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UNIVERSITY OF THE WITWATERSRAND

THE ROLE OF ARCHITECTURE WHEN INTEGRATING CHILDREN WITH PHYSICAL DISABILITIES INTO FULL-SERVICE PRIMARY SCHOOLS

Nadira Haripersadh (534181)

A dissertation submitted to the Faculty of Engineering and the Built Environment, University of the Witwatersrand, Johannesburg, in fulfilment of the requirements for the degree of Master of Architecture by Research.

SUPERVISORS:

1. Associate Professor A Janse van Rensburg
   (School of Architecture and Planning)

2. Associate Professor F Adams
   (Department of Occupational Therapy)



Johannesburg 2019

I. DECLARATION

I declare that this thesis is my own unaided work. It is being submitted for the degree of Master of architecture to the University of the Witwatersrand, Johannesburg. It has not been submitted before for any other degree or examination to any other University.



.....

Nadira Haripersadh

534181

19th day of December 2019

II. ABSTRACT

Historically, persons with disabilities experienced discrimination from a social, political, and economic perspective. Globally, human rights legislation since the 1960's has advocated inclusion. In 2001, in South Africa, Education White Paper 6 called for the transformation of ordinary public schools into full-service schools, which would provide equal access to learners with disabilities (Department of Education, 2001). A review of the number of such learners enrolled in full-service schools, in South Africa, showed a slow success rate in achieving the predetermined milestones (Department of Basic Education, 2017). This study looks into the physical accessibility of schools, that are categorised as full-service schools, in order to understand the positive and negative effects that the built environment has on the inclusion strategy. This investigation was conducted through interviews, that provided context and background to how the Full-Service School Strategy was implemented. These were augmented through universal access assessments to measure the effectiveness of the infrastructure renovations, and this was further explored through an analysis of the various factors that affect or are affected by the physical accessibility of a place. The only four full-service, public primary schools in Gauteng that had undergone universal design renovations (at the time of the study) were investigated through this research. Results showed that in all cases, the architectural changes were not compliant with universal accessibility as set out in the South African Bureau of Standards, South African National Standards 10400-Part S (2011), and provided only partial accessibility. Schools had not received adequate information on the architectural requirements for universal accessibility.A comprehensive approach, starting with awareness of technical, sociological, sensory, physical, medical, support, facilities and other requirements would be essential for the successful promotion of a more strategic and planned approach to converting mainstream schools into inclusive and barrier-free learning environments, or full-service schools.

III. DEDICATION

I dedicate this dissertation to my boys, Xavi and Milan. Without your kind hearts and beautiful, understanding minds, I would not have been able to finish this. May you always take the opportunity to make a difference, when you find you are in a position to do so.

And to my greatest love, Mithen.

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To those who believed in my study and its relevance in the world we live in.
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VIII. LIST OF ACRONYMS

Acronym	Full description
DOE	Department of Education
DBE	Department of Basic Education
GDE	Gauteng Department of Education
DPSA	Disabled People South Africa
DPW	Department of Public Works
EWP6	Education White Paper 6, 2001
FSS	Full-Service School
ICF	International Code for Functioning Disabilities
IE	Inclusive Education
INDS	Integrated National Disability Strategy
LTSM	Learner and Teacher Support Team
NBR	National Building Regulations
NCPD	The National Council for the Physically Disabled
SANS 10400	South African Bureau of Standards, South African National Standards 10400: 2011.
SANS Part S	South African National Standards 10400 Part S: Facilities for persons with disabilities.
SIAS	Policy on Screening, Identification, Assessment, and Support
SSRC	Special School as Resource Centre
WHO	World Health Organisation
SASA	South African Schools Act
UA	Universally Accessible/ Universal Access
UNCRPD	UN Convention on the Rights of People with Disabilities

IX. DEFINITIONS

The following terms have been used in this research document as per the definitions below. These definitions have been referenced from various sources as definitions vary between different organisations, countries, etc. The most suitable definition has been selected by the researcher in each case.

Architecture:

"The art and science of designing and superintending the erection of buildings and similar structures." (Collins English Dictionary, 1994)

The Architecture of a school would include the detailed planning of the entire site, vehicular movements, student, parent and visitor movements, building size, arrangement of rooms, relationship planning between spaces, play areas, rest areas, sport facilities, services, legislation and a number of other factors that all result in the way that children feel when they move through the environment.

Barrier:

"A barrier is an object or layer that physically prevents something from moving from one place to another." (Collins English Dictionary, 1994)

For example, a fence prevents people from moving from one side to the other. In architecture, and pertinent to this study, a barrier is any physical obstruction or hindrance to the intended path, purpose or use of the built environment.

Context:

Context is defined as "the circumstances that form the setting for an event, statement, or idea, and in terms of which it can be fully understood." ((Lexico Dictionary, 2019)

In order to understand the full picture, every part of the scenario must be contextualised. This covers areas of historical, cultural, social, political, geographical, and physical importance with regards to inclusive education. The context of this study is presented in the introduction chapter.

Disability:

The United Nations Convention on the Rights of Persons with Disabilities (2006)

'person who has long-term physical, mental, intellectual or sensory impairments which, in interaction with various barriers, might hinder his full and effective participation in society on an equal basis with others' (United Nations, 2006: . Definition also used by the South African Bureau of Standards,SANS 10400- S, 2011:)

World Health Organisation

> *'Disabilities is an umbrella term, covering impairments, activity limitations, and participation restrictions. An impairment is a problem in body function or structure; an activity limitation is a difficulty encountered by an individual in executing a task or action; while a participation restriction is a problem experienced by an individual in involvement in life situations.*
>
> *Disability is thus not just a health problem. It is a complex phenomenon, reflecting the interaction between features of a person's body and features of the society in which he or she lives. Overcoming the difficulties faced by people with disabilities requires interventions to remove environmental and social barriers.People with disabilities have the same health needs as non-disabled people – for immunization, cancer screening etc. They also may experience a narrower margin of health, both because of poverty and social exclusion, and also because they may be vulnerable to secondary conditions, such as pressure sores or urinary tract infections. Evidence suggests that people with disabilities face barriers in accessing the health and rehabilitation services they need in many settings.'* (World Health Organisation 2019)

Discrimination:

> *Discrimination based on disability means any distinction, exclusion or restriction of persons on the basis of a disability, which has the purpose or effect of impairing or nullifying the recognition, enjoyment or exercise, on an equal basis with others, on all human rights and fundamental freedoms in the political, economic, social, cultural, civil, or any other field. It encompasses all forms of unfair discrimination, whether direct or indirect, including denial of reasonable accommodation*.
> (Department of Social Development, 2016: 17)

Unfair discrimination within architecture could be a direct result of barriers that are found in the built environment. If certain people are restricted from accessing certain places because they cannot physically get there, they are experiencing discrimination.

Enabling Environments:

Enabling Environments consists of the "interrelated physical and other infrastructures, built environments, culture, laws, policies, information, communication technologies, and organisations that must be in place to facilitate the socio-economic development of persons with disabilities."
(Department of Social Development, 2016:17)

Full-Service Schools

Ordinary schools that have "the capacity to respond to a diversity by providing appropriate education for individual needs of learners, irrespective of their disability or differences in learning style or pace." (Gauteng Department of Education, 2015:6). Full-service schools are welcoming of all learners, increase participation and reduce exclusion by providing support to all learners to develop their full potential irrespective of their background, culture, abilities, or

disabilities, their gender or race. These schools will be strengthened and orientated to address a full range of barriers to learning in an inclusive education setting to serve as flagship schools of inclusive education. From an architectural perspective, a full-service school is a school that complies with universal design principles, is free from barriers and provides enabling environments that are usable by all scholars.

Human Dignity:
"It refers to an individual or group's sense of self-respect and self-worth, physical and psychological integrity and empowerment" (Department of Social Development, 2016: 17)

Impairment:
"Impairment is a perceived or actual feature in the person's body or functioning that may result in limitation or loss of activity or restricted participation of the person…" (Department of Social Development, 2016: 17)

Inclusive:
"If you describe a group or organization as inclusive, you mean that
it allows all kinds of people to belong to it, rather than just one kind of person."
(Collins English Dictionary, 1994)
If buildings are described as being inclusive, it means that all kinds of people, with or without disabilities, are able to move in and around equally, without barriers.

Orientation:
"The ability to locate oneself physically and socially in an environment."
(Mistrey, 2011:18)

Physical Environment:

In architecture, the physical environment of a school is made up of the buildings, the open spaces, the transitional spaces and the play areas. An overview of a school's physical environment can be seen on a site plan which will indicate all buildings, hard and soft areas, play areas and site boundaries.

Universal Access:

Universal access is completely dependent on the successful interpretation and implementation of universal design principles as defined below. A universally accessible school would be a full-service school that has already been converted to cater for all scholars, regardless of the abilities or disabilities. (Du Plessis, 2013)

Wayfinding:

Wayfinding combines principle 3: simple and intuitive use, and principle 4: Perceptible information. It is defined as "The process or activity of ascertaining one's position and planning and following a route." (Lexico Dictionary, 2019)

X. PROLOGUE

The focus on school architecture is based on my long-standing interest in the importance of the built environment when integrating children with physical disabilities into mainstream schools. In 2002, as a young architectural student at the University of Kwa Zulu-Natal, I became interested in the developments of inclusive education. "Inclusive education in the South African context is defined as a learning environment that promotes the full personal, academic, and professional development of all learners irrespective of race, class, gender, disability, religion, culture, sexual preference, learning styles and language" (Du Plessis, 2013:2).

The movement towards inclusive education was a positive change in the right direction to work towards removing the stigmas created by discrimination. From the periphery, it seemed as though all was in order: awareness was increasing, legislations were changing, and schools had started pilot projects whereby children with physical disabilities were being introduced into mainstream schools. One school, in particular, had installed new ramps to accommodate children in wheelchairs. However, the ramps were built incorrectly and were too steep.

A little girl, in a wheelchair, had joined the school as one of the first integrated children. As she was moving from one class to the next, her teachers or colleagues must have assisted her by hanging her backpack on the back handles of her wheelchair. As she tried to wheel herself up to the (already too steep) ramp, gravity pulled her back, and her wheelchair tipped backward leaving this little girl helpless, on her back, with her feet up and in the most vulnerable and embarrassing position. Although I have never met this little girl, and I do not know how her story developed, she has been the motivation for my research work. It was unacceptable to me that the built environment had been the cause of such a

negative emotional experience. The architecture should have provided the safety and security that she needed to navigate the school environment with ease.

Over the years, with practical experience and a greater understanding of the political, socio-economic, and financial environment of the country, this research became more relevant. It appeared that there were strategies in place and money was being invested. There were commitments made, treaties signed, and policies implemented. However, the statistics were not showing the success rates expected.

When the opportunity came to pursue a Master's Degree in Architecture, the immediate choice of topic focused on architecture, children with disabilities, and education. My initial proposal was to conduct a qualitative study, interviewing five children with physical disabilities who were attending a primary school that was regarded by the Gauteng Department of Education as a "Full-Service School." To further test the results, this study was to be carried out on four Full-Service schools in Gauteng.

The research started with telephonic surveys, which were aimed at identifying the population that I could draw the sample from. Unfortunately, none of the schools that had been listed as Full-service schools had a sufficient number of learners to base the study on. Some schools did not have any children with physical disabilities even though they claimed to be equipped with ramps, handrails, and other accessible elements. The experience at other educational facilities (e.g., universities) that claim to welcome persons with physical disabilities is that some campuses are not actually accessible to wheelchair users. At this point, it became clear that the question to be asked was whether the architecture of schools plays a role in the slow progress of the move towards inclusive education in South Africa?



Figure iii. Sketch (Prem, 2019)

1. INTRODUCTION

"Everyone is equal before the law and has the right to equal protection and benefit of the law. Equality includes the full and equal enjoyment of all rights and freedoms."

