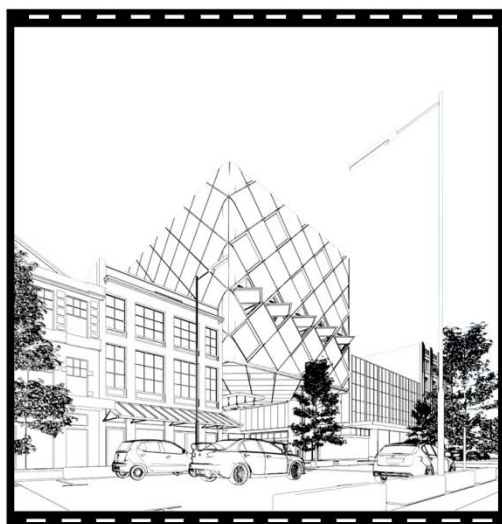
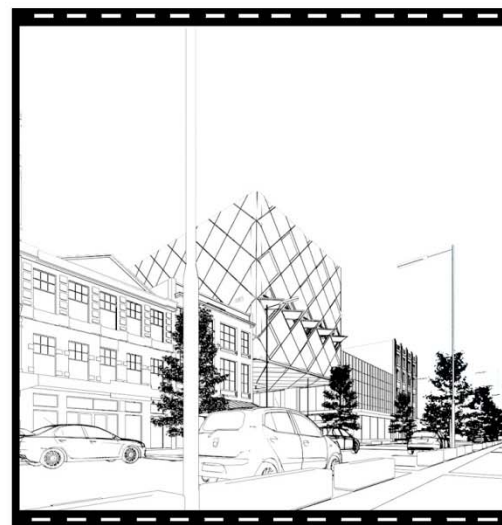
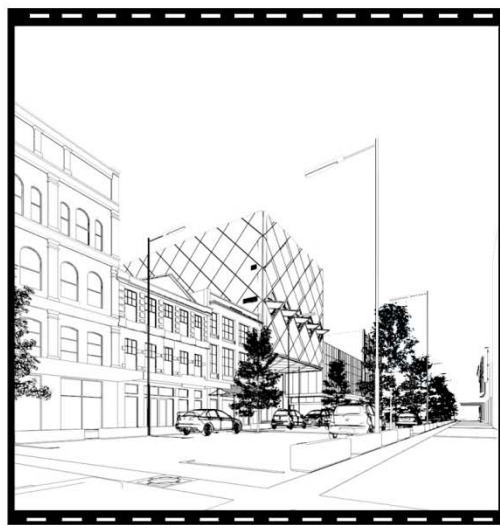
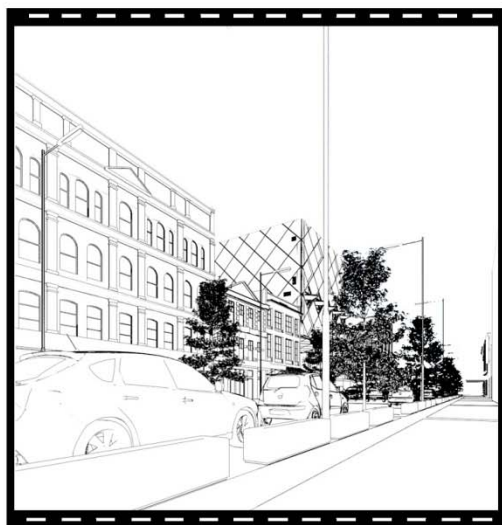


## Film Strip

[Figures 5.3] South to North



[Figures 5.4] North to South





[Figure 5.5] Cuba Street



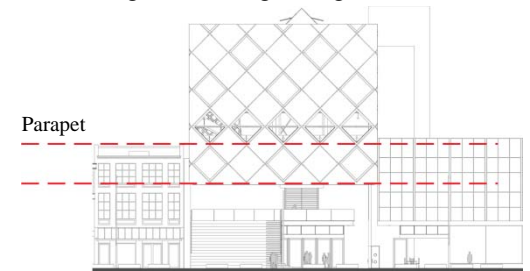
[Figure 5.6] Cuba Street

### 5.3 Streetscape

Although the school building has a distinct character it also fits into the streetscape for a number of reasons. These include the design coherence; relationship to context; siting, height, bulk and form; street edge and building alignment and positive open space.

The enveloping diamond skin creates a coherent integrated building. The proportions of the diamond module are similar to other architectural elements on the neighbouring buildings such as window openings. The vertical fire cores on the southern facade help to break up the overall bulk from an oblique street level view. The upper elevation of the school aligns with the surrounding buildings but the open ground level also extends the street edge into the site to provide another positive link with the surroundings. In this way, the ground level would add to the pedestrian-orientated open spaces at both ends of the proposed lower Cuba Street development.

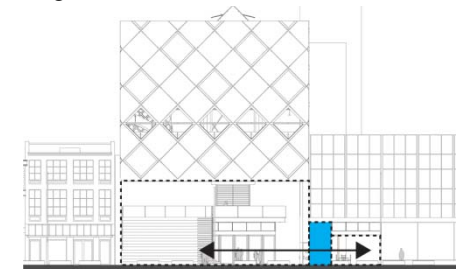
[Figure 5.7] Regulating Lines



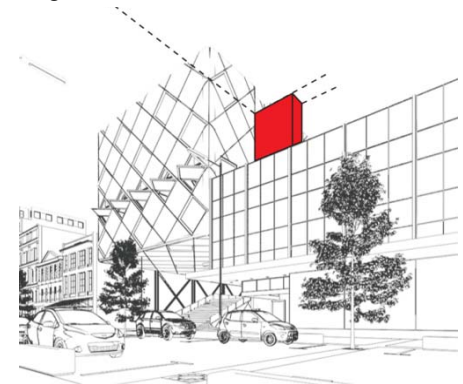
[Figure 5.8] Diamond Proportion



[Figure 5.9] Scale Transition



[Figure 5.10] Vertical Cores



## 5.4 The Public Living Room

The open space created by the school building being elevated above the ground acts as a transition or threshold between the city and the school. It is the place where the activities of the school and city intermingle and can be referred to as a ‘public living room’. A thoroughfare linking the James Smith shopping complex has been incorporated into the ‘public living room’ to increase block permeability and encourage activity within the space (figure 5). There is also a linkway through to Pringle Avenue which could assist in creating a network of lanes to further increase block permeability. The space includes retail outlets and a café that breakout into the public space.

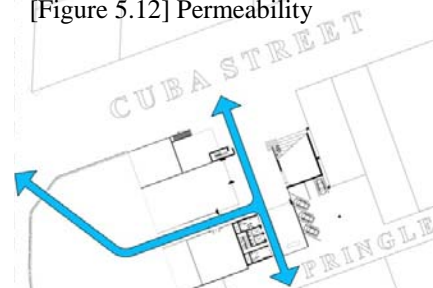
A major design challenge was how to create a significant arrival point and pathway into school. This was achieved by creating a ‘grand’ staircase which doubles as tiered seating. The tiered seating can be used for school performances such as kapa haka, choir and productions. The wider community would also have access to these performances either by using the public space or simply by pausing while passing along the footpath outside. It will also be possible to connect with the wider community through extending school events, such as the gala, the science fair and book fair into the public space and Cuba Street. The children could benefit from the social interaction with the wider community at these events.

The choice of materials such as cedar, glass and steel for the public living room has been carefully considered to create a quality environment that is appreciated by the school and the community. It is intended that the area would be closed off at night with a security gate. On the northern side of the space, the wall of the adjacent building has been left exposed. This helps isolate the school building as a separate visual entity, thus confirming its local landmark status. The pavers from Cuba Street have been extended into the space to ensure that there is no visual

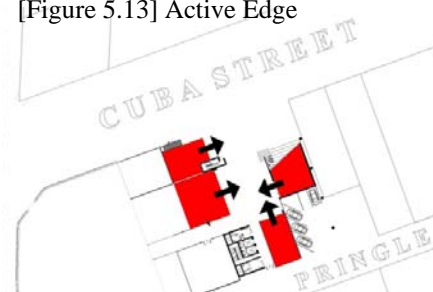
[Figure 5.11] Cuba Street Extension



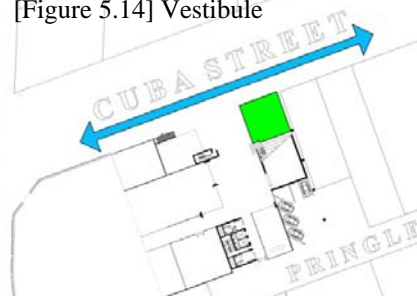
[Figure 5.12] Permeability



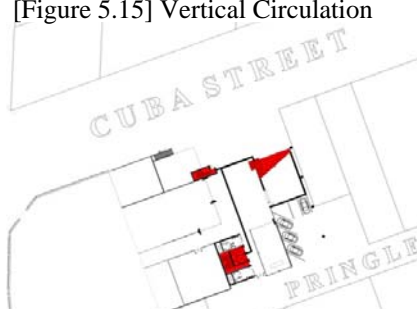
[Figure 5.13] Active Edge



[Figure 5.14] Vestibule



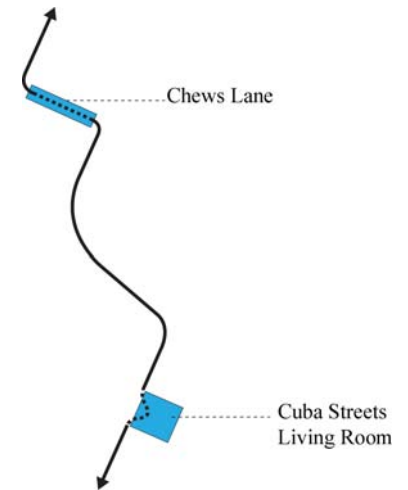
[Figure 5.15] Vertical Circulation



barrier and indicate that the space is an extension of the public domain. The diamond impressed 'skin' of the school building creates the ceiling of the public living room and the fact the space is free from columns again isolates the school but emphasizes its presence as a hovering volume.

The scale of the open space is grand and overtly "civic". However there is a deliberate contrast between the grandeur of the "living room" and the more conventional dimensions of the flanking retail units. The lesser scale is created by cantilevering the second floor of the adjacent building. There is also an aperture that brings natural light into the public space and gives the opportunity of looking upward into the school's atrium. This opening also provides glimpses of children or snatches of their sounds thereby creating a connection between the school and public domain at street level.