(Constitution of the Republic of South Africa. 1996: 5)

Since 1994, there have been major changes in the moral intentions of the South African government, as the nation was faced with the enormous challenge of determining how to transition from a country that was built on segregation, to a country that will not tolerate discrimination of its people. Inclusion is one of the cornerstones of the South African Constitution and the Bill of Rights, which explicitly states that:

> *The state may not unfairly discriminate directly or indirectly against anyone on one or more grounds, including race, gender, sex, pregnancy, marital status, ethnic or social origin, colour, sexual orientation, age, disability, religion, conscience, belief, culture, language and birth" and this applies to all people.*
> (Constitution of the Republic of South Africa. 1996:5)

Numerous treaties, agreements, and commitments were made by the South African Government to undo the segregated conditions of the past, keeping in line with this fundamental human right. Legislative frameworks and policies were changed to pave the path to inclusive rights, and specific to this study, inclusive education. (Du Plessis 2013). However, the number of children with disabilities who are not attending school remains a major concern. Furthermore, the challenges faced with the defining of disabilities and resulting statistical data creates a ripple effect of challenges with infrastructure planning for the country as well as detailed planning for individual building sites. This chapter aims to provide a brief synopsis of the challenges, opportunities and relevance of inclusive education in South Africa.

1.1. Defining disabilities and how this affects the statistics

The word 'Disability' has been defined over the ages and continents to include medical perspectives, philanthropic perspectives, economic perspectives, and social perspectives. The definitions pertinent to this research are based on the social model of disability, which sees disabilities as a result of an interaction between a person, with a health condition, and that person's contextual factors (World Health Organisation, 2002). Although this breakthrough has had positive impacts on inclusion, even a decade after Education White Paper 6 (Department of Education, 2001) was published, "most learners with disabilities who attend school are still in separate, "special" schools for learners with disabilities. There is no consensus about what should and should not be classified as a disability in South Africa." (Heap, Lorenzo & Thomas, 2009). The Statistics South Africa Census 2011 Report states that efforts towards inclusion can only be realised if accurate statistics are available. (Stats SA, 2011). Due to the difficulty in categorising disabilities, and the difference in questions asked in previous census surveys, the data collected in the 1996 Census, the Community survey of 2007, the 2001 Census and the 2011 Census cannot be thoroughly compared (Stats SA, 2011). A further challenge is that in some cases, parents misreported on children (Stats SA, 2011).

Statistics South Africa, in the 2011 Census, reports data on the prevalence of disabilities under the degree of difficulty in the six functional domains of seeing, hearing, communicating, walking, remembering, and self-care (Stats SA, 2011). The Community Survey (2016), conducted by Statistics South Africa, used the same set of questions as the 2011 Census and reported under the same categories. The table below speaks directly to the type of physical disabilities that are covered in this study.

Table 1.1. Prevalence of disabilities under the degree of difficulty in the six functional domains of seeing, hearing, communicating, walking, remembering, and self-care (Stats SA, 2011: viii).

Type of difficulty	Sex	None	Mild difficulty	Severe difficulty	Do not know	Total
Seeing	Male	19 293 437	1 604 318	279 553	11 460	**21 188 768**
	Female	19 771 350	2 481 581	458 526	11 912	**22 723 368**
	Total	**39 064 787**	**4 085 898**	**738 079**	**23 372**	**43 912 136**
Hearing	Male	20 461 507	545 433	127 271	10 179	**21 144 389**
	Female	21 796 259	706 475	161 098	10 613	**22 674 444**
	Total	**42 257 767**	**1 251 907**	**288 369**	**20 791**	**43 818 834**
Communication	Male	20 756 600	225 018	97 450	10 850	**21 089 918**
	Female	22 258 298	248 432	93 832	11 015	**22 611 576**
	Total	**43 014 898**	**473 450**	**191 282**	**21 864**	**43 701 494**
Walking/ climbing stairs	Male	20 559 261	426 317	172 044	7 836	**21 165 458**
	Female	21 759 194	673 818	251 135	8 504	**22 692 651**
	Total	**42 318 455**	**1 100 135**	**423 179**	**16 340**	**43 858 109**
Remembering/ concentrating	Male	20 343 787	570 561	187 095	18 470	**21 119 914**
	Female	21 522 772	834 537	269 084	17 224	**22 643 617**
	Total	**41 866 559**	**1 405 098**	**456 179**	**35 694**	**43 763 530**
Self-care	Male	19 877 403	389 097	288 597	31 756	**20 586 852**
	Female	21 326 855	448 266	300 273	31 408	**22 106 801**
	Total	**41 204 257**	**837 363**	**588 869**	**63 164**	**42 693 653**

Table 1.2. population aged 5 years and older by sex, type of difficulty in functioning, and degree of difficulty (Stats SA, 2016: 15).

Types of disability	Sex	No difficulty	Some difficulty	A lot of difficulty	Cannot do at all	Total
Seeing	Male	22 160 981	1 693 307	318 058	32 797	24 205 143
	Female	22 354 152	2 520 855	509 492	36 807	25 421 306
	Total	**44 515 133**	**4 214 162**	**827 550**	**69 604**	**49 626 449**
Hearing	Male	23 390 517	647 954	136 563	29 589	24 204 623
	Female	24 349 640	867 260	171 223	33 064	25 421 187
	Total	**47 740 157**	**1 515 214**	**307 786**	**62 653**	**49 625 810**
Communicating	Male	23 777 777	298 084	84 596	45 988	24 206 445
	Female	24 949 060	352 131	79 707	41 178	25 422 076
	Total	**48 726 837**	**650 215**	**164 303**	**87 166**	**49 628 521**
Walking	Male	23 216 214	648 454	262 872	76 546	24 204 086
	Female	23 733 093	1 125 607	464 656	96 101	25 419 137
	Total	**46 949 307**	**1 774 061**	**727 528**	**172 647**	**49 616 628**
Remembering	Male	23 330 844	652 645	184 047	31 955	24 199 491
	Female	24 149 844	979 711	258 018	29 564	25 417 137
	Total	**47 480 688**	**1 632 356**	**442 065**	**61 519**	**49 616 628**
Self-care	Male	23 584 934	417 749	133 340	71 456	24 207 479
	Female	24 690 596	514 688	146 911	70 658	25 422 853
	Total	**48 275 530**	**932 437**	**280 251**	**142 114**	**49 630 332**

These tables have been included to show the categorisation of disabilities according to Statistics South Africa. This categorisation is essential to facilitate accurate data collection. The types of disabilities, as categorised above, are further explored in section 2.2.7 Defining Physical Disabilities for Architecture,

where the definition, possible causes, reliance on the built environment, and assistive devices are explored. This is then used to set the boundaries of the research by clarifying the types of disabilities included in this study and how the physical environment affects a person's ability for active participation, and the challenges in realising full inclusion.

1.2. Inaccurate statistics and how this affects infrastructure design

Statistics comprise important data that allows for the planning of an entire countries infrastructure. It can be used to design for different people with different needs and can also be used to plan for the economic and political development of the country. Global statistics give a worldwide view of what is possible and also reports on the progress of efforts and investments made. Statistics in districts and provinces can assist with the town planning and potential future planning of facilities such as schools. With the correct information, it is possible to plan appropriately for all people. However, South African statistics prove to be fallible due to the difficulties faced with generating accurate information.

As stated in the United Nations Disability and Development Report (2019) the lack of precise data and research, that is needed for accountability and program development is impeding on the successful execution of the interventions aimed at inclusive and quality education (United Nations 2019).

1.3. Prevalence of Children with Disabilities in South Africa

According to Statistics SA, in 2001, there were 2 255 982 people with disabilities in South Africa (Stats SA, 2001). Of this, 2% were between the ages of 0 to 9 years old. Furthermore, only 3% had tertiary education. Ten-point five percent (10.5%) had no schooling, 5.2% had primary level schooling, and 3.9% had secondary

schooling (Stats SA, 2001). In 2013, the General Household Survey (Stats SA, 2013) reported that 25 949 children with disabilities were not receiving an education in South Africa. This number of children with disabilities who are currently not receiving schooling motivates the need for this study. According to the South African Community Survey of 2016, the number of children with disabilities has increased by 8% between 2001 and 2016 (Stats SA, 2016). According to the General Household Survey of 2013, there is an estimated four hundred thousand (400 000), vulnerable children, including those with disabilities, who were not attending school" (Stats SA, 2013: 52). This indicates that although the legislative changes have been made, and there have been initiatives on several fronts that aim to create an inclusive society, lack of education remains a major problem. The constitution requires that South African learners are given equal opportunities and access to basic education (Constitution of the Republic of South Africa. 1996). In 1997, Education White Paper 6 was published with the intention to change the problematic systems of education, which had been modelled on segregation of children with disabilities who either attended specialised schools or were attending mainstream schools that were not equipped for their needs. As the world moves towards an inclusive society, inclusive education has become both an educational goal and a methodology (UNESCO, 2018).

1.4. Inclusive Education and Architecture

Inclusion has been directly advocated since the Universal Declaration of Human Rights, which was proclaimed in the United Nations in 1948. Inclusion aims to break down barriers to education, enabling all children equal access to basic education (UNESCO, 2018). In the South African context, inclusive education is defined as a learning environment that promotes the full personal, academic and professional development of all learners irrespective of race, class, gender, disability, religion, culture, sexual preference, learning styles and language (Department of Basic Education, 2007).

One of the key factors to ensure the success of inclusive education is the requirement to provide schooling environments that are physically accessible by all learners. This means that school environments need to be universally accessible to ensure that there are no physical barriers faced by a scholar, teacher or visitor. A physical barrier can be in the form of an incorrect pitch of a ramp, or a door handle that cannot be reached by a scholar in a wheelchair, or numerous other hindrances or restrictions.

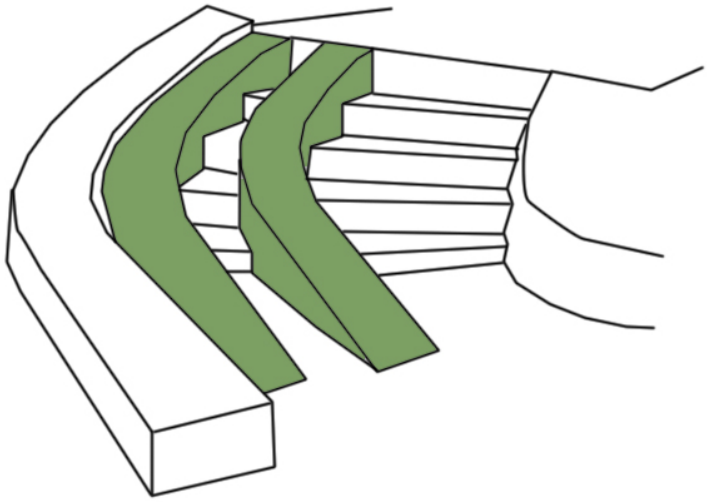


Figure 1.1. Incorrect detailing of ramp intervention (Wyszkowski-Korwin, 2019)

For children with physical disabilities, the basic requirements for education are more difficult to achieve. With all physical disabilities, the mobility time required is much more than for people without disabilities. (Egilson & Traustadottir 2009) A person in a wheelchair or with mobility aids will need more time to get ready in the morning, more time to get to a bus stop, and more time to get to the classroom in the morning. Children with sensory disabilities, such as visual or auditory impairments, need to exercise extreme caution to avoid obstructions and accidents along their way. Inadequate public transportation routes compound this

problem. For a child with a disability, inclusive public infrastructure is vital, but not often available. (Donohue and Bornman, 2014)

School infrastructure presents a major barrier for children with physical disabilities. Even when a child can get to the gate of the school, it is not always easy or possible for a child to navigate the school environment and buildings. This research sought to gain insight into the success of the building renovations completed at four registered full-service schools in Gauteng. When searching for literature on this topic, there was little information found that related to the results of the implementation of renovations to existing schools. Therefore, it was difficult to establish the compliance status of schools in terms of the minimum requirements for accessible schools in South Africa. This research aims to collect and analyse data that could be used to understand the process and outcomes of the Inclusive Education Strategy applied specifically in terms of the architecture of the full-service schools studied.

1.5 Structure of the dissertation

The foundation chapter (Chapter 2), provides the grounding for the research into inclusive education. The background section sets out the historical context of the study with a section on historical perspectives of disability, the movement of disability awareness, International and National commitments, and a review of the policies related to full-service schools in South Africa.

The second part of the foundation chapter comprises the literature review which aims to provide the journey of exploration through the numerous sources of information encountered. In this chapter, inclusive education strategies are reviewed in relation to the physical environment. Architecture is explored through the role of the physical environment on child development and universal accessibility. This chapter unpacks the full-service school implementation strategy

in South Africa, with challenges and opportunities discussed from an architectural perspective.

Chapter 3 starts with defining of the problem statement and research questions that keep this study focused. This is followed by a description of the mixed methods research approach applied to this study. The data generation tools, the method for conducting fieldwork, and interview procedures are explained and justified. The data management, adherence to ethics requirements, data analysis, and reporting formats are discussed.

Chapter 4 reports the results of the data collection, management, and analysing process. This data is reported factually and represents the raw data collected, before analysis or discussions are introduced. Chapter 5 presents the discussion on the common threads which emerge from the analysis of the data. Chapter 6 concludes the research with a review of the research question and the findings of the study. The writer intends to introduce a focused architectural perspective on the implementation of full-service schools. In doing so, it should start a conversation that brings together the built environment professionals, the relevant health care professionals (including occupational therapists), the relevant stakeholders, and the school management teams for a collaborated approach.

2. FOUNDATIONS

This foundation chapter provides the history, the background, and the context for this study. The topic of disabilities is as old as time itself and has been part of the rich fabric of the development of humanity. We stand at the brink of change in perceptions, realities, and activities, and as architects, we are responsible for the structures and spaces that will guide people's behaviour and abilities. Progressive thinking and appropriate applications of the knowledge gained, across the borders of inequality, could see the change that is imminent. Through an investigation of the path travelled, the goal is to change the trajectory of inclusion in South Africa through universally accessible architecture.

2.1 Background

This chapter seeks to investigate how disabilities were perceived historically, the challenges that ensued, and the efforts made towards creating global awareness of disabilities. This provides the historical context for this study and intends to help with the understanding of the pre-existing conditions that challenge the current inclusion strategies.

2.1.1 Historical perspectives

The timeline below has been generated with information collected from various sources. It demonstrates certain milestone events in history that broke barriers and set about a change in the perception of people with disabilities. It also marks periods when people with disabilities were misunderstood, ill-treated, and denied basic human rights.

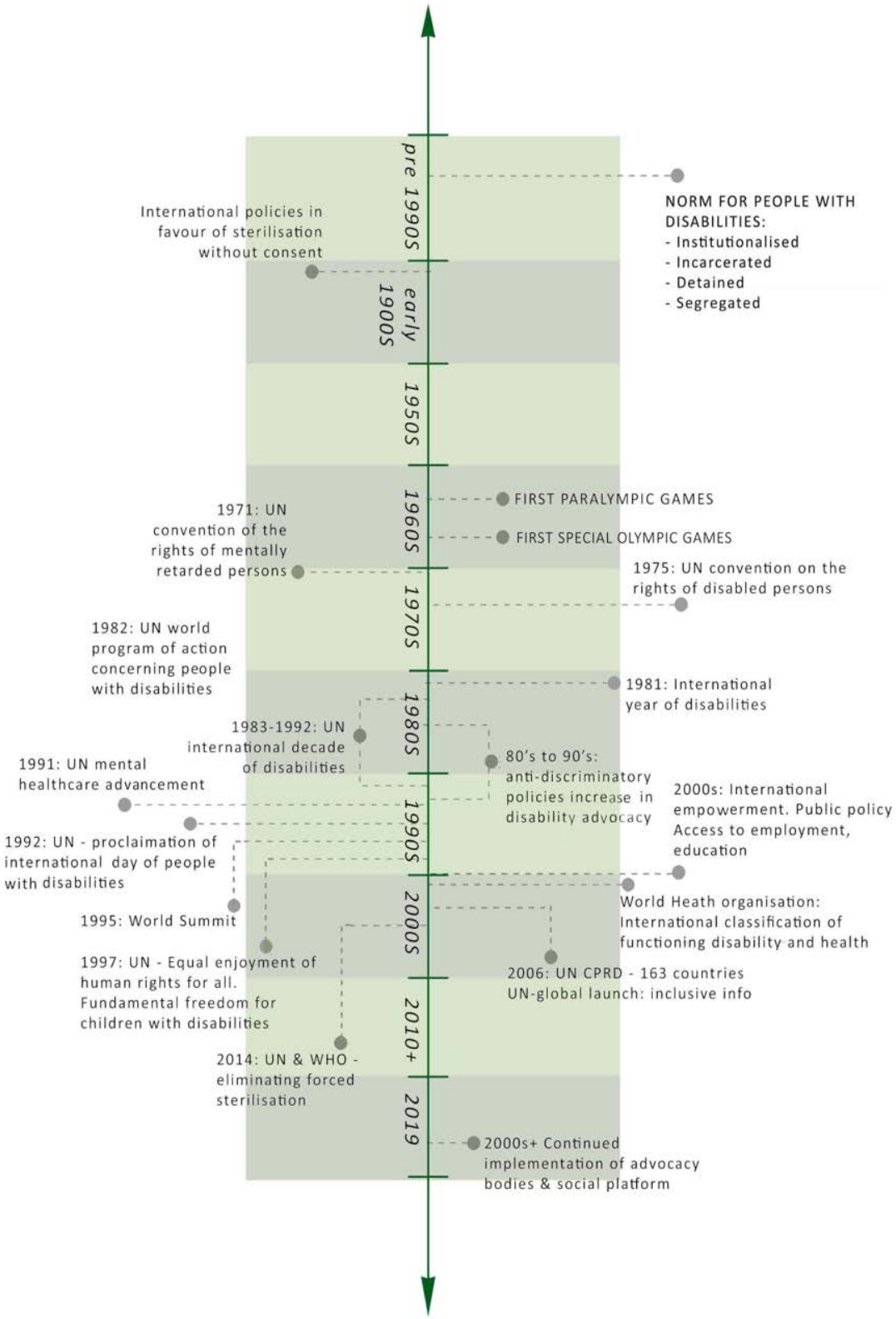


Figure 2.1. Timeline of milestones in the awareness and inclusion of people with disabilities across the ages. (Author, 2019)

In the 1950s, although there was a shift from the institutionalised treatment of people with disabilities into a more community-based model. World Health Organisation, 2011. Forced sterilisation on both people with disabilities and women at risk of giving birth to babies with disabilities was still practiced in the United States. The most significant turning point in history would have occurred in the 1960s when liberation movements started to grow and gain momentum as they fought for people's rights against racism and gender discrimination. At this point, with the growing voice of people fighting against discrimination, movements towards disability awareness started to form. The Disability Rights Movement was started in the United States in the 1960s and focused on equal opportunities for all people across the disability spectrum. In 1960, the first official Paralympic Games was held in Rome, where 400 athletes from 23 countries competed.

In the 1970s, there were remarkable milestones in history. In 1971, the United Nations held a Convention on the rights of mentally retarded persons, and in 1975, the United Nations held a convention on the rights of people with disabilities (World Health Organisation, 2011). Delegates from the USA, UK, Europe, and Scandinavia joined forces to identify the elements of oppression that had hampered development and inclusion within mainstream society. Through these interventions, came the sharing of knowledge, which created the opportunity to formulate strategies for change.

The 1980s started positively, with 1981 being declared by the United Nations as the International Year of Disabilities and the years 1983 to 1992 being declared as the International Decade of disabilities (UNESCO, 2018). During this period, there was a collaboration between people with disabilities, international movements, and professionals within the medical field. The liberation movements highlighted the importance of professionals working together with people with disabilities in order to down the barriers that were preventing full integration. These barriers included finding a common language to define disabilities, access to information,

accessibility of the built environment, access to appropriate transport facilities, access to education, access to employment, societal attitudes and the psychological effects thereof, access to medical services and facilities, and the most challenging barrier being the inculcation of cultural belief systems (UNESCO, 2018).

In 1992, the 3rd of December was declared as International Day of people with disabilities. In 1995, the World summit, held in Copenhagen, world leaders agreed to put the needs of the people at the forefront of developmental proposals (UNESCO, 2018). As people from around the world paid more attention to the needs of people facing discrimination and exclusion due to disabilities, technology made it possible to share information freely. Collaboration between different stakeholders, authorities, and professionals started to shape the way forward. Universal commitments prevailed and were followed by legislative changes, publishing of guidelines, standards, and general information. The focus on access to education for people with disabilities had finally received the attention it required as conventions were held over the years to discuss and plan for global transformation projects (UNESCO, 2018).

2.1.2 Human rights and Inclusive Education

The need to provide equal access for people with disabilities was addressed across all sectors through treaties, declarations, and agreements. The following is a summary of the key international commitments that drove the movement towards universal accessibility. The key points relating to education have been included in this study.

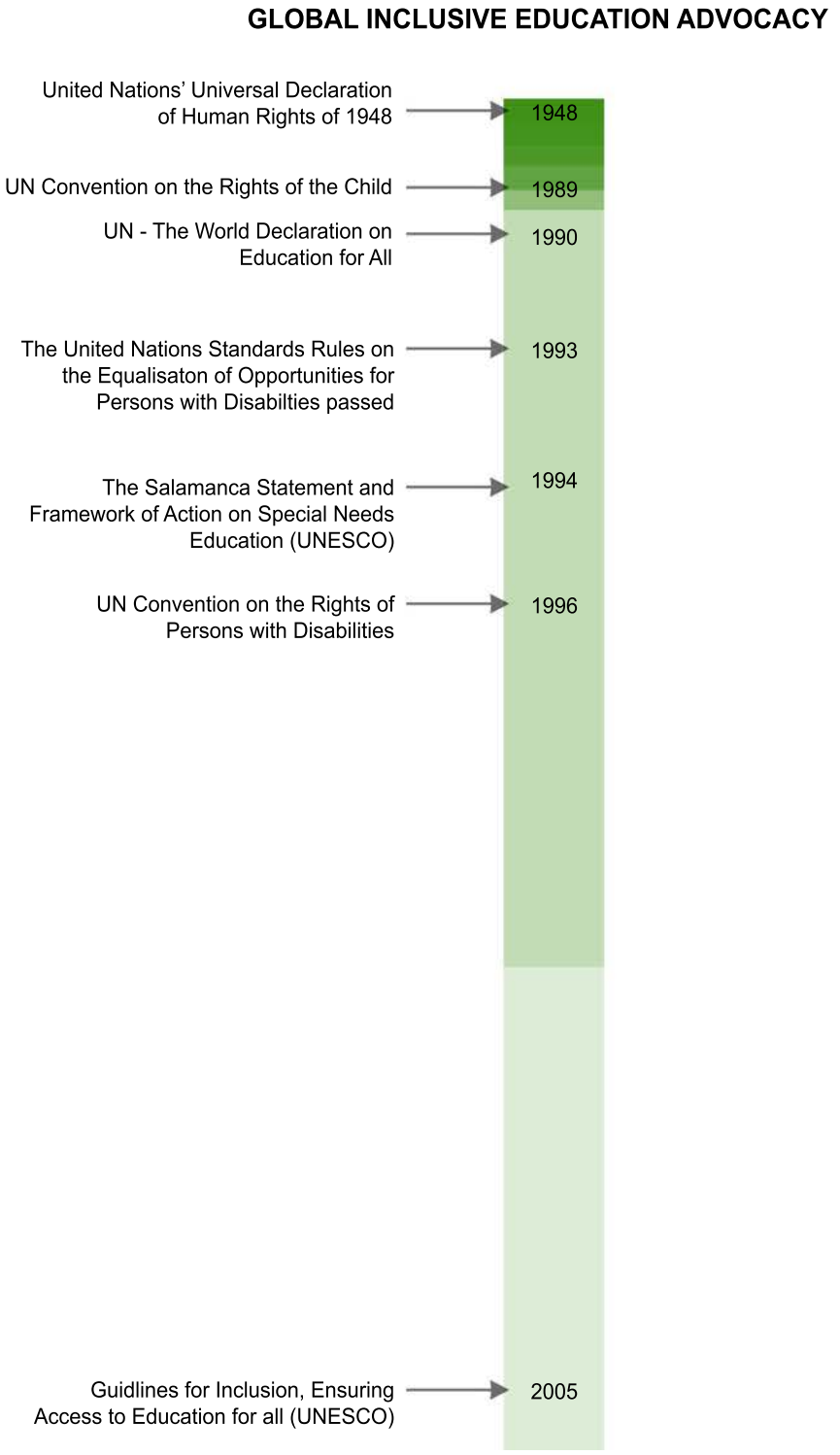


Figure 2.2. Timeline of advocacy of inclusive education globally. (Wyszkowski-Korwin, 2019)

The United Nations conventions and Advocacy for the rights of people with disabilities started in 1948 with the Universal Declaration of Human Rights, which affirms the right to free education for all children, including children with disabilities. This was followed by the 1989 UN Convention on the Rights of the Child, which emphasises the rights of children to receive an education without discrimination of any kind.