[Figure 5.16] Public Space Connection



[Figure 5.17] Public Living Room

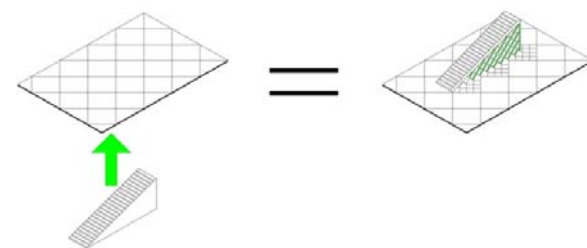
## 5.5 The School Building

### 5.5.1 Key Design Concepts

As the importance of social interaction in learning has been recognized the circulation paths within the school have become learning opportunities. The design sets a precedent for a vertical primary school within New Zealand where both vertical and horizontal circulation has to be considered. Designing spaces around the circulation paths is a key design concept. Vertical circulation could be viewed as problematic but the design focuses on the positive aspects of movement between the levels whereby students are able to interact visually with the floors above or below. The horizontal circulation reflects the idea of the ‘city in miniature’ presented by Hertzberger (2008). The circulation paths act as ‘Learning Streets’ and the classrooms and other educational spaces are not just organised along these routes but also “break out” onto the “streets” which become ancillary learning spaces.

The staircases that provide the main vertical circulation can be considered as sections of the outer diamond ‘skin’ that have been pushed into or out of the school. The diamond pattern appears undistorted in plan. However, as the skin has been pushed or pulled the diamonds have become elongated and “torn”. Imagine a thin sheet of play-dough has been indented with a diamond pattern and the sides have been stretched and torn (figure 5.18). The diamond pattern therefore appears on all the staircases throughout the school.

One challenge to be overcome was to organize the movement of approximately 200 children in and out of the school in a positive and efficient way. The architectural design concept achieves this by breaking the transition into two moments. The first part involves walking up the “tiered seating” which is perceived as different to a traditional staircase, especially as the gradient is gentler than a normal flight of steps.



[Figure 5.18] Vertical Circulation Concept

Circulation

Roof

Level 5

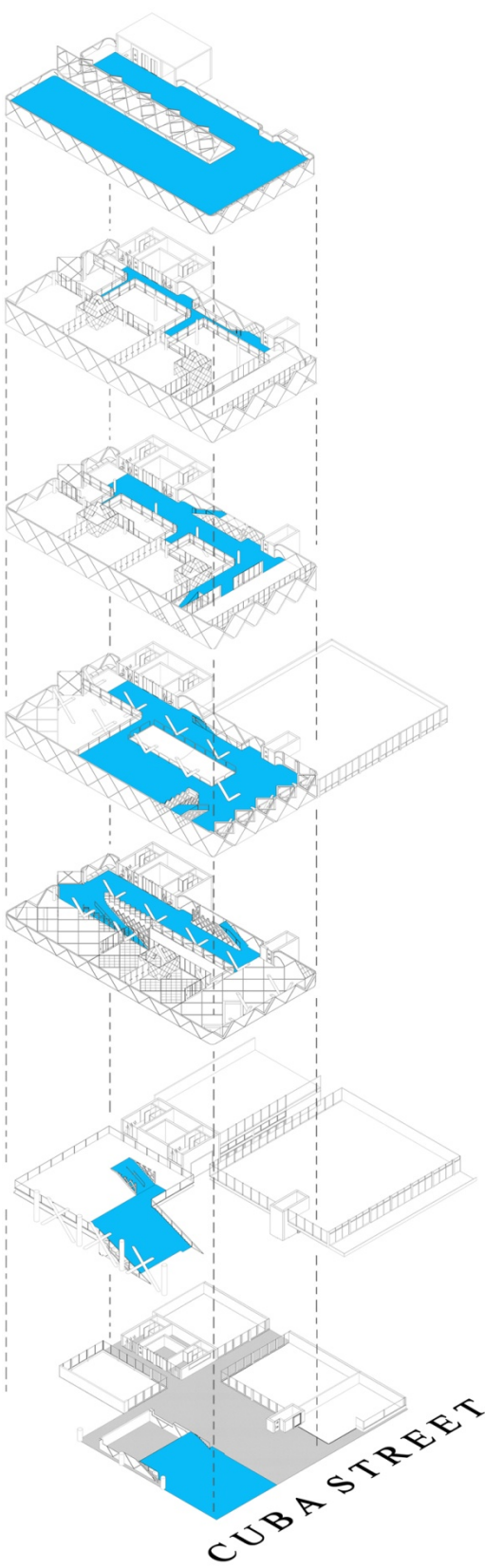
Level 4

Level 3

Level 2

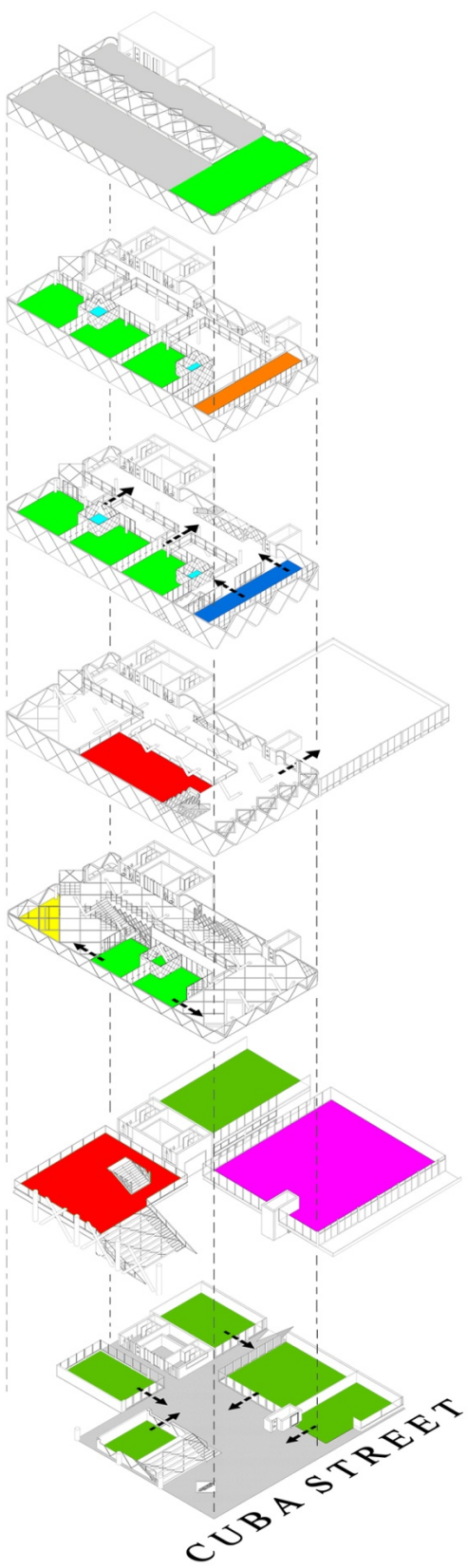
Level 1

Ground Level



Programme

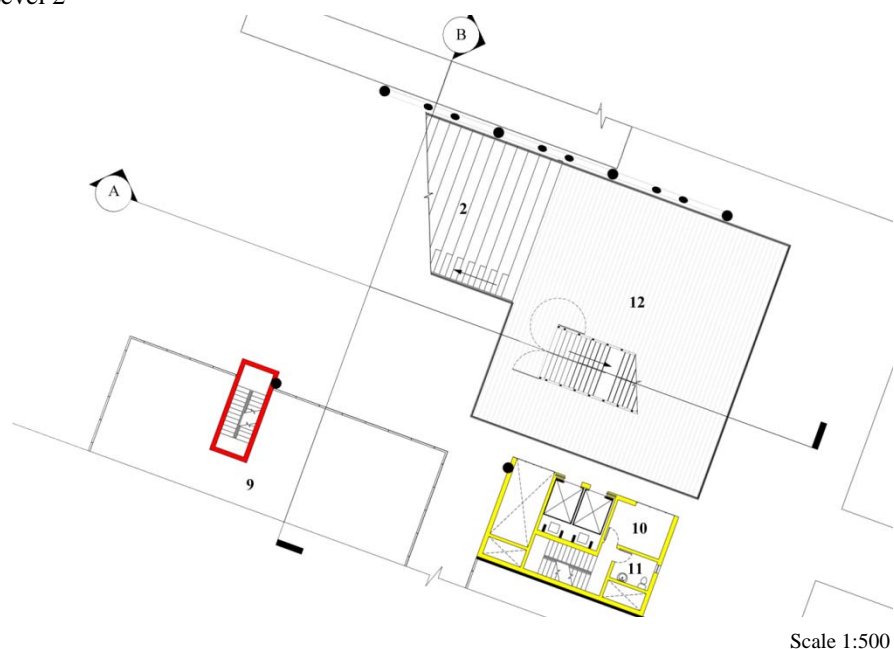
- Retail
- Gym
- Classroom
- Administration
- Hall/Multipurpose Space
- Learning Pod
- Library
- Staffroom/Teacher Resources
- Environmental Education



[Figure 5.19] Exploded Isometric Diagrams

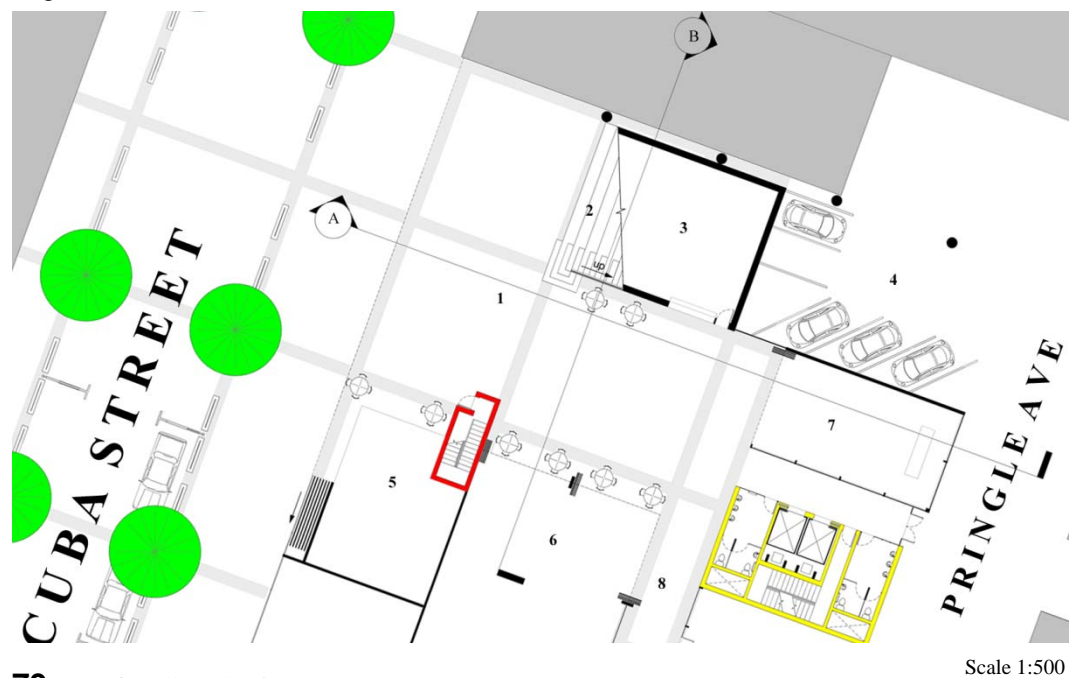
The second moment consists of a tension hung ‘diamond’ staircase which is offset from the tiered seating. This is intended to break the journey into two manageable stages rather than overwhelming arrivals with a steep direct ascent.