In 1990, The World Declaration on Education for All was set up with six goals focussing on inclusion. Four of these goals were directly related to childhood education as follows:
"Goal 1: Expand early childhood care and education
Goal 2: Provide free and compulsory primary education for all
Goal 3: Promote learning and life skills for young people and adults
Goal 6: Improve the quality of education." (United Nations, 2000).

The United Nations Standard Rules on the Equalisation of Opportunities for Persons with Disabilities were passed in 1993 (United Nations, 1993). This comprised of 22 rules that direct decisions towards inclusion. Rule 5 addresses the importance of accessibility for all people, to the physical environment (United Nations, 1993). Rule 6 restated the rights of children with disabilities to receive equal education, and furthermore, it specified that they should receive it in an inclusive school environment. These rules directly address the need for the physical environment to be converted into accessible environments.

The Salamanca Statement and Framework of Action on Special Needs Education in 1994 (Ministry of Education and Science Spain, 1994), which stipulated that schools should accommodate children across the board regardless of their physical, social, intellectual, linguistic, or emotional disabilities. Article 9 of the UN Convention on the Rights of Persons with Disabilities (United Nations, 2006) focusses on the need to ensure that persons with disabilities have access to the

built environment, transportation, information, communication, technologies, facilities, and services. Point 2a notes that State World Health Organisation, 2011 (United Nations, 2006:8)

and

(d) Provide in buildings and other facilities open to the public signage in Braille and in easy to read and understand forms; (United Nations, 2006:8)

> "The Salamanca statement is the most influential document on inclusive education worldwide. Its role is to inform policy and guide governments on how to build inclusive education systems. The statement advocates for major policy shifts in the education systems of every country. It proposed that all policies in education should be reformed and framed around the principles of inclusive education." (Mphanda, 2018: 7)

In 2005, UNESCO published the Guidelines for Inclusion, Ensuring access to education for all. This guideline promotes the rights of people with disabilities and the need for the mainstreaming of all people. The need for free and accessible education is clearly stated: "Education must be viewed as a facilitator in everyone's human development and functionality, regardless of barriers of any kind, physical or otherwise. Therefore, disability of any kind (physical, social, and/or emotional) cannot be a disqualifier" (UNESCO, 2005:5). The built environment and the effect of inaccessible built environments everywhere are noted as a challenge to be overcome. This guideline recognises the built environment as a major physical barrier to education and goes on to note that overcoming physical barriers are simpler to overcome than barriers to learning. (UNESCO, 2005). This is true with the correct application of universal access principals, which will be discussed further in section 2.3.1 Defining disabilities for the built environment. This summary of human rights accomplishments shows the inconsistent mention of disabilities, education, and the built environment, historically. This did change in South Africa, as the political and legal framework

evolved along with the rest of the world as efforts were made on many fronts, to implement inclusion of people with disabilities.

2.1.3 Policy and legislative framework for inclusive education in South Africa

In 1981, the foundations of the South African Disability Rights Movement/ Independent Living Movement began to take shape. The system of grouping people with disabilities according to their specific disabilities had resulted in creating various divides between people who now needed to unite. People had organised themselves into groups for self-help and support.

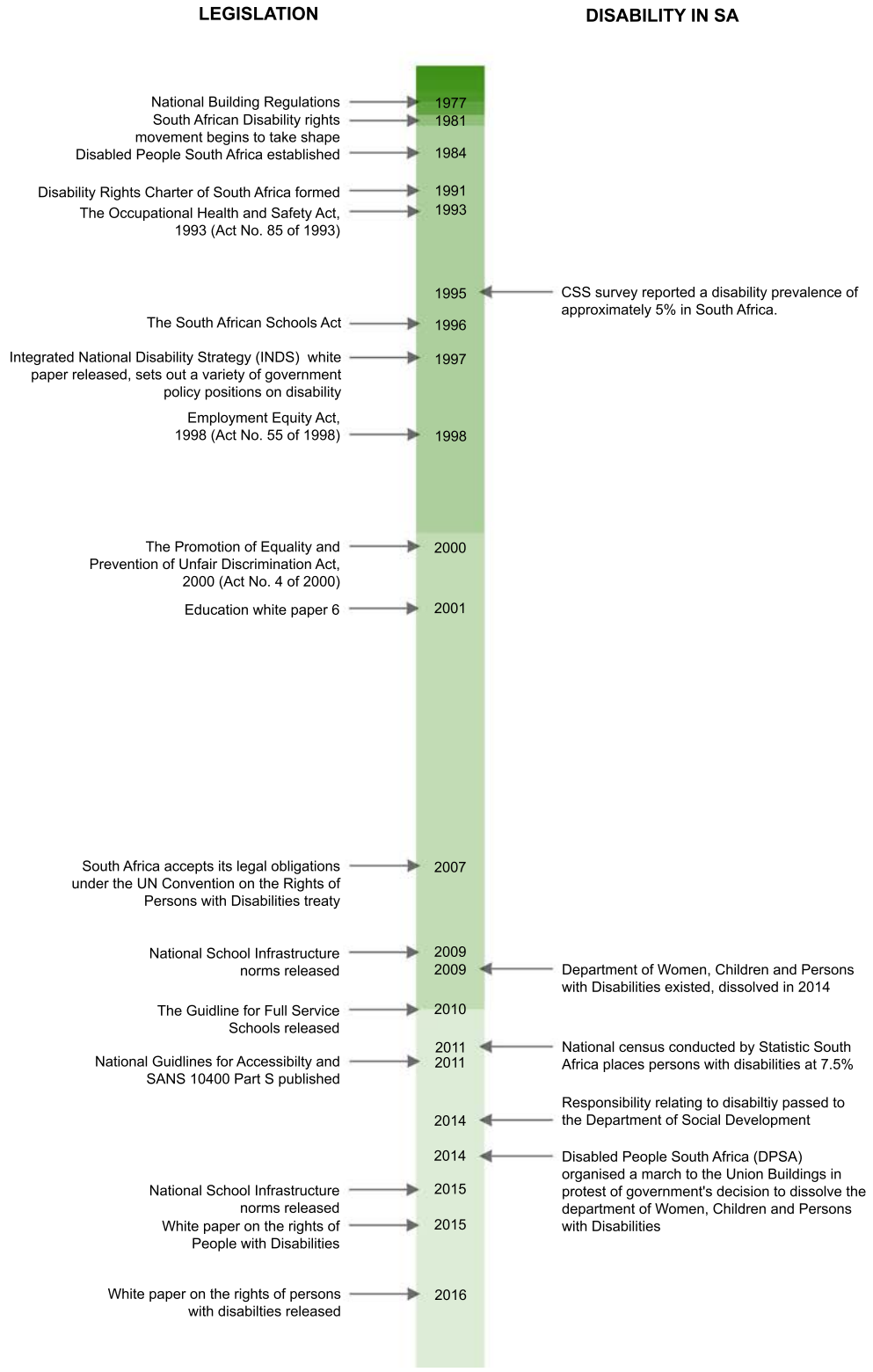


Figure 2.3. Timeline of South African framework for Inclusive Education (Wyszkowski-Korwin, 2019)

In 1984, these groups came together to form the Disabled People South Africa, a national organisation. The DPSA focused on advocating for equal rights for people with disabilities. Since South Africa was a country that was rooted in discrimination and segregation, the challenges were far-reaching. The Disability Rights Charter of South Africa was formed in 1991 and started to define the specific needs of people with disabilities. These findings were then used to inform the legislative changes that were to follow. (Disabled People South Africa, 2000)

As this is an architectural study, focussing on inclusive education, the need to investigate the physical accessibility of schools was of particular importance. In reviewing legal documentation that directly impacts on inclusive education, this section seeks to find the architectural guidelines, construction strategies and reporting on the success of the transformation to the built environment. The challenge has been in finding literature that supports this approach from an architectural implementation perspective. Information on the physical considerations for disabilities and the resulting architectural design implications were found to be fragmented and difficult to consolidate. Although there is extensive research on the topic of disabilities, the social, political, and historical and changing context that we currently experience, the architectural opportunities are overshadowed by the management and training requirements when it comes to inclusion strategies at schools.

The South African Schools Act, 1996

This act talks about admission to all learners and the non-tolerance of discrimination, which is in line with the Constitution, which was published in the same year. The SASA does not reference the planning regulations and guidelines required for the built environment.

Integrated National Disability Strategy, White Paper, 1997

This vision of creating equal opportunities for all, developed into several policies and strategies that have become the vehicles for change in South Africa. The 'Integrated National Disability Strategy White Paper' was launched in November 1997 to determine a way to integrate people with disabilities into mainstream society. The Integrated National Disability Strategy, White Paper, 1997, makes reference to the built environment on a number of occasions and notes the importance of new design concepts to be implemented. The Integrated National Disability Strategy, White Paper, 1997, also references the National building regulations and in particular, Part S, which is specifically for people with disabilities. Although there was the Part S standard available at that time, the Integrated National Disability Strategy, White Paper notes the challenges faced at that time as follows:

1. Planning professionals do not recognize the specific details required in providing a barrier-free environment.
2. Development agencies do not have clear policies on environmental access. The result is that hundreds of schools, clinics, and other public buildings are presently being built with no regard for barrier-free requirements.
3. Standards prescribed by the National Building Regulations require review.
4. No barrier-free design norms have been incorporated in the Public Sector Briefing Document.
5. Specialist expertise in the field of barrier-free access is limited in South Africa.

   (Office of the Deputy President, 1997: 33)

Already in 1997, it was identified that National building regulations needed to be reviewed and that no design norms existed particularly for schools. Minimum building standards, as set out in Part S, were used to guide the Architects to

create environments suitable for children with disabilities. The contents of Part S and the challenges thereof are discussed further below. All of these challenges faced at the time of publishing the Integrated National Disability Strategy, White Paper in 1997 are again reported on in White Paper on the Rights of People with Disabilities, 2015.

Education White Paper 6, 2001

Education White Paper 6, published in 2001, "to some extent, is seen as progressive because it views disability as a systematic, structural and organisational issue" (Mphanda, 2018: 12). By shifting the understanding of disabilities from a medical perspective, to a social perspective, disabilities are seen as an "imposed restriction by an oppressive and discriminating social and institutional structure on individuals who have an impairment" (Mphanda, 2018: 12).

In order to redress the inequality of South Africa's segregated past, the infrastructure and organisational systems that existed pre-1994 were challenged and revisited continuously through policy development and relevant government initiatives such as the publications of the White paper on an integrated national disability strategy, and the guidelines for full-service/ inclusive schools. (Du Plessis; 2013). The only reference to the built environment and conversion of the built environment was mentioned in 2.1.7 as follows "The Department of Public Works is implementing a job creation project to provide ramp access for learners on wheelchairs to schools." (Department of Education, 2001: 25). This statement makes evident a common misconception that physical disability means a wheelchair user. This shows that although the polices were leading in the progressive direction, the implementation, practicality and technical expertise of built environment specialists were being overlooked.

The Guidelines for Full-Service Schools, 2010

The guidelines for Full-service schools was published by the Department of Basic Education in 2010 defines a Full-service school as follows:

"Full-service schools are first and foremost mainstream education institutions that provide quality education to all learners by supplying the full range of learning needs in an equitable manner. They should strive to achieve access, equity, quality, and social justice in education." (Department of Basic Education, 2010: 7)

This guideline has a much more direct approach to the built environment. Section 12.1 states *that the school should carry out a full access audit of the building and school grounds, involving the learners*. Schools should have the necessary resources they need to create safe and accessible infrastructure for effective learning to take place in the classroom and the broader school environment" (Department of Basic Education, 2010: 37). Reference is made to the requirement for schools to comply with the National School Infrastructure norms, 2009 and the Environmental Access Guide, 2009. These guides and norms are discussed further in section 2.3.2 Architectural regulations and guidelines. This guideline does not reference the National Building regulations or part S. It does make specific note of sanitary facilities, ramps, chair lifts, and wheelchairs. There is no mention of universal design concepts. This shows a fragmented approach to the physical accessibility of the environment.

White Paper on the Rights of People with Disabilities, 2016.

Although there have been several legislations, regulations, and papers published by the South African government concerning the plans towards achieving Inclusive education, the White paper on the rights of Persons with Disabilities brought to light the practical challenges when designing the built environment.

The South African Cabinet approved the White Paper on the rights of persons with disabilities on the 9th of December 2015. This policy does not replace but does update the Integrated National Disability Strategy, White Paper white paper and provides mechanisms for both the implementation and the monitoring of the strategies employed for transformation. According to section 6.1.1.2 of the White paper on the rights of Persons with Disabilities:

"Current legislation regulating the built environment is not fully compliant with either international treaty obligations or constitutional imperatives, as it does not facilitate or enforce the concept of universal design that will enable equitable access to the built environment. (Department of Social Development, 2016: 52).

Here again, the paper talks about the non-compliance of the built environment. At this point, it was recognised that there was a need to ensure that appropriate solutions were being implemented for the transformation of schools. White paper on the rights of Persons with Disabilities (2016), references the use of the National Building Regulations and Building Standards Act, 1977, National Guidelines for Accessibility, and the South African Bureau of Standards, SANS 10400-S published in 2011. These building regulations and guidelines are further discussed in section 2.4.2 Architectural regulations and guidelines.

The list of policies discussed above was extracted from the Gauteng Department of Education policy (2015), on the configuration and establishment of full-service and special schools as resource centres in Gauteng. This policy document was given to the Principals of the schools chosen for the full-service school implementation strategy. For this reason, it was essential to understand which policies, legislations and guidelines formed part of the fragmented network of information available to the role players. The next section sets out to understand the definition, technical planning, and implementation strategy for the conversion of ordinary mainstream schools into full-service schools.

2.2 Literature Review

Many documents have been written regarding the rights of people with disabilities. Although the literature referenced covers a range of topics that influenced the progression towards inclusive environments, this research is focused on how architecture can either enable or hinder scholars with physical disabilities.

The literature review starts with an investigation into classroom-based education and why this is the appropriate choice for the healthy development of children. The current state of schools in South Africa as a result of the history of the country is used to set the context within which change is meant to occur. The implementation of inclusive education strategies is investigated, leading from this physical and environmental description. This is spearheaded by the change from the medical to the social model of disabilities and the effect of this change on the way that architecture is seen. The second part of this literature review is explicitly written about architecture, the application of universal design principles, the psychology of space, South African building standards and precedent that sets best practice standards for inclusive education worldwide. The researcher found that although there was ample published work on the topic of inclusive education, there were few publishing's that linked the physical environment to the success or challenges faced when implementing inclusive education strategies. Searching through the available information produced a magnitude of resources, the most relevant of which are referenced below.

2.2.1 Inclusive Education as the right choice for children with disabilities

The background chapter provided the context that showed the progression towards inclusive education as the international goal for which many countries, including South Africa, have committed to achieving. Before proceeding with the

research, the challenges identified lead to the question of whether or not inclusive education is the right choice for children with disabilities. This is explored through the three main topics that emerged as follows:

Topic 1: Attitudinal barriers to inclusion

Topic 2: The use of assistive technologies

Topic 3: Childhood development needs

Topic 4: Outcomes-based evidence

Topic 1: Attitudinal barriers to inclusion

The extensive reference to inclusive education as a basic right is reason enough for the promulgation of this approach in South Africa and the world. It is the core ambition of disability activism to ensure that inclusion is, in fact, realised and the education sector has been a key component of these goals to solidify this.

Esther Mphanda's paper (2018) refers to the body of research conducted "before and after Education White paper 6 policy was released." (Mphanda, 2018:14). This included research into the perspectives of teachers, caregivers, and role-players in the inclusion strategy. Although these studies were always focused on accomplishing the goal of inclusion, the outcomes showed challenges from an attitudinal perspective as teachers and caregivers were in need of support, that they were not always getting (Bornman and Rose, 2010). This resulted in presumptions that children with disabilities were more challenging to manage (Mabuya, 2004: 84), that they could be "disruptive to other learners" (Donohue and Bornman, 2014:5) and that children are "more likely to fall victim to bullying" (Werbeach, 2017:2). From this viewpoint, it can be seen that the teacher and caregivers' concerns over inclusion included concerns about their own abilities, training, and readiness for the task (Mphanda, 2018). It included concern for the general well-being of all the children in the class in terms of effectiveness and productivity during class time. And it included concern over the well-being of

children being integrated into full-service schools as they were at a higher risk of being bullied by other children. These concerns are echoed throughout the research accessed for this study, with the repeated strategy being to create awareness and provide training on all levels. Although these are major challenges that have affected the efficacy of the inclusion strategy, it cannot stop the progression towards inclusive education in South Africa.

This research supports inclusive education as the way forward and is reaffirmed when reading the following quote by prior Constitutional Court Judge: Justice Zak Yacoob:

> "I have had the privilege and the benefit of being educated at a school where the necessary facilities were largely available. I am pained to say that if the facilities at the school at which I was a pupil had been as paltry as in most of the schools described in the report, I would never even have completed school successfully. I, therefore, make a humble personal appeal to all the concerned authorities to treat this matter as one of urgency, and not to let the lives of a whole generation of blind children, mainly African and poor blind children, go to waste."
> (Fish-Hodgson and Khumalo, 2015:7)

This quote was extracted from the Section 27 Report (Fish-Hodgson and Khumalo, 2015), which Judge Yacoob reviewed and made a comment on. This report was based on interviews with 22 schools for children who are blind. It is a comprehensive report on the challenges, lack of progress, and lack of understanding of implementation strategies/ policies. It also provides invaluable information on the needs, opportunities, and creative thinking required when making design and strategic decisions. Despite the positive benefits of inclusive education, this topic is also faced with major challenges in terms of the attitudes and perspectives of people, towards the practicality, effectiveness and comprehensiveness of the strategies implemented.

Topic 2: The use of assistive technologies

Oone of the key components for the successful implementation of inclusive education includes the use of assistive devices, because even if you can get a child into a classroom, without the appropriate assistive device, a child may struggle to hear the teacher, or see the teachers handwriting. Assistive technology is needed to bridge the gap between getting a child into the classroom, and enabling the child to participate in the classroom alongside his/ her peers. (Ahmad, 2015). Assistive devices come in many forms and can refer to wheelchairs, walking aids such as canes, Hearing aids and hearing loops, voice-activated computers, braille writing machines etc.

It is very difficult for children with disabilities to navigate the public transport routes, get to the school gates, get to the classroom and go through a day of manoeuvring through the school spaces. The strain placed on these children, working with conditions that are entirely unsuitable, would lead to the thought that online, home-based learning is the better option. Furthermore, parents "expressed similar fears concerning the mistreatment of their children in ordinary schools (Donohue & Bornman, 2014: 6). Motivation in support of classroom-based learning can be seen below, through the review of research on childhood development needs.

Topic 3: Childhood development needs

In support of inclusive education, Mitasha Mistrey (2011) has written about the effect of architectural psychology on the development of a child, specifically focussing on children with disabilities. As stated by Mistrey, "learning environments, child – care settings, playgrounds, parks, orphanages, and homes are the places within which children are supposed to develop the psychological and social skills necessary for them to thrive as adults in the future." (Mistrey,

2011: 23). The goal of inclusive education is to eliminate "barriers that had been preventing them from being at the same level as their peers." (Ahmad, 2015:2).

Furthermore, the interaction, experience, social development, and emotional development that is gained through classroom-based learning is needed for the healthy development of children. "If the environment has been designed to cater for the specific needs of disabled children, it would help them to build confidence and self – esteem which would then enable them to believe in themselves and build a future." (Mistrey, 2011: 24). Mistrey's work in this area is supported through numerous research papers written on this very significant aspect of architectural psychology.

Topic 4: Outcomes-based evidence

Although there is a case to make to validate inclusive education, "there is a lack of a firm research base for inclusive education to support either whether this is a preferable approach in terms of outcomes, or how inclusion should be implemented." (Lindsay, 2007: 16). Similar to the case of incorrect statistics, the lack of evidence based on educational outcomes makes it difficult to determine whether positive educational outcomes are a result of excellent teaching skills or the inclusion model. Having noted this, the outcome of Lindsay's study reviewed 14 research papers and concluded in support of inclusion as the best fit for children with physical disabilities. (Lindsay, 2007).

2.2.2 The effect of history on the current state of schools in South Africa

The History of South Africa has played a massive role in the development of the current schooling structure. In 1948, when the apartheid government came into power, the entire structure of laws governing life, accessibility, and human rights in South Africa was determined by the apartheid belief system. As explained by Esther Mphanda, "the legacy of apartheid used racial classification to structure unequal access to educational provision. The schooling system during apartheid was used to maintain a class and racial hierarchy that benefited the white minority." (Mphanda, 2018: 10). This affected the provision of facilities in the form of infrastructure, and the resulting challenges are repeated throughout the literature read on the topic of inclusion, where researchers state that "some of current issues in the schooling system have been inherited from the apartheid era, and that they also affect the implementation of inclusive education." (Mphanda, 2018: 11)

Aside from apartheid creating a divide between people based on race, South Africa's also includes a segregated system for the education of children based on disability status. The education system up until 1994 included two options:

- Special Schools – for children with disabilities, and
- Mainstream schools – for children without disabilities.

So, children with disabilities, who were non-white, had a double disadvantage. As noted by Mphanda (2018), "transformation in general has become a powerful discourse in South Africa" (Matshedisho, 2007,) it tends to focus on issues around race. It is not only the racialized body that is stigmatised, but the body with a disability has fallen prey to this form of prejudice." (Mphanda, 2018: 1). The South African schooling system, prior to 1994, comprised of a system of exclusion and segregation, as depicted in the figure below, adapted from the United Nations Committee on the rights of persons with disabilities s general comment No. 4.

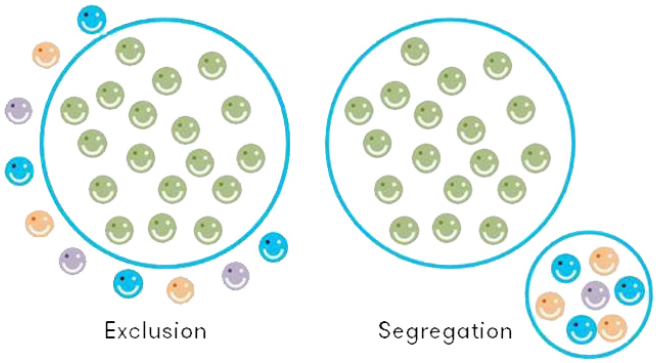


Figure 2.4. Exclusion and Segregation

(Adapted from Vilegas, 2017)

South Africa provides a context that makes transformation difficult because of the different ethnic and language groups, political history, and rampant poverty. This leads to differing views about the needs of children with disabilities, best practices, and beliefs regarding how they should be educated. (Donohue & Bornman, 2014:3). The inclusion strategy in South Africa is based on integrating children with mild to moderate disabilities into mainstream schools (provided the appropriate support is provided (Daniel, 1997:400) and transforming the special schools into resource Centre's, which will accommodate children with severe disabilities. (Mabuya, 2004: 21)

Through the Constitution of South Africa, the way forward was to implement comprehensive transformation across all sectors. "As part of this transformation, the focus was about attaining redress for previously marginalised groups such as people living with disabilities, women and black people." (Mphanda, 2018: 11). Through the numerous declarations, commitments, policies, legislations, guidelines, strategies and reports that have been compiled, the opportunity presented itself for the redress of the inequalities of the past, and this study focuses on inclusive education as a fundamental transformation goal.