[Figure 5.20] Level 2



- 9. Gym
- 10. Storage
- 11. Admin. WC
- 12. Multipurpose space

[Figure 5.21] Ground Floor



- 1. 'Public living room'
- 2. Tiered seating
- 3. Ice cream parlour
- 4. Teacher's car parking
- 5. Cafe
- 6. Retail
- 7. Retail
- 8. Link way to James Smith complex



[Figure 5.22] School Entrance

### 5.5.2 *The 'Yellow Level'*

The school consists of four floors, which are on levels three to six each with a different colour scheme; yellow, red, green and blue. This is intended to help orientate children around the school in a simple way rather than using different architectural languages on different floors. There is a central atrium that brings natural light into the building and connects the floors. The children are able to see the colours of the floors from the atrium which could help develop a sense of where they are in relation to other parts of the school. Warmer colours are used on the lower levels which receive least natural light.

The Yellow Level, which is the first floor of the school building, consists of the reception/administration area, principal's office, sick bay, two classrooms and play spaces for the younger children. It is the point where the children and visitors arrive at the school building. The large double height space could be considered a reward for the effort of climbing up the stair. It is also intended to ease the transition from the civic scale of the public living room to the more modest scale of individual classrooms. A meeting place is provided outside the reception area where parents can meet with children and other parents. It can also provide a breakout space for one of the junior classrooms for group work and where more space is required.

The image on the facing page clearly demonstrates the distortion of the diamond pattern as the staircases are pushed down into the 'public living room' and up into the school. The primary architectural language is the white diamond skin and this is subtly complemented by the secondary language of the floors, balustrades and the glass curtain walls of the classrooms. The classrooms on the Yellow Level do not break out onto the circulation path because it would be busy as the whole school passes through this space. The primary 'learning street' is found further up



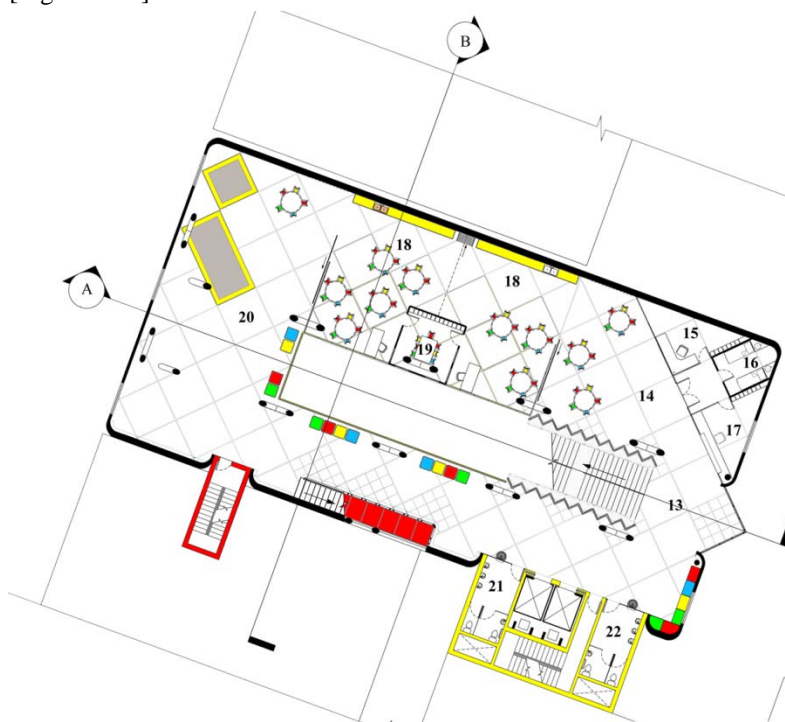
[Figure 5.23] Yellow Level

the building. The classrooms at this level breakout into the meeting space and play area at the front of the school.

As the Yellow Level is on the lowest floor of the school it has the least natural light and therefore the classrooms have being designed as glass boxes within the space. However the classrooms still gain natural light from Pringle Avenue, Cuba Street and the atrium.

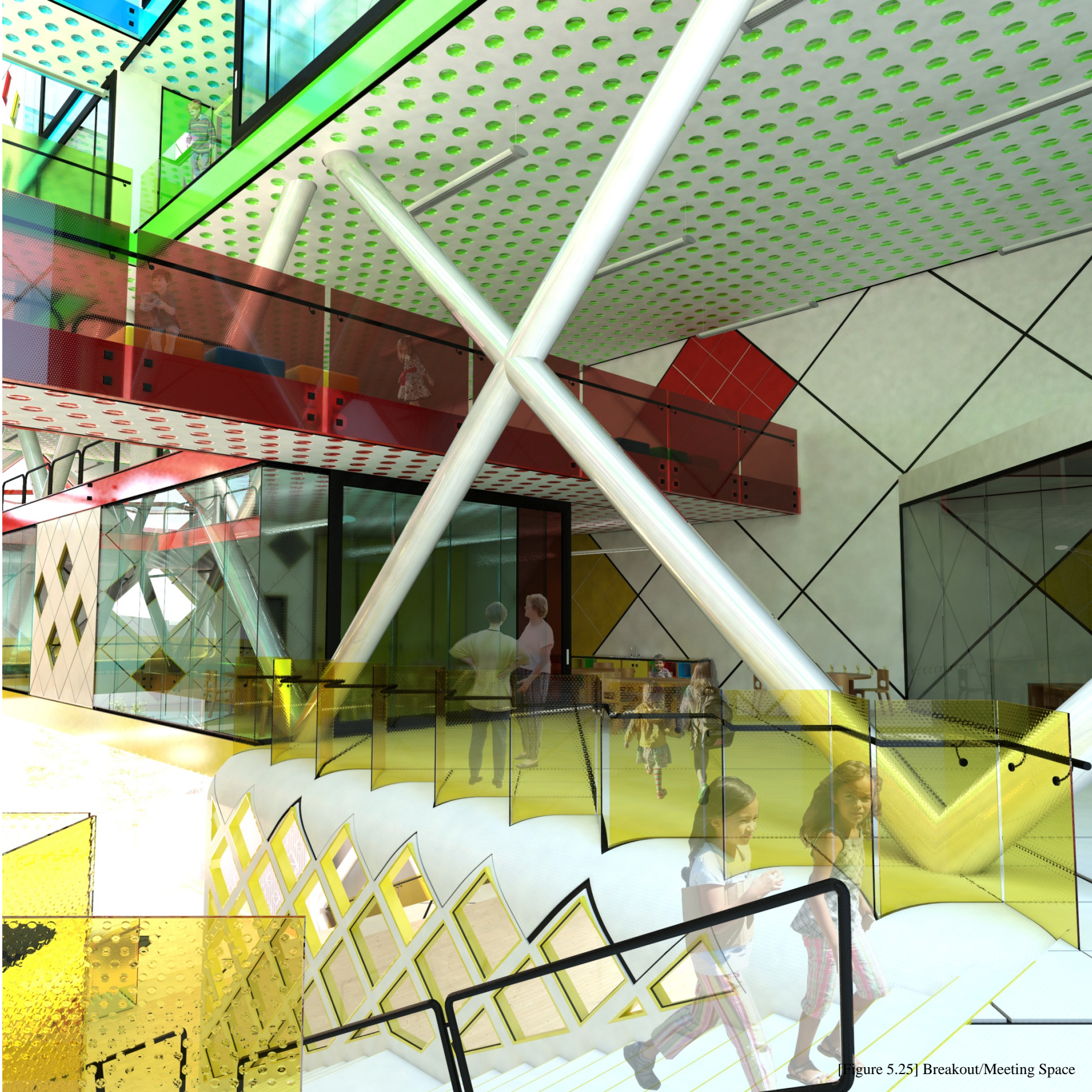
The Warren/Lattice truss structure evident on this floor and the Red Level complements the diamond pattern throughout the building. The diagonal members are not only an efficient way of spanning a large space but also become a learning opportunity for the children related to building structure.

[Figure 5.24] Level 3 – ‘Yellow Level’



Scale 1:500

- 13. School foyer
- 14. Meeting/breakout space
- 15. Principal's office
- 16. Sickbay
- 17. Reception
- 18. 'L' shaped classroom (years 0-3)
- 19. 'Think tank'
- 20. Play/breakout space
- 21. Boy's toilets
- 22. Girl's toilets

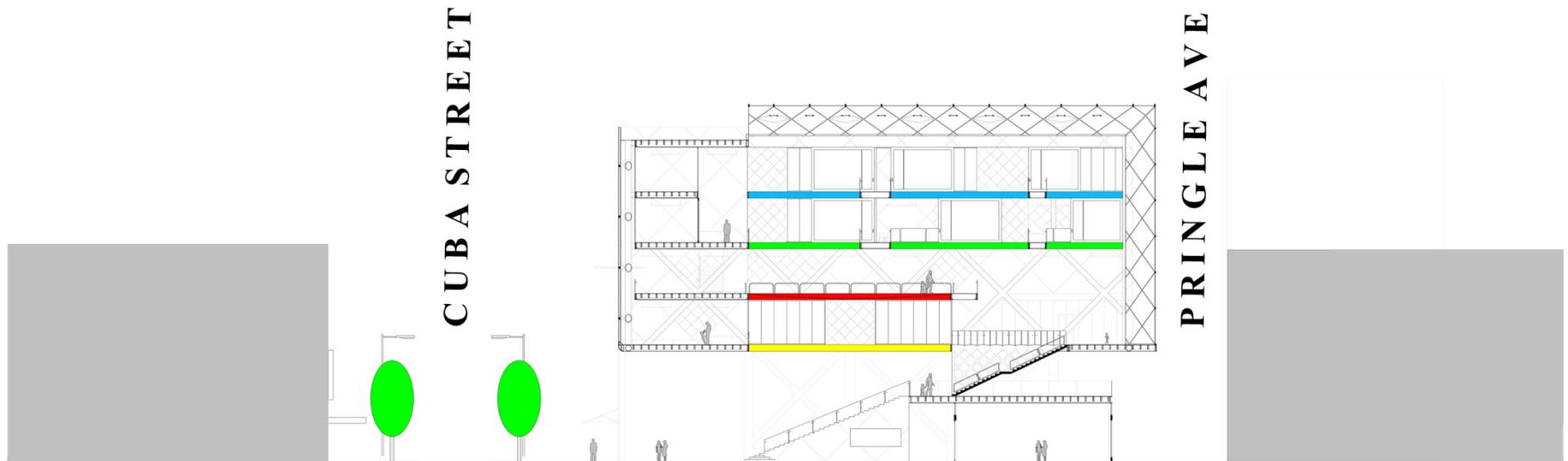


[Figure 5.25] Breakout/Meeting Space

All the classrooms throughout the school are 'L' shaped which provides opportunities for different groups to work separately with minimal distraction. As there are no permanent obstacles the spaces can be totally flexible. There is also the opportunity for the walls between the adjoining classrooms to be folded back to enable classes and children of different age groups to work together. There are also individual and shared 'think tanks' accessed from the classrooms that can be used as a resource room or for smaller groups of children working with teacher aides. These are standard features of modern primary school design, and they complement design innovations such as the learning streets.

Most of the classrooms throughout the school do not have exterior views into the city but they do have views into the 'learning streets' and atrium. This is intended to help children develop a wider spatial awareness beyond the walls of the classroom.

In other programmes stairwells can be underutilised spaces but in this school environment they provide opportunities for exploration or quiet reflection. They can become 'cave spaces' as presented by Nair, Fielding and Lackney (2009). However the children can also be visible to supervisors, which is important for safety reasons.



[Figure 5.26] Section A



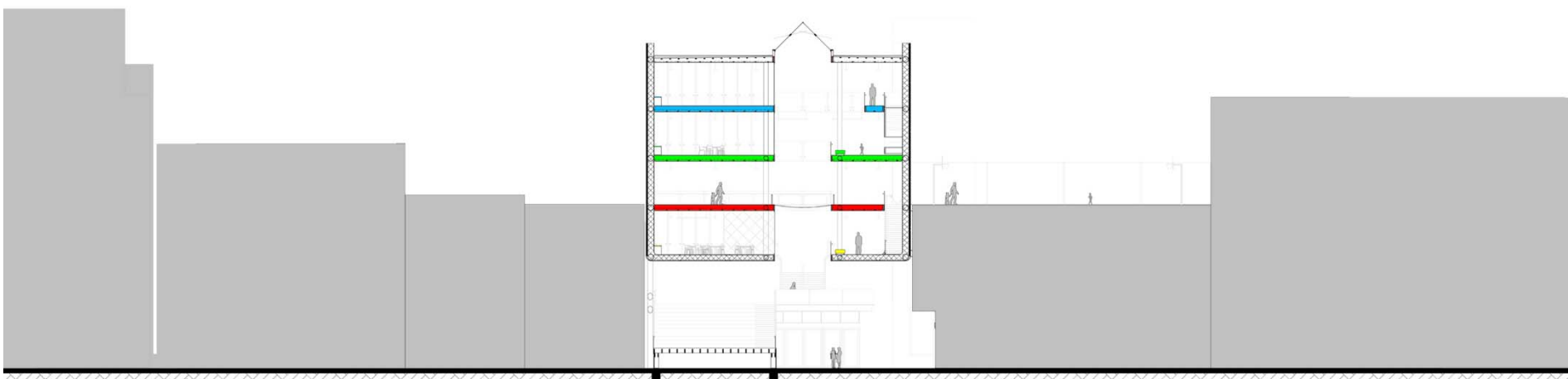
[Figure 5.27] Red Stair and Level 3 Circulation

### 5.5.3 The 'Red Level'

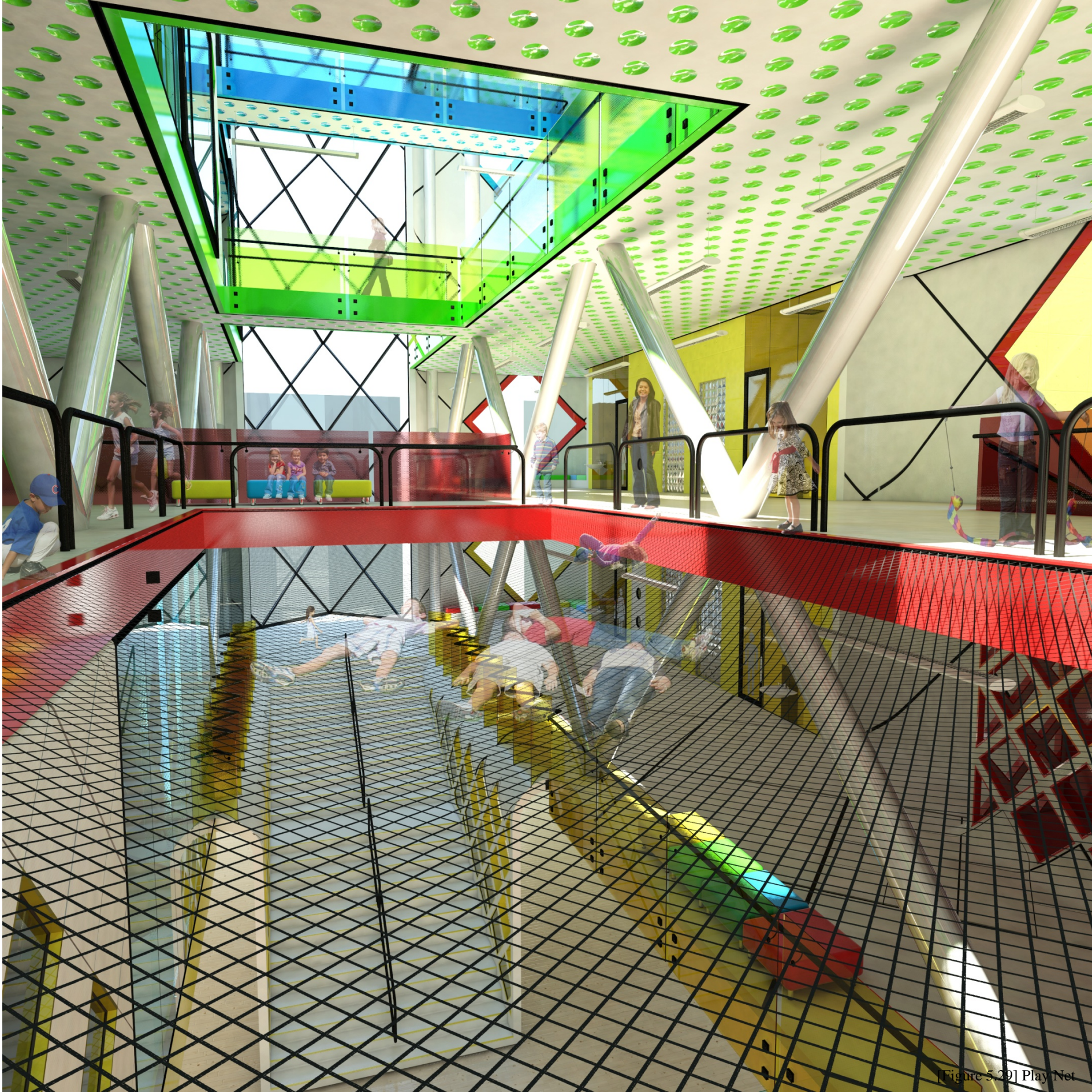
The Red Level, which is the second floor of the school building, is the main open play floor within the school. The floor has a large internal open flexible space which can be used to seat the whole school for assemblies or physical education activities such as gymnastics, skipping or dancing. The floor can also be used as an alternative venue to the 'public living room' to host school events. There are large opening windows that connect the school to the city. The sounds of the city can mingle with the sounds of the school and create an awareness for both of the others existence.

A critique of some of the vertical schools discussed in the precedents was a problem with supervision when play areas were spread over multiple levels. This design consolidates the play areas to two levels. The play area also extends onto the roof of the 1960s Stage 2 addition to the James Smith building. This has a multipurpose open-air court for ball sports and other outdoor spaces available to the whole school.

The image on the facing page shows a playful element that has been incorporated into the design through the use of a large net that spans the atrium. This can provide the children with a challenge to step out of the comfort level and have a new sensory experience. This could provide the possibility of interesting social interaction where peers can support each other to accept the challenge. However current safety regulations could act as a barrier to implementation.

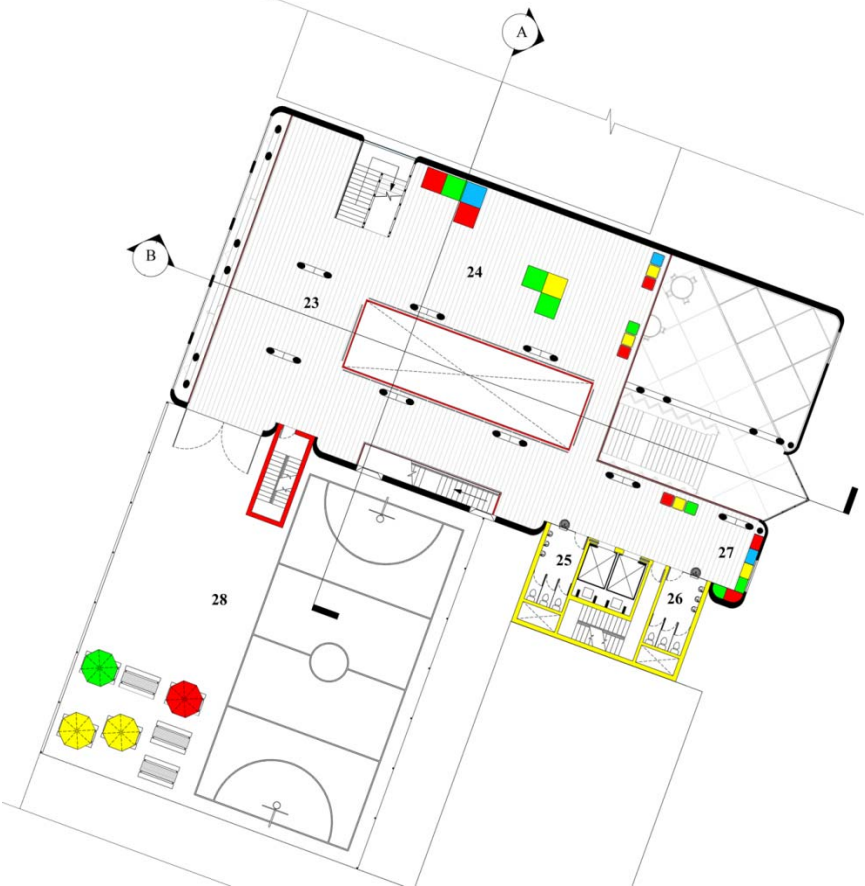


[Figure 5.28] Section B



[Figure 5.29] Play Net

[Figure 5.30] Level 4 – ‘Red Level’