2.2.3 Inclusive Education needs and challenges

The transformation of schools in South Africa has resulted in 4 scenarios as depicted in the figure below, adapted from the United Nations Committee on the rights of persons with disabilities general comment No. 4.

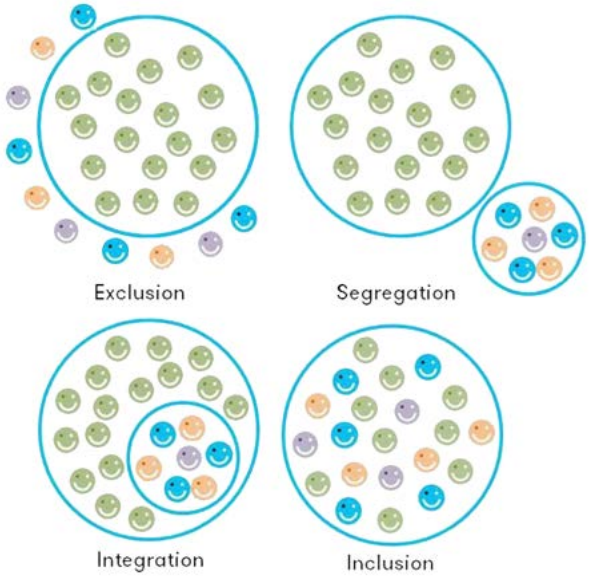


Figure 2.5. Exclusion, segregation, accommodation, and inclusion
(Adapted from Vilegas, 2017)

Exclusion: implemented through mainstream schools that excluded the enrolment of children with disabilities.

Segregation: implemented through the separation of mainstream and special schools, whereby all children with disabilities were enrolled at special schools only.

Integration or accommodation is a step towards inclusion. It incorporates the perspective of all people being different, and each person with a disability having needs that may be different from someone else in similar circumstances. Strategies incorporating individualized plans recognises this approach. The Policy on Screening, Identification, Assessment and Support adopts this approach whereby the process enables the implementers of integration to become fully

aware of the needs of a child and to implement accordingly. (Department of Basic Education, 2014).
The disadvantage of integration is that changes are made according to individualized plans and would, therefore, prolong the process of transformation.

For inclusion to be successful, interventions need to "not only be at the individual level, like medical rehabilitation, but also at the societal level, with provision of necessary support services, a universal design to make infrastructure more accessible, and a change in attitude and perception regarding disability; promoting inclusive education systems and community awareness programs to combat stigma." (Ahmad, 2015:1)

Inclusion: The social model of disability leads to the definition of inclusion getting linked to a comprehensive approach, which sees this goal as a shared responsibility between all stakeholders. According to Ahmad (2015), a comprehensive approach would require a change in attitudes, improvement of infrastructure, pedagogy, assessment and evaluation of needs and the supply of relevant accommodations. This would need to be driven by a culture of acceptance and inclusion at all levels of the strategy. (Ahmad, 2015:1). The implementation of inclusion is dependent on the principles of universal design.

In summary, accommodating a person with a disability means that provisions, arrangements, and/or building changes have been made to accommodate specific types of disabilities (based on the needs of certain users). Inclusion means that buildings and facilities are designed and built (or have been renovated) to allow for universal accessibility and participation of all people, equally.

In the case of existing schools in South Africa, realizing inclusion has numerous challenges because "these schools were not designed to accommodate a broader spectrum of needs, students with disabilities may be challenged at times in ways

other students are not, particularly in regards to tasks involving feeding, toileting, or mobility.7 (Werbeach, 2017: 3).

2.2.4 How the Social Model of Disabilities affected Architecture

The Integrated National Disability Strategy adopts a socio-political approach when defining disability within a social environment:

> *"It is the stairs leading into a building that disable the wheelchair user rather than the wheelchair.*
> *It is defects in the design of everyday equipment that cause difficulties, not the abilities of people using it.*
> *It is society's lack of skill in using and accepting alternative ways to communicate that excludes people with communication disabilities.*
> *It is the inability of the ordinary schools to deal with diversity in the classroom that forces children with disabilities into special schools."*
> (Integrated National Disability Strategy, 2015:15).

The social and socio-political models of disability place responsibility on (the designer of) the environment for the creation of barrier-free and inclusive built environments.
It is believed that "because this problem is one created by architecture; it is best solved by it. Through extensive affordance-based observation, classroom behavior reveals patterns of needs that can be addressed through architectural interventions." (Werbeach, 2017: ii)

The responsibility of the architect and built environment professionals is to design universally accessible environments. In order to apply the appropriate architectural solutions, there needs to be an understanding of the challenges experienced by people with disabilities in terms of the technical and

anthropometric requirements. This is further explored in section 2.2.6 Defining physical disabilities for architecture.

2.2.5 Universal Design Principles

In the quest to determine how inclusive education could be implemented, a group of built environment and product design professionals, in 1997, published a list of 7 design principles that provided basic considerations when designing for universal accessibility. These principles are:

- Equitable use,
- flexibility in use,
- simple and intuitive use,
- perceptible information,
- tolerance for error,
- low physical effort and
- size and space for approach and use.

These principles are applied across all design sectors and include areas of information technology, communication and building design. When universal design principles are applied in architecture, the result is universal accessibility.

2.2.6 Universal accessibility and architecture

In Architecture, universal design principles are meant to be considered along with the relevant legislative, structural, and aesthetic requirements of the purpose of the buildings. These factors are taken into consideration when designing new environments, and when designing interventions for existing buildings. This section looks at the 7 principles of wayfinding, demonstrated through examples that explain the principle in relation to architecture and design.

Principle 1: Equitable design

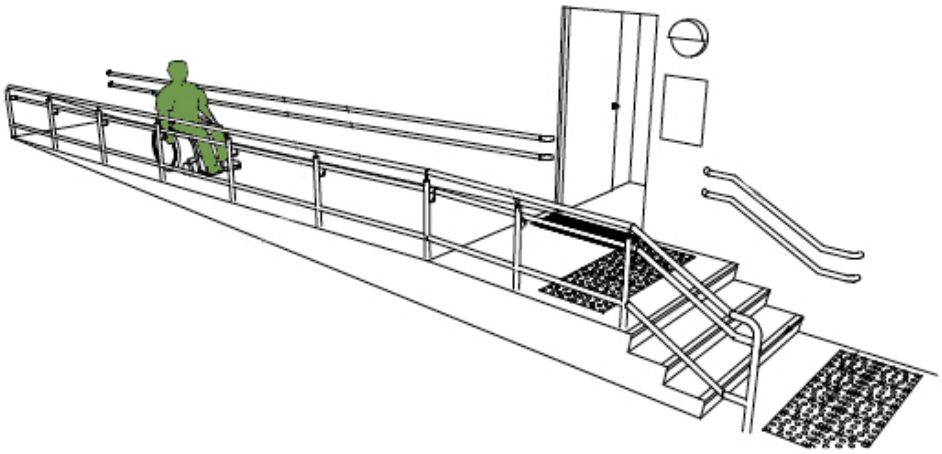


Figure 2.6. Perspective showing both stairs and a ramp. (ISO/FDIS 154. 2011:23)

The design should be useful to people with a wide range of disabilities.

Principle 2: Flexibility in Use

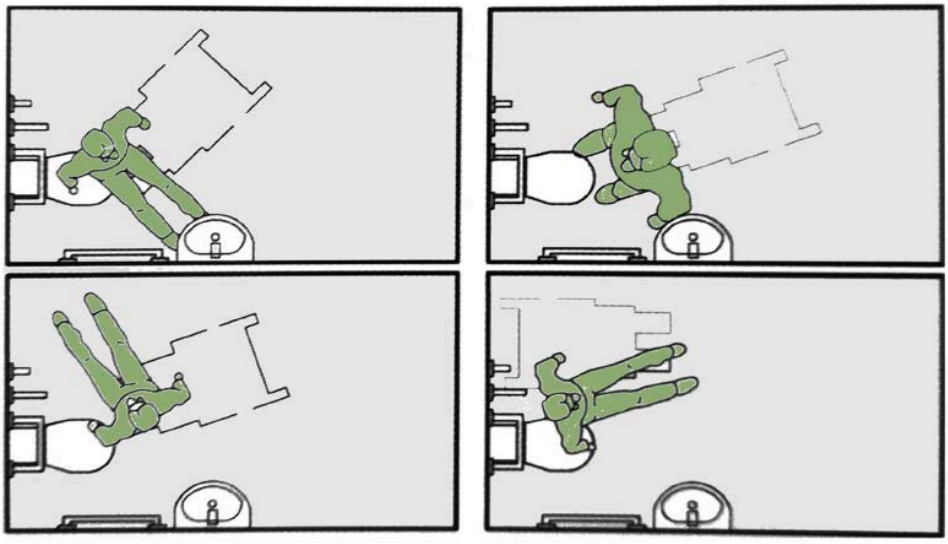


Figure 2.7. Flexibility in use (Architective, 2013: Fig 47)

The design caters for individual preferences and disabilities.

Principle 3: Simple and intuitive use

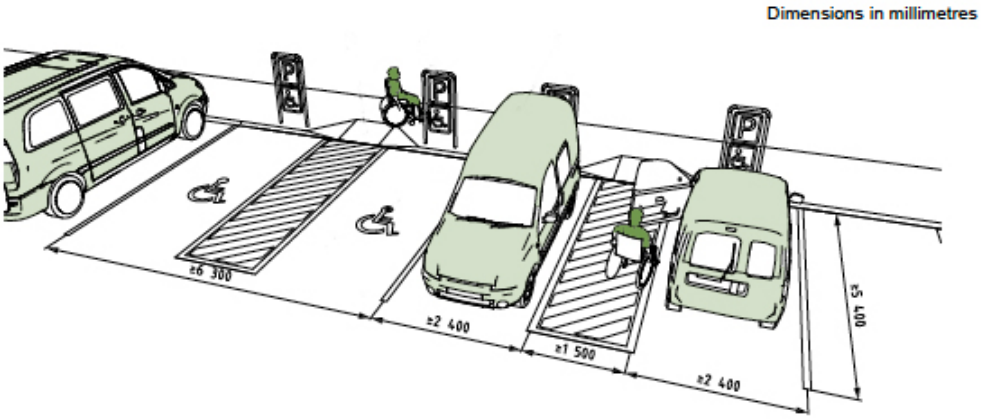


Figure 2.8. Easily understandable environment (ISO/FDIS 154. 2011: Fig 14)

The fittings and fixtures are simple to use and understand regardless of the user's knowledge or skills.

Principle 4: Perceptible information

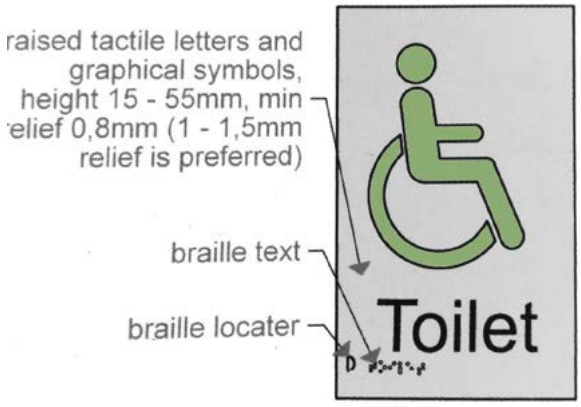


Figure 2.9. Signage with symbol, text and braille (Architective, 2013: Fig 88)

The design communicates necessary and simple information in different formats

Principle 5: Tolerance for error

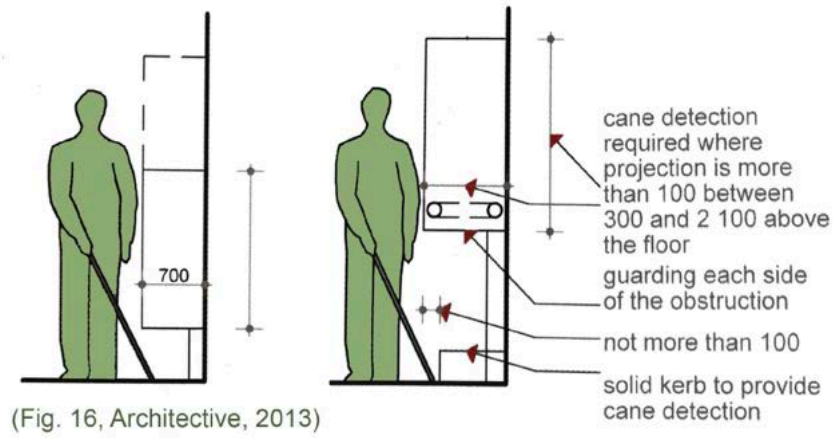


Figure 2.10. Protrusions and obstructions (Architective, 2013: Fig 16)

The design should minimise hazards or adverse consequences.