- 23. Play floor
- 24. Hall/multipurpose space
- 25. Boy's toilets
- 26. Girl's toilets
- 27. 'Cave' space
- 28. Open-air play roof

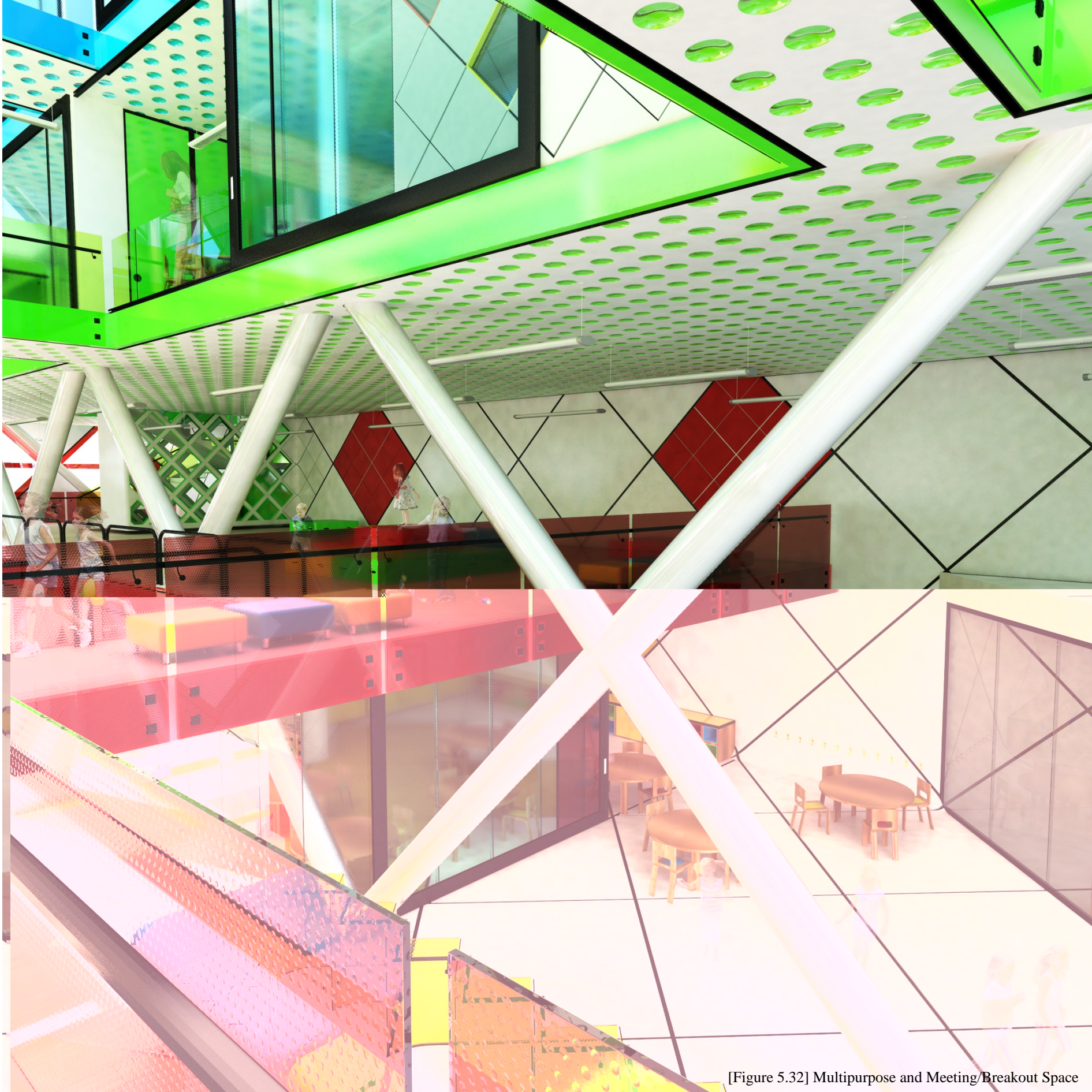
Scale 1:500

[Figure 5.31] Level 5 – ‘Green Level’



- 29. Library
- 30. 'Learning Street'
- 31. Think tank
- 32. 'L' shaped classroom (years 3-4)
- 33. 'L' shaped classroom (years 5-6)
- 34. Atrium
- 35. 'Cave' space

Scale 1:500

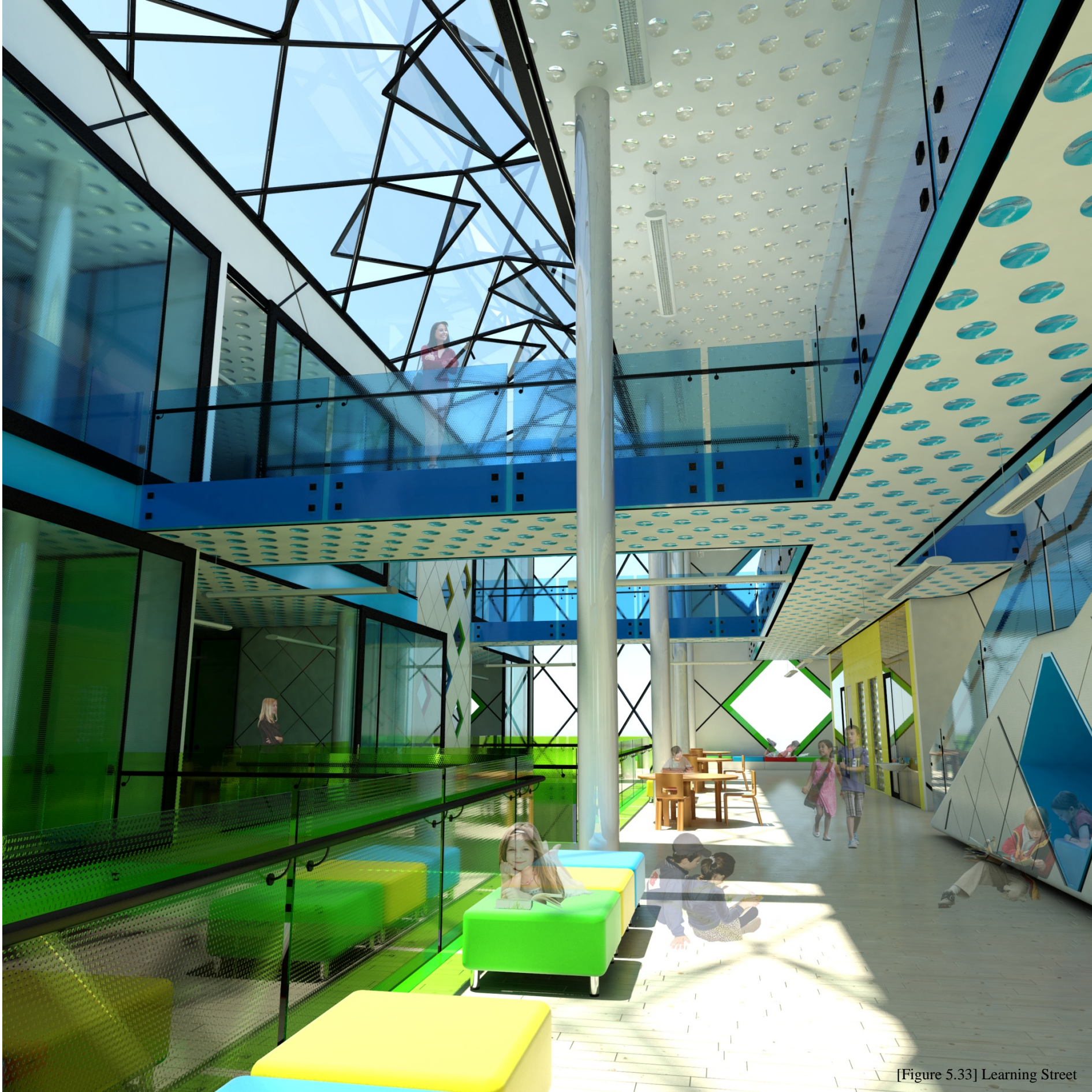


[Figure 5.32] Multipurpose and Meeting/Breakout Space

#### *5.5.4 Green Level*

The Green Level, which is the third floor of the school building, consists of two Year 3-4 and one Year 5-6 classrooms and the school library. The 'learning street' concept as discussed by Nair, Fielding and Lackney (2009) and Hertzberger (2008) is clearly demonstrated on this floor. The classrooms and library breakout onto the street where there are meeting places along the way. Furniture is placed in 'watering hole' spaces created by offsetting the main structural columns. This could produce hubs of activity along the 'learning street' where children have the opportunity to participate in or simply observe. There could be a safety issue regarding to children climbing on furniture and leaning over the handrails. However the handrails are higher than code requires and the furniture is planned to be secured and away from the edge. There are also 'cave' spaces at the Pringle Avenue side of the building that are repeated on each floor for those who wish to be moved from the main activity.

Two narrow bridges linking the classrooms to the 'learning street' give hierarchy to the street regarding circulation flow. The 'learning street' has a double height space extending into level 6, which is flooded by natural light via the atrium. It is intended to be used by both level 5 and 6 classrooms for group work and is similar to the 'awhina' spaces discussed in the contemporary New Zealand precedents. This offers alternative open learning spaces but the classrooms provide the secure home-base to allow children to socially construct knowledge most effectively.



[Figure 5.33] Learning Street

### 5.5.5 Blue Level

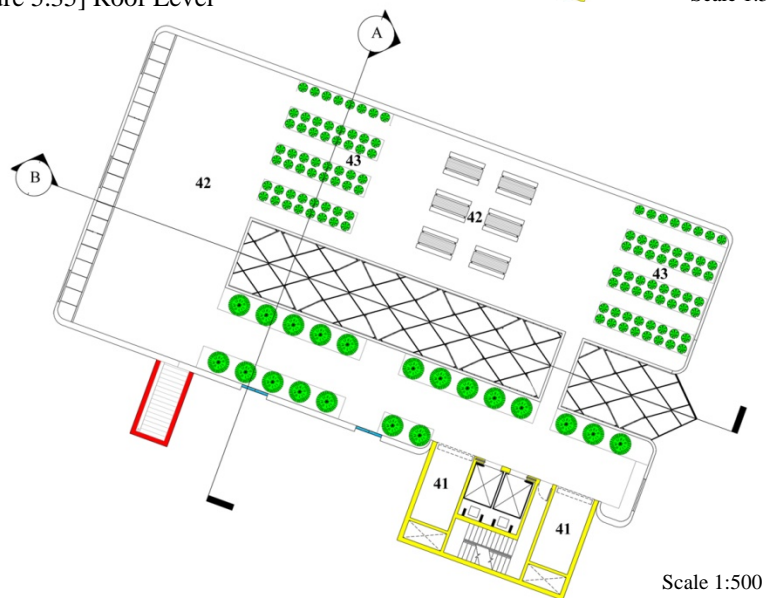
The Blue Level, which is the 4th floor of the school building, consists of two Year 7-8 and one Year 5-6 classrooms, staffroom and teachers' resource room. The children share the 'learning street' on the floor below but are still clearly visible for supervision from their classrooms. As the children get older they also progress up the floor levels of the school but have the opportunity to look back where they have being in their earlier years.

[Figure 5.34] Level 6 – 'Blue Level'

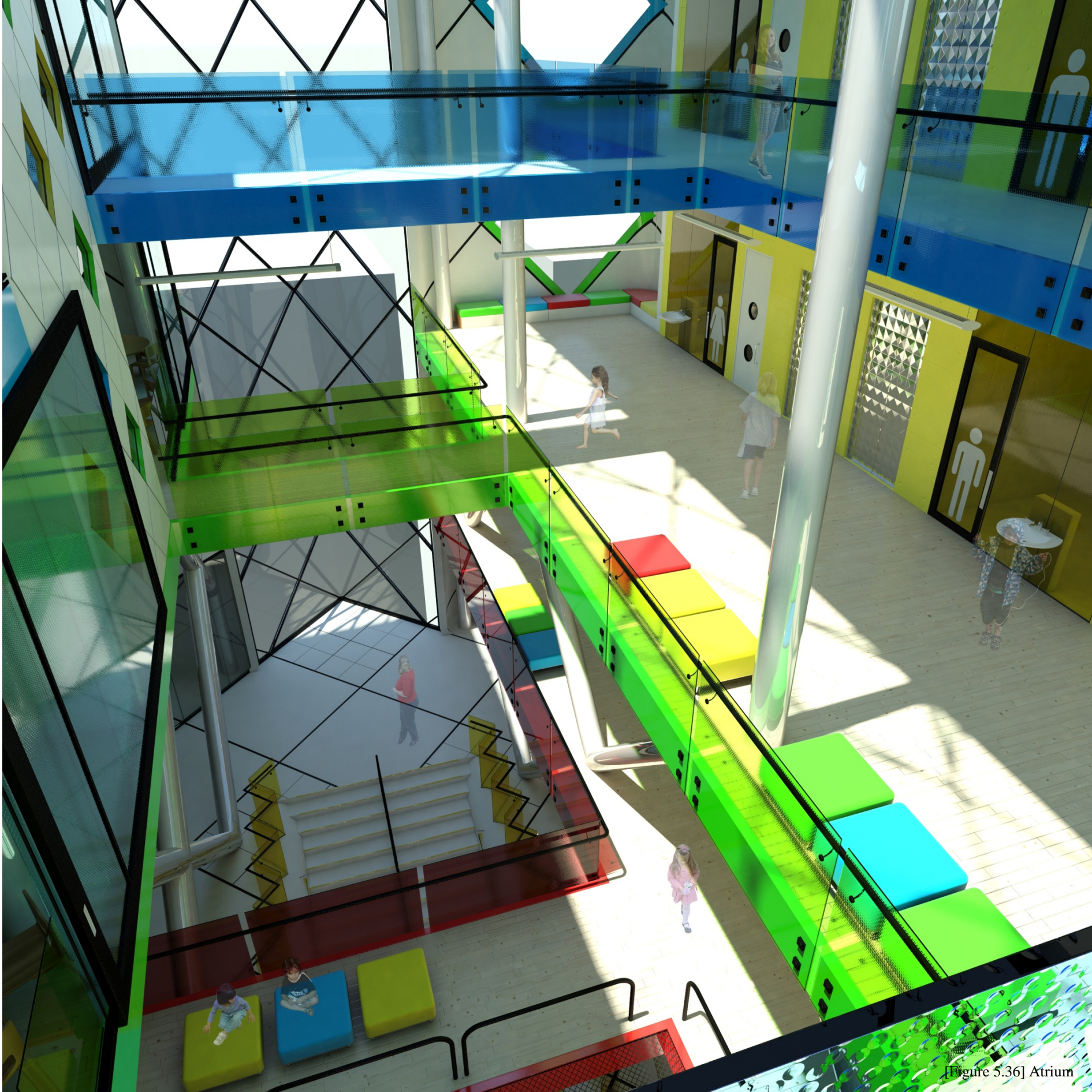


- 36. Teachers resource room
- 37. Staffroom
- 38. Think tank
- 39. 'L' shaped classroom (years 7-8)
- 40. 'L' shaped classroom (years 5-6)

[Figure 5.35] Roof Level



- 41. Garden shed
- 42. Outdoor classroom space
- 43. Vegetable garden



[Figure 5.36] Atrium

### *5.5.6 Roof Level*

The roof level is intended to be used for environmental education such as the planting of vegetable gardens. The space could be developed as part of an enviro school project where groups of children work together to improve the school environment. This is a good opportunity for members of the public to share their knowledge and skills with the children and create a more positive environment. The teachers could also use these spaces during the break or outdoor lessons during the summer.

## **5.6 The Design Journey and Critical Reflection**

The final design evolved from experimenting with different concepts within the parameters of a confined inner city site. Although the final floor plans might appear simple they result from a rigorous planning process, including experimenting with alternative locations for key spaces. The vertical cores proved a particular challenge to ensure that they did not obstruct any of the spaces including the ‘public living room’. The adjacent site assisted in the planning, both absorbing the new cores and also providing consolidated outdoor play space.

Initially the design had a defined built edge along Cuba Street which would have had a normal retail frontage. The entrance of the school was intended to be accessed directly off Cuba Street. However this would not have created a significant social interaction between the city and the school. The ‘public living room’ space is intended to address this problem. However the space would require careful management in relation to security and access. Unfortunately the ‘public living room’ sacrifices most ground level retail space and relegates what there is to a less desirable location, away from passing foot traffic. Therefore it is important that the retail outlets are able to take advantages of school events to attract customers. The ‘public living room’ might need to be modified in the

future to increase block permeability if the quality of Pringle Avenue and other surrounding networks of lanes improves.

Pracad (2007) discussed the possibility of sharing facilities with the community. There have been no specific spaces designed for activities such as after school care. However the flexible nature of the spaces could accommodate such activities, providing that they did not impact on the normal school programme.

A potential streetscape problem of the school building could be created because it does not continue the canopy which is part of the Cuba Street character. However this was taken into consideration in the design and it was decided that it was more important to create the larger scale threshold to the public living room. The proposed configuration of the 'public living room' is intended to accommodate the current network of lanes. The use of the proposed retail spaces would need to be carefully considered to ensure that they are profitable. Outlets associated with education or children might be the most appropriate such as children's clothing or bookshops with stationary.

The proportion of space devoted to circulation is higher than in most other schools. This was an intentional outcome as 'learning streets' provide opportunities for interaction and as such are learning spaces beyond the classroom. The learning streets could have been more like city streets if there were classrooms along both sides. However this was not a possibility due to the tight site dimensions and the proposed configuration still provides ample opportunities for social interaction.

The deep site required an atrium to bring natural light into the building which then limited the roof space. The decision to place the extension of the play floor onto the adjacent, 1960s addition to the James Smith building could create problems. It limits the development potential of the adjoining building to three storeys which could have financial implications.

The purpose of the design case study is to provide a test of whether an inner city primary school that reflects the educational theory of Social Constructivism is possible, effective or desirable. The building appears capable of supporting strong links with the community through the use of the 'public living room' and the public circulation paths which traverse the site. The design demonstrated that it is possible to produce a plan which is effective in terms of curriculum objectives and Constructivist teaching philosophy. The vertical nature of the school has the potential to reduce contact between floor levels and age groups. However it is possible to create opportunities for social interaction on a narrow confined site through the use of 'learning streets' and other spaces. A variety of indoor and outdoor spaces could be provided but at a much lower ratio of open space per child than when compared to conventional schools. The proximity of public open spaces such as the Waterfront and other amenities can compensate for the lack of open space within the school.

Locating a school in the inner city has the potential to create traffic congestion at certain times of the day as parents drop off and pick up the children. However if the majority of children lived in the inner city this would not be problem as they could walk to school. The location of the three car parking facilities near to the site could also alleviate traffic congestion, especially if parents are then walking to work.

A number of the design features related to Social Constructivism, the use of an urban site and the multilevel design would probably result it in a significantly more expensive primary school. However the potential to create a quality primary school that encourages families to live in the city could make it a desirable proposition.

CONCLUSION



The main intention of the research was to develop a model for an inner city primary school building which is responsive to the urban context and reflects the educational theory of Social Constructivism. The underlying demand for an inner city primary school was identified as a result of a recent demographic shift which involves more families living in the centre of New Zealand's largest cities. Building schools in the central city moves away from the common practice over the last 50. Conventionally, schools were built in open green spaces on the outskirts of the city. Possibly as a result of this practice, most people associate primary schools with open green spaces and view expansive sites as important for children's development. The research examined the challenges to creating a workable relationship between the school and the urban context, where children's development and learning would not be compromised.

The availability of sites within the city are limited and when available are more expensive than on the outskirts of the city. Internationally vertical schools have been built to make effective use of the tight urban sites, where they fit into the streetscape rather than being detached within an open compound. Precedents of vertical schools have been discussed as different designers have developed solutions for challenges related to particular sites. One identified trend was to develop multiuse programmes to ensure that the use of expensive inner-city land was financially viable.

Children within the central city could be viewed as problematic with regards to safety, especially related to traffic. Locations of inner city primary schools need to be carefully considered in relation to ease of access for inner city residents and for parents dropping off and picking up their children. In the design case study the site for the primary school was located in an area where pedestrians have right of way over vehicles, and where amenities could be accessed without crossing arterial routes. This might not always be possible in other locations and if schools

were to be built in the inner city then the city planners might need to reconsider traffic flows.