Principle 6: Low physical effort



Figure 2.11. Low effort mechanisms (Wyszkowski-Korwin, 2019)

The design allows for use with minimal effort or fatigue.

Principle 7: Size and space for approach and use.

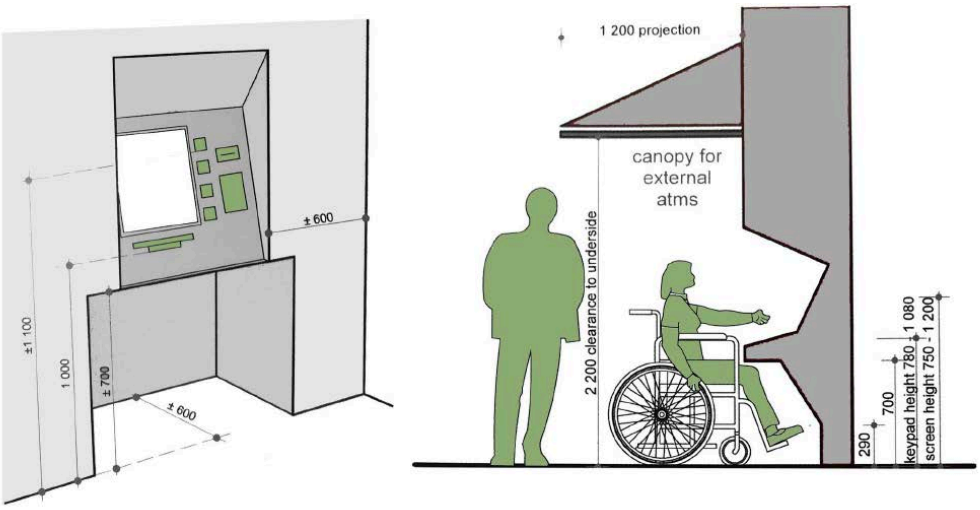


Figure 2.12. Size and space allowances (Architective, 2013: Fig 94)

Appropriate space and size are provided, regardless of body size, posture or mobility.

2.2.7 Defining Physical Disabilities for Architecture

In order to apply universal design principles to the built environment, it is important to understand the needs of persons with physical disabilities. This can be a difficult task as individuals have a diverse range of needs, and they could also have multiple disabilities. Furthermore, people with the same disability do not necessarily experience the environment in the same way.

Statistics South Africa has generated information across the decades to attempt to produce numbers that can be used for the planning of the country's infrastructure and services across industry sectors. The 2011 and 2016 surveys produced a set of disability types that the population was measured against (see section 1.2. Inaccurate statistics and how this affect infrastructure design). Table 1 and Table 2 are referenced to clarify the types of physical disabilities that are

Topic 1: Mobility impairments

Topic 2: Visual disabilities

Topic 3: Hearing disabilities

Topic 4: Sanitation facilities (addressing some areas of self-care)

Topic 5: Wayfinding (addressing some areas of communication, remembering, and concentration)

This section explores each of these categories in relation to architectural requirements and space implications. Universal design principles and the National building regulations have informed this research. This exercise was done to demonstrate the different sources of information available on the topic of universal accessibility.

When designing for children with physical disabilities in school settings, “adequate space should be provided both in the classroom and on the playground. Children with physical challenges may need ramps and enough space to maneuver their wheelchairs and walkers. Tables and chairs need to be sturdy to give support to youngsters who lose their balance easily. Non-skid floor coverings can prevent tripping.” (Lerner, Lowenthal, & Egan, 2003:130).

There are numerous guidelines for the design considerations, best practice, and spatial requirements when designing for people with disabilities in mind. People with mobility disabilities encounter numerous barriers that prevent participation in mainstream activities. The built environment often presents unnecessary challenges, even though guidelines have been published to assist the design of inclusive environments. One such guideline is the Architective guideline for Architects (Architective, 2013). The figure below shows some of the anthropometric considerations from this guideline for use when designing accessible spaces for persons with mobility impairments.

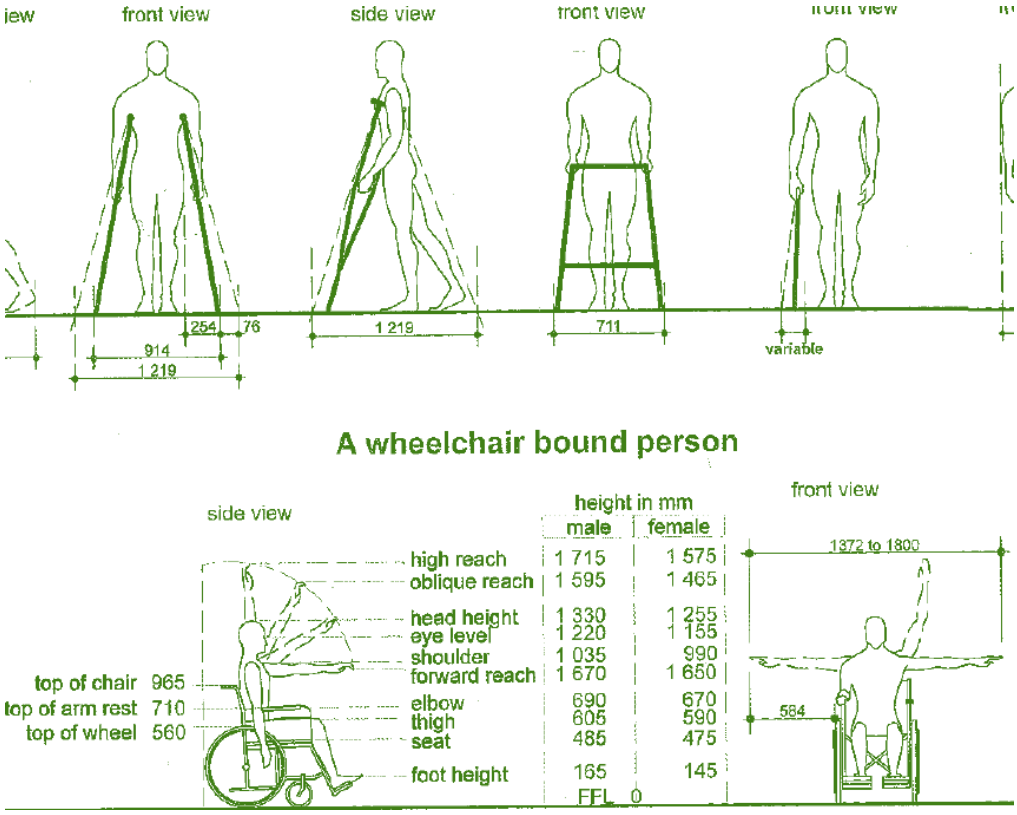


Figure 2.13. Anthropometrics of assistive mobility devices (Architective, 2013: Fig 9)

SANS10400 Part S did not include and anthropometric study. Neither document referenced child scale anthropometric studies.

Topic 1: Mobility disability

This is a physical disability that is a result of muscle, bone, nerve or skin damage that causes difficulty in moving and restricts a person from performing everyday tasks. (Disabled People South Africa, 2000).

Some examples that could help understand the effect of the built environment on a person with a mobility disability are as follows:

- Cerebral palsy: causes muscle incoordination.
- Quadriplegia: a substantial loss of function in all four limbs.
- Paraplegia: a substantial loss of function in the lower part of the body.
- Hemiplegia: a substantial loss of function on one side of the body (arm and leg)

- Post-Polio Paralysis: weaknesses in some muscles, and under-development of some limbs. (Disabled People South Africa, 2000)

Whether a person has a temporary or permanent disability, whether it was a condition from birth or resulted from consequences that occurred, the design of the environment plays a massive In order to apply universal design principles to the built environment, it is important to understand the needs of persons with physical disabilities. This can be a difficult task as individuals have a diverse range of needs, and they could also have multiple disabilities. Furthermore, people with the same disability do not necessarily experience the environment in the same way.

Statistics South Africa has generated information across the decades to attempt to produce numbers that can be used for the planning of the country's infrastructure and services across industry sectors. The 2011 and 2016 surveys produced a set of disability types that the population was measured against (see section 1.2. Inaccurate statistics and how this affect infrastructure design). Table 1 and Table 2 are referenced to clarify the types of physical disabilities that are role in the everyday lives of people with disabilities.

<u>The wheelchair user and how the environment should be designed</u>

Description: a person with a disability who is dependent on a wheelchair for mobility. The abilities of a wheelchair user vary from people who are entirely independent to people who are entirely dependent on an assistant or caregiver. The main characteristics for a wheelchair user are that they experience the world from a lower perspective, and the ergonomics of a wheelchair requires a much wider space within which to move.
In terms of the hierarchy of access to spaces, the wheelchair user is the most disadvantaged as he or she can only go where the wheelchair can go. This makes vertical circulation problematic in most instances and often, the only access via a

ramp would be at the back or side entrance to a building. With new buildings, the law required that these factors are considered at the onset of the design process, thereby ensuring equal access to all.

Design considerations:

- Lower scale access should be provided for fittings, controls, and necessary equipment.
- The width of corridors and passages would need to be 1.5m wide in order to allow for two wheelchairs to pass by each other.
- The clear door opening should be 813mm wide and should have low force opening mechanisms. Lever door handles.
- Generally, ablutions, turning areas, lobbies, and classrooms need to be more spacious.
- The wheels require specific gradients on ramps for changes in levels - 1:12 gradient at maximum.
- Ground textures provide an excellent opportunity to assist with wayfinding and smooth movement.
- Safety features such as curbs and handrails should be used to avoid accidents.

Walking Aids and how the environment should be designed

Description: People with mobility impairments, who can walk, but may rely on prostheses (artificial limbs), orthoses (callipers), sticks, crutches, or other walking aids. The extent of a person's ability to move freely in an environment varies extensively; however, the critical factor is that they are independently mobile. A disadvantage is that people rely on their upper bodies for support, and it becomes difficult to negotiate door handles, etc while balancing on their mobility aid.

Design considerations:

- Surfaces and textures should be even and not slippery
- Stairs should be accessible when stairs are preferred to ramps.
- Handrails should be provided on both sides of the circulation routes.
- Rest spaces should be provided at appropriate intervals.
- Space requirements to be considered.

Topic 2: Visual disabilities

The correct amount of light in a room, the control of glare, the position of lights to avoid distracting shadows when working, the colour of the light, and the design of the lighting fixtures all contribute towards setting the tone, creating clarity and visibility. Designing for people with visual disabilities needs to consider detailing and construction choices. Simple details could either confuse or orientate a person with a visual disability. The anthropometric study (Fig 2.14) shows the scale of an adult. This is important, because, what may only be a hindrance to an adult may be dangerous for a child.