Tight site dimensions within the inner city have implications for the size of spaces within and around the school. This is particularly relevant to play spaces and team sports that require a large amount of space. The City of Learning concept presented by Strickland (2005) offers a solution, as the city can become an extended classroom. The school can use the resources in the local community such as the public library, museums and playing fields on a regular basis. In the design case study the potential local resources were mapped and taken into consideration during the site selection process. The practicalities of using external resources could be problematic, especially with primary age children. Moving large numbers of children safely around the city requires adequate supervision and documentation to meet the requirements of Education Outside the Classroom policies.

One of the main advantages of placing a primary school in the inner city is the opportunity for the children to interact with the community and to experience the diversity that the city offers. The Social Constructivist theory of learning emphasises the importance of social interactions with peers and more knowledgeable members of the community in constructing knowledge. It is therefore important to ensure that there is an interface between the school and city communities. In the design case study the idea of the 'public living room' was explored, where a space was created to provide the connection. The space is intended to be used for school events such as the school gala or performances and productions, while also providing a meeting place. The 'public living room' is a specific response to the selected location and should not be regarded as a general solution, although a similar gesture/interface is desirable in some form. It is acknowledged that the management of such spaces could be problematic with regard to security.

Social Constructivism as an education approach also has architectural implications for designing the spaces within the school to ensure that positive social collaboration can occur. Hertzberger's model of the school as a 'city-in-miniature' is particularly relevant. In this model, corridors become 'learning streets'. Learning streets are examples of good public spaces, where children can gather and socialise. The design case study explored creating these spaces within the confines of a vertical inner city school with tight site dimensions. The design demonstrated that it is possible to create these spaces but with limitations. The need for multiple levels resulted in children of different age groups being physically separated, although there could always be a visual connection between floors. Ideal learning streets that mirror city streets would be better on a single level, where classrooms could break out onto the street from either side.

The multilevel nature of the school also creates challenges with dealing with vertical circulation both into and within the school. It is highly likely that a school in the inner city will not be occupying the ground floor space due to affordability. Therefore the challenge is to create an address for the school and also a means of entry. A significant amount of space is required for circulation to accommodate the number of people leaving and entering the building at a similar time. While lifts could be used, the majority of the children would use the staircases and this has the potential to create problems with congestion and safety at interval times. The placement of activities within the school also needs to be considered. For example, in the design case study the multipurpose/hall space is located on one of the middle floors. Some students will move up in the building while others move down therefore using different staircases.

The lack of outdoor space requires different ways of thinking about play and social gatherings and challenges the traditional model of the school playground. Alternative solutions are required to provide opportunities for informal social interactions and physical activity. A critique of vertical school buildings

acknowledges problems with supervision and safety if play areas have to be broken up onto too many floors. In the design case study play areas were consolidated onto two floors to limit the amount of supervision required. Rooftops also have the potential to be used for open-air play spaces including courts for ball sports. However the rooftop area might be required to create an atrium to allow natural light into the building. An atrium was required in the design case study due to the depth of the site. The solution was to accommodate open-air play space on the roof of the adjoining building. However, this restricts the development potential of the remainder of the site and therefore has financial implications for the school.

Vincent (2006) argues that schools are important elements of public, social and physical infrastructure, where the quality of cities depends on the quality of schools. If primary schools are to be built in the inner city where land is restricted then a new building type is required – one which challenges conventional notions of what a ‘quality’ school is. The research has explored drawing together the practice of inner city primary school design and the educational theory of Social Constructivism to create this new building type. A model has been created using a vertical solution, however limitations have been identified and the practicality of placing a primary school in the inner city explored. While spaces have been created which encourage social interaction between students and the community, these are constrained by the vertical nature of the building. Despite these limitations the advantages of having access to the city and all the experiences it has to offer make the new building type a viable option.

It would be useful to carry out a feasibility study for the current project. The spatial requirements to accommodate social interactions as suggested by the educational theory of Social Constructivism in addition to a multi level primary school. Future research could also focus on building a connection between city and school planning. This includes identifying the areas of population growth and

planning suitable sites for the schools in relation to traffic flows and safe access to amenities. Other research could focus on identifying the types of open spaces that families moving into the city might need. This might include ensuring that cities are child friendly and a variety of open public spaces are available, providing the opportunity for different recreational activities. Most city parks are designed for passive recreation and sometimes, it would appear, primarily as a 'visual' resource. More opportunity for active recreation such as basket ball, tennis courts and so forth would augment the play spaces in inner city schools.

One of the barriers to building schools in the central city is the cost of land. Potential Public Private Partnerships for the school building could be researched, as suggested recently by the government. In the cities this could include exploring multiuse programmes to ensure financial feasibility. However there are limits to how high you can elevate a school above the street and if airspace were sold off quality of the internal space could be compromised.

Following more research it would be hoped that in the near future inner city primary schools could become established as an important part of the city's infrastructure within New Zealand. The primary school should become an integral part of the city and the children an integral part of the community, creating a 'City of Learning'.



# BIBLIOGRAPHY

## *Books and Journals*

- Baker, L. (2006). The politics of play. *Metropolis* 26(4), 42-43. Retrieved from <http://www.metropolismag.com>
- Baum, H. (2005). Urban society : the new social spaces of resistance. *Journal of Planning Educational and Research* 25(1), 103-104. Retrieved from <http://jpe.sagepub.com>.
- Beard, A. (2009). *Primary school case study: St Mary and St Pancras C of E primary school*. London: Commission for Architecture and the Built Environment.
- Beck, C., & Kosnik, C. (2006). *Innovations in teacher education, a social constructivist approach*. New York: State University of New York Press.
- Bergeijk, H. (1997). *Herman Hertzberger*. Berlin: Birkhauser Verlag.
- Bierbaum, A., Vincent, J., & McKoy, D. (2010). Putting schools on the map: linking transit-oriented development, families, and schools in the San Francisco bay area. *Center for Cities and Schools, Institute of Urban and Regional Development*. Retrieved from <http://escholarship.org>
- Blades, M., & Spencer, C. (2006). *Children and their environments: learning, using and designing spaces*. Cambridge: Cambridge University Press.
- Bramley, N. (2006). Blue Peter it ain't. *Royal Institute of British Architects*, 113(7), 61-64.
- Brown, D., & Thomson, S. (2000). *Cooperative learning in New Zealand schools*. Palmerston North: Dunmore Press Limited.
- Canizares, A., & Fajardo, J. (2007). *Kindergartens, schools and playgrounds*. Barcelona: LOFT Publications.
- Chan, F. (2001). Public school, public building: the role of the school in building the city. *Cities*, 18(3), 193-197

- Commonwealth Schools Commission. (1982). *Schools design and use*. Canberra: Australian Government Publishing Services.
- Curtis, E. (2003). *School buildings*. London: Wiley-Academy.
- Department for Education and Employment. (2001). *Inclusive school design*. United Kingdom: DfEE.
- Donnelly, S. (2003). A toolkit for tomorrow's schools. *American Planning Association*, 69(9), 4-13. Retrieved from <http://proquest.umi.com>
- Dudek, M. (2000). *Architecture of schools: the new learning environments*. Oxford: Architectural Press.
- Dudek, M. (2005). *Children's spaces*. Burlington: Architecture Press.
- Dudek, M. (2007). *A design manual: schools and kindergartens*. Berlin: Birkhauser.
- Eisberg, J., Friedman, L., Lollini, C., & Slingluff, S. (2006). Building "smarter" schools: improving land development and school design. *The Centre for Cities & Schools University of California*. Retrieved from <http://citiesandschools.berkeley.edu>
- Filardo, M., Vincent, J., Allen, M., & Franklin, J. (2010). Joint use of public schools: a framework for a new social contract. *Institute of Urban and Regional Development*, 1-13. Retrieved from <http://escholarship.org>
- Fuller, B., Dauter, L., Hosek, A., Kirschenbaum, G., McKoy, D., Rigby, J., et al. (2009). Building schools, rethinking quality? early lessons from Los Angeles. *Journal of Educational Administration*, 47(3), 336-349. Retrieved from <http://proquest.umi.com>
- Fuller, B., Vincent, J., McKoy, D., & Bierbaum, A. (2009). Smart schools. smart growth: investing education facilities and stronger communities. *Institute of Urban and Regional Development*. Retrieved from <http://escholarship.org>

- Gislason, N. (2009). Mapping school design: a qualitative study of the relations among facilities design, curriculum delivery, and school climate. *Reports & Research*, 40(4), 17-33
- Goodman, G. (Ed.). (2008). *Educational psychology, an application of critical constructivism* (Vol. 329). New York: Peter Lang Publishing.
- Harris, J., Turckes, S., & Hinton, K. (2009). A habitat for 21st century learning. *Educational Leadership*, 67(7), 66-69. Retrieved from <http://content.ebscohost.com>
- Hertzberger, H. (2000). *Herman Hertzberger: space and the architect: lessons in architecture 2*. Rotterdam: 010 Publishers.
- Hertzberger, H. (2008). *Spaces and learning*. Rotterdam: 010 Publishers.
- Holland, C., Clark, A., Katz, J., & Peace, S. (2007). *Social interactions in urban public places*. Great Britain: Policy Press.
- Ivanic, M., & Kuhar, S. (2008). *Contemporary school architecture in Slovenia 1991-2007*. New York: SpringerWien.
- Kenny, D., Dumont, R., & Kenny, G. (2005). *Mission and place, strengthening learning and community through campus design*. Westport: Rowman & Littlefield Education.
- Kernohan, D. (1994). *Wellington's old buildings*. Wellington: Victoria University Press.
- Kraftl, P., Horton, J., & Tucker, F. (2007). Children, young people and built environments. *Built Environment*, 33(4), 398-404.
- Leonard, R. (2007). Spaces for learning. *Architecture Australia*, 96(5), 59-66.
- Lippman, P. (2005). The L-shaped classroom: A pattern for promoting learning. *Design Share* Retrieved April 15, 2010, from <http://www.designshare.com>
- Lubell, S. (2005). K-12 schools: back to the future. *Architectural Record*, 193(12), 135-137.

- McCann, B., & Beaumont, C. (2003). Build 'smart'. *American School Board Journal*, 190(10), p.24-27. Retrieved from <http://content.ebscohost.com>
- McCracken, H. (1999). *Heritage trail: Te Aro, Wellington City*. Wellington: Wellington City Council.
- McDonald, N. (2010). School siting. *American Planning Association*, 76(2), 184-198. Retrieved from <http://web.ebscohost.com>
- McGuirk, T. (2008). Space exploration for Louis Kahn a school was 'an environment of spaces where it was to learn,. How can designers of today's urban schools create these spaces. *Royal Institute of British Architects*, 114(1), 12.
- Mckoy, D., Bierbaum, A., & Vincent, J. (2009). The mechanics of city-school initiatives: transforming neighborhoods of distress & despair into neighborhoods of choice & promise. *Places*. Retrieved from <http://escholarship.org>
- Mckoy, D., & Vincent, J. (2005). The center for cities & schools: connecting research and policy agendas. *Berkely Planning Journal*, 18, 57-77.
- McKoy, D., & Vincent, J. (2005). The centre for cities and schools: connecting research and policy agendas. *Berkeley Planning Journal*, 18, 57-77.
- Retrieved from Tolbert, L. T., P. (2006). Finding their place in the community: urban education outside the classroom. *Childhood Education*, 82(5), 271-274. Retrieved from <http://proquest.umi.com>
- McKoy, D., Vincent, J., & Makarewicz, C. (2008). Integrating infrastructure planning: the role of schools. *Access*, 33(4), 18-26. Retrieved from <http://citiesandschools.berkeley.edu/>
- Melvin, J. (1999). Seeing is believing: Elder & Cannon Architects' junior school, Glasgow. *Royal Institute of British Architects*, 106(2), 28-29.
- Milshtein, A. (2000). School's in. *Contract*, 42(9), 80-84.

- Moffat, D. (2002). Designing a city of learning: Paterson, New Jersey [EDRA / Places Awards, 2001-2002 - Planning] *Places*, 15(1), 30-33. Retrieved from <http://escholarship.org>
- Morisseau, J. (1972). *Design and planning, then new schools*. New York: Van Nostrand Reinhold Company.
- Nair, P., & Gehling, A. (2010). Life between classrooms: applying public space theory to learning environments. 27-33. Retrieved from <http://www.designshare.com>
- New Zealand Historical Places Trust. (2000). *Wellington City Council: heritage building inventory*. Wellington Wellington City Council.
- Norton, R. (2007). Planning for school facilities: school board decision making and local coordination in Michigan. *Journal of Planning Education and Research*, 26(4), 478-496.
- O'Grady, S. (2007). Brisbane girls grammar: social spaces and learning spaces are integrated in the dramatic, permeable forms of the creative learning centre by m3architecture. *Architecture Australia*, 96(5), 84-93.
- O'Hara, K. (2005). The influence of grassroots organizing on public school facility siting decisions. *The Ralph and Goldy Lewis Center for Regional Policy Studies*. Retrieved from <http://escholarship.org>
- Powell, K., & Kalina, C. (2009). Cognitive and social constructivism: developing tools for an effective classroom. *Education*, 130(2), 241-251. Retrieved from <http://proquest.umi.com>
- Power, M. (2003). Schools for the future: inner city secondary education exemplar. *Arq (London, England)*, 7(3-4), 263-269.
- Prakash, N., & Fielding, R. (2005). The language of school design: design patterns for the 21st century schools Available from <http://www.designshare.com>

- Prasad, S. (2007). *Transformations, the architecture of penoyre & prasad*. London: black dog publishing.
- Robbins, M. (2002). *Schools for cities: urban strategies*. Washington, DC: National Endowment for the Arts.
- Sanoff, H. (1994). *School design*. New York: Thomas Publishing.
- Shaw, A. (1995). *Social Constructivism and the inner city: designing environments for social development and urban renewal*. Harvard University, Cambridge.
- Statistic New Zealand. (2007). 2006 Census. Retrieved February 10, 2010, from [www.stats.govt.nz/](http://www.stats.govt.nz/)
- Stickland, R. (2000). Learning as a medium for placemaking: neighborhoods for learning [Portfolio] *Places*, 13(1), 58-65. Retrieved from <http://escholarship.org>
- Strickland, R., & Riesman, J. (2005). Place-making as an expression of teaching and learning: the Hilltop, Washington, D.C. [Research and Debate]. *Places*, 17(3), 50-55. Retrieved from <http://escholarship.org>
- Tanner, K., & Lackney, J. (2006). *Educational facilities planning: leadership, architecture and management*. New York: Pearson Education Inc.
- The American Institute of Architects Press. (1996). *Educational facilities 1995-96*. Washington DC: Rockport Publishers, Inc.
- Tolbert, L., & Theobald, P. (2006). Finding their place in the community: urban education outside the classroom. *Childhood Education*, 82(5), 271-274. Retrieved from <http://proquest.umi.com>
- Vialle, W., Lysaght, P., & Verenika, I. (2005). *Psychology for educators*. Australia: Thomson/Social Science Press.
- Vincent, J. (2006). Public schools as public infrastructure: roles for planning researchers. *Journal of Planning Education and Research*, 25(4), 433-437.

- Walden, R. (2009). *Schools for the future: design proposals from architectural psychology*. Cambridge: Hogrefe & Humber Publishers.
- Wiles, J. (2006). "Redesigning schools - redefining education". *Design Share*  
Retrieved April 20, 2010, from <http://www.designshare.com>
- Williams, A. (2002). School mastering. *The Architects Journal*, 17(October 2002), 36-37.
- Yee, R. (2005). *Educational environments no.2*. New York: Visual Reference Publications.

#### *Internet Sites*

- BRANZ. (2007). *Designing quality learning spaces: introduction and interior design, function and aesthetics*. Retrieved from  
<http://www.minedu.govt.nz>
- CABE. (2009a). Hampden Gurney Church of England primary school. Retrieved April 28, 2010, from [www.cabe.org.uk](http://www.cabe.org.uk)
- CABE. (2009b). St Mary and St Pacras C of E primary school, London.  
Retrieved April 28, 2010, from [www.cabe.org.uk](http://www.cabe.org.uk)
- CABE. (2010). *Creating excellent primary schools: a guide for clients*. Retrieved from <http://www.cabe.org.uk>
- Education Counts. (2009). School roll projections. Retrieved February 26, 2010, from [www.educationcounts.govt.nz/](http://www.educationcounts.govt.nz/)
- Glasgowarchitecture. (1998). St Aloysius School - Glasgow building: information. Retrieved April 24, 2010, from  
[www.glasgowarchitecture.co.uk](http://www.glasgowarchitecture.co.uk)
- Ministry of Education. (2008). Technology in schools architectural design guide.  
Retrieved 15 April, 2010, from <http://www.minedu.govt.nz>

Ministry of Education. (2009a). Ministry of Education. Retrieved 6 April, 2010, from [www.minedu.govt.nz/](http://www.minedu.govt.nz/)

Ministry of Education. (2009b). New and remodeled schools. Retrieved April 16, 2010, from [www.minedu.govt.nz](http://www.minedu.govt.nz)

New Zealand Education Institute. (2010). Public Private Partnerships (PPPs) in education. Retrieved November 13, 2010, from [www.nzei.org.nz](http://www.nzei.org.nz)

Task Force on the Future for Growth and Development in Maryland. (2009). Vertical schools subgroup report. Retrieved March 17, 2010, from [www.mdp.state.md.us](http://www.mdp.state.md.us)

Tolley, A. (2009, 28 May). Budget focus on frontline funding for schools. Retrieved 22, March, 2010, from <http://www.beehive.govt.nz>

Wellington Regional Chamber of Commerce. (2009). Wellington 2040 - the future of our central city. Retrieved February 26, 2010, from [www.wellington.govt.nz/](http://www.wellington.govt.nz/)

Wellington City Council. (2009). Restoring the golden mile. Retrieved November 6, 2010, from [www.wellington.govt.nz](http://www.wellington.govt.nz)

## APPENDIX A

## **Restoring the Golden Mile – Overview** (retrieved November 6 2010, from

[www.wellington.govt.nz](http://www.wellington.govt.nz))

The new two-way Golden Mile bus route will be in operation from 5.00am Sunday 28 November. Buses travelling between Lambton Quay and Courtenay Place will use Willis and Manners streets, moving in both directions.

### **Traffic Resolutions**

At the Council meeting on 25 June 2010, the Council made a number of traffic resolutions which are required once the construction work is completed. These will come into force on 28 November 2010.

### **Changes for Pedestrians, Bus Users & Motorists**

With the new two-way bus route in operation, buses will be travelling along Willis and Manners streets in both directions.

A 30 km/h speed limit from the Lambton bus interchange to the Embassy end of Courtenay Place will also be in place.

Pedestrians and motorists need to take extra care - there are lots of changes and it will take a while to get used to them.

### **Pedestrians**

Pedestrians will need to:

- watch for vehicles travelling down lower Cuba Street towards Wakefield Street
- look both ways when crossing Willis and Manners streets as buses will travel in both directions
- take extra care when crossing as buses - and in some cases general traffic - will be coming from new directions.

## Bus Users

- Buses will travel through the city in both directions via Lambton Quay, Willis Street, Manners Street and Courtenay Place from Sunday 28 November.
- The temporary bus route through Wakefield Street will stop in the early hours of Sunday 28 November.
- There'll no longer be a bus stop in Dixon Street - instead there'll be new bus stops in Manners Street near Arty Bees Books and Burger King.
- Buses that have always used Wakefield Street (route 24) will continue to do so.

## Motorists

There are important changes to the traffic flow in lower Cuba, Willis and Manners street.

If you want to travel through the central city, it's best to use the quays, Victoria, Wakefield or Taranaki streets and steer clear of Willis and Manners streets.

### *Lower Speed Limit*

From 28 November, the 30 km/h speed limit will apply to the whole of the Golden Mile - from the Lambton Quay bus interchange to the Embassy end of Courtenay Place.

The 30 km/h limit will also apply on some short sections of streets that intersect the Golden Mile.

Watch for the signs.

### *Lower Cuba Street*

You won't be able to enter lower Cuba Street from Wakefield Street any more. The flow of traffic is being reversed.

If you're looking for a park in lower Cuba, turn from Taranaki Street into Manners Street and then turn right into lower Cuba Street.

[Figure 1] Map of 30km/h Areas



## *Willis Street*

You'll still be able to drive down Willis Street to Lambton Quay, but in the other direction it will be buses-only as far as Manners Street.

## *Manners Street*

You'll be able to drive along Manners Street towards Victoria Street:

- before 6.00am and after 7.00pm, Monday to Friday
- at all times during the weekend.

The remainder of the time it will be bus-only.

You won't be able to drive along Manners Street towards Willis Street at any time - it is for bus-only traffic.

The road through what was Manners Mall will be bus-only at all times.

[Figure 2] Map Traffic Changes



The above restrictions will be enforced. You'll be able to travel along Manners Street from Taranaki Street as far as lower Cuba Street. From there you will have to turn into Wakefield Street as lower Cuba Street will be one way (travelling towards Wakefield Street).