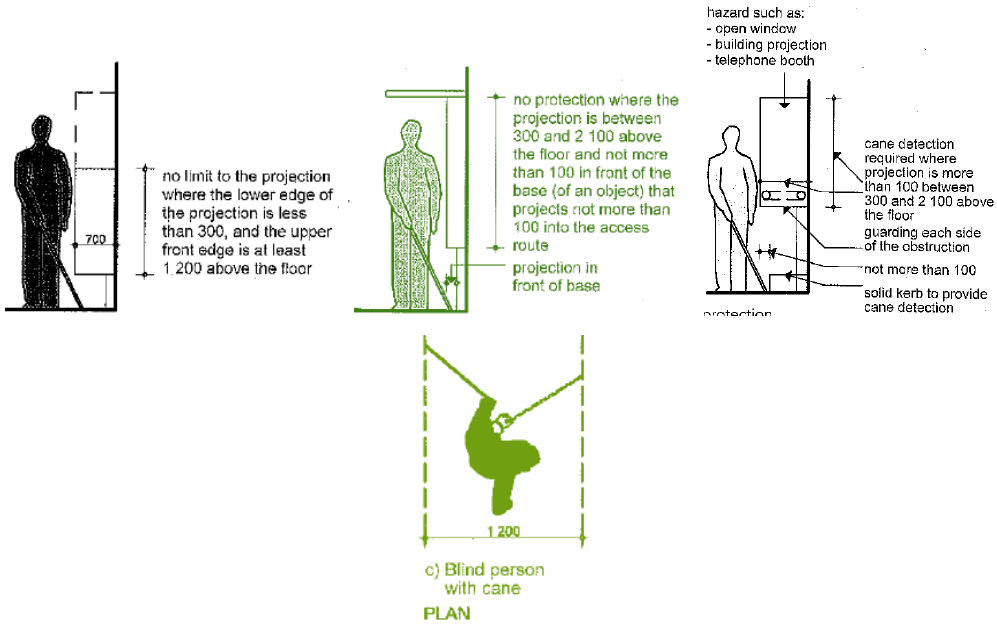


Figure 2.14. Anthropometrics of a person with visual impairments

(Architective, 2013: Fig 9 & 16)

Visual disabilities and how the environment should be designed

Description: People who experience the total or partial inability to see. Individuals who are experiencing this type of disability range from those who are completely blind to those who are partially blind or colour blind.

Design considerations:

- Foreign objects that they do not see in their known environment could be dangerous.
- It is difficult or impossible to respond to visual landmarks and signs that are imperative for both safety and wayfinding.
- People with visual disabilities often have a heightened sense of smell, sense of touch and sense of hearing. Environments with different textures will assist a person who is blind, to differentiate between different spaces. Changes in floor textures are used to warn people that there is a change in level or direction.
- Layouts need to be clear with tactile markers (or landmarks) to help orientation in spaces. Wayfinding principles with clear, sensible, and simple routes enable most people who are blind to remember their routes and spaces quite quickly. Additional or point lighting may be required in some instances for low sighted learners.
- Generally, for learners with visual impairments, there should be a good contrast between different elements. For example, a contrast in the colour of the skirting between the floor and the wall helps the visually impaired person to see the end of the floor and the start of the wall.

- A brilliant invention is a braille handrail, which is an innovative and simple way to guide people with visual disabilities. It is installations such as these that will truly transform environments.

Topic 3: Hearing disabilities

People with hearing impairments can participate in all activities which depend on physical and visual abilities. The range of hearing loss varies from people who are entirely unable to hear, to people who can only hear above a certain threshold or at certain frequencies. One disadvantage of not being easily recognisable is that society tends to assume that a person is rude, as described Zamo Zamu, a deaf scholar: "People do not believe that I am deaf, they think that I am rude or stupid. It is hard to understand when people talk because they talk so fast, and I do not lip-read well". (Govender, 1999:18). This is difficult to manage because individuals often feel isolated. Good acoustic design is essential to prevent unnecessary disturbances from sounds outside the classroom spaces, or confusing reflected sound from hard surfaces. Softer textures in the class, such as pinboards can be used to assist with acoustic absorption. People are affected and even disturbed when there is sound bouncing around off hard surfaces.

Hearing impairments and how the environment should be designed

Description: People who are entirely or partially unable to hear

Design consideration:

- Induction loops can be fitted for universal accessibility
- Acoustics: It is vital to ensure that the correct quality and quantity of sound is obtained in all spaces. Lack of controlled acoustics could result in people feeling disorientated and confused. Fig 2.15 below shows a project on designing adaptive environments, conducted to investigate different settings and how the environment can affect hearing abilities. This

comprises of a collection of simple diagrams illustrating the DEAF experience. These aim to mediate ideas of communication, interaction, education, interface, ethics, etc. Exercises such as these are missing from the national building regulations and guidelines currently used in South Africa.

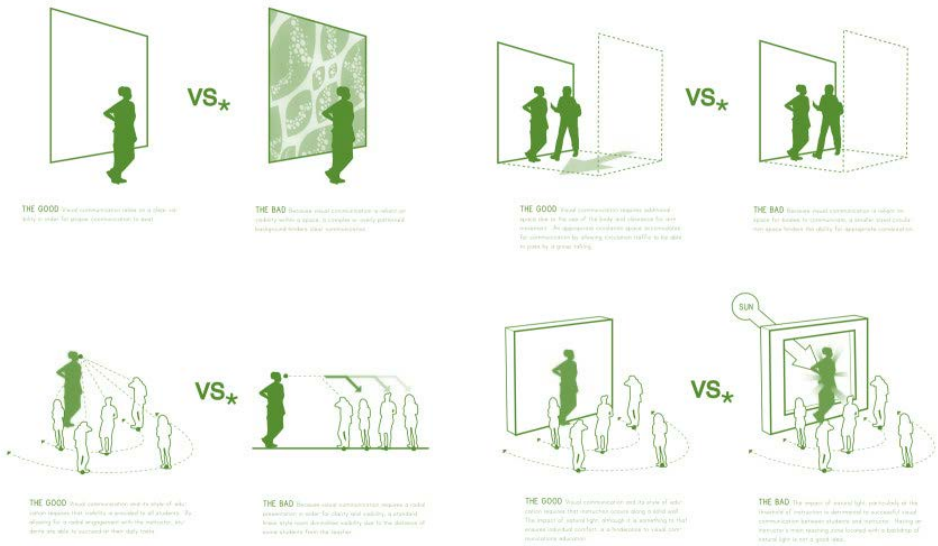


Figure 2.15. Mediating DEAF Experience (Beverly school for the deaf) (https://designabilities.wordpress.com/2009/06/30/mediating-deaf-experience/)

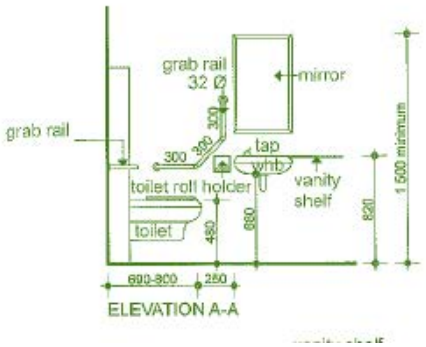
Neither the South African Bureau of Standards, SANS 10400-Part S (2011), nor the Architective guideline presented guidance on exercises (such as figure 2.15 above) on the opportunity to choose layout, materials and finishes to assist with the acoustic quality of school spaces.

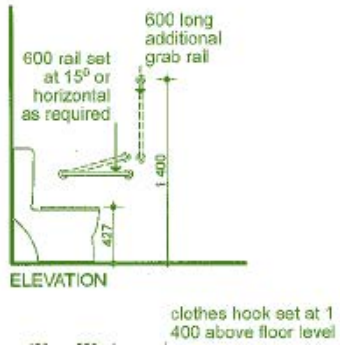
Topic 4: Sanitary Facilities

The definition of self-care is “based on a four-part question: "Because of a physical, mental, or emotional condition lasting 6 months or more, does this person have any difficulty in doing any of the following activities: (b) dressing,

bathing, or getting around inside the home..." (asked of persons between the ages of 5 years old and older)" (Stats SA, 2000:)

Difficulties with self-care can relate directly to sanitary and dining facilities in a school setting. The design of inclusive schools requires particular attention to the technical requirements as generated by anthropometric and design studies indicated above. These technical specifications are illustrated and described in the National building regulations which are further discussed in section 2.4.2. The South African Bureau of Standards, SANS 10400-Part S (2011) and the Architective guideline (2013) show the same information for bathroom dimensions for people with disabilities.





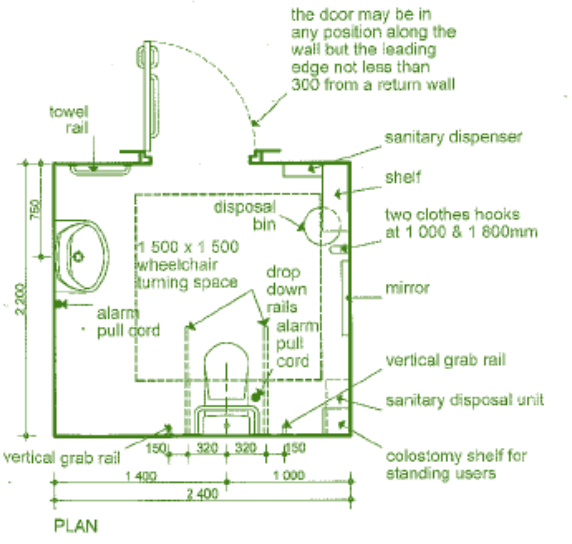
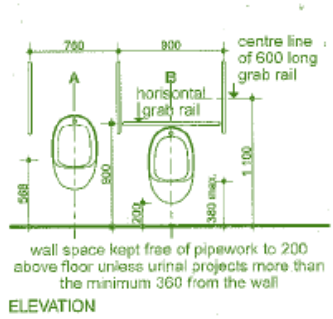
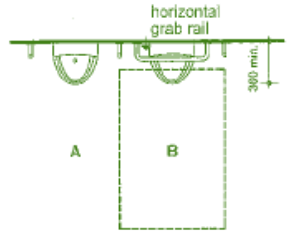


Fig 51 Layout of a typical facility for assisted use





A: suitabe for ambulant disabled people
B: suitabe for wheelchair users
PLAN

Figure 2.16. Technical detailing of requirements for assisted bathroom fittings and fixtures. (Architective, 2013: Fig 48 & 49)

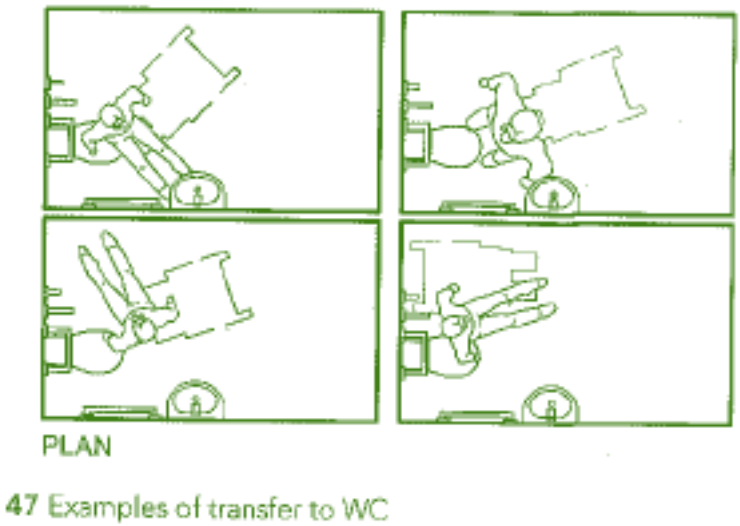


Figure 2.17. Drawings showing movements of person in a wheelchair manoeuvring the bathroom space (ISO/FDIS 154. 2011: 11)

Figure 2.17 above is a very informative set of drawings for designers. It is always important to understand the flow, patterns and space requirements in space. It is recommended that anthropometric studies of this nature are conducted.

Topic 5: Wayfinding

Communication can be influenced through Architecture by means of the appropriate application of universal design principles for signage and wayfinding. Perceptible information can be guided by signage standards found in Part S of SANS. Signage includes emergency evacuation signage as well as wayfinding signage. Well-designed signage plans can assist and benefit all users of a building (Architective, 2013: 93). A typical set of signage would include the following:

- Orientation signage – including maps and locality plans for overall orientation.

- Directional signs – which is usually a combination of text, arrow, and symbol
- Functional/ explanatory signs – usually a combination of text and symbols. These signs are often used to restrict access to certain areas.
- Information or name signs – are usually used to indicate room names and floor levels.
- Emergency signs – indicate fire escape routes, fire equipment etc.



Fig 2.18. Typical set of signage types for a school (Internet source, unknown)

The height of signs should accommodate different user's viewpoints and should be designed with clear legible fonts that are appropriately sized and incorporate a good contrast between the text or symbol and the background. Fig 2.19 above is one example of design considerations for signage. Other factors include braille signage, which can be incorporated into the standard signs.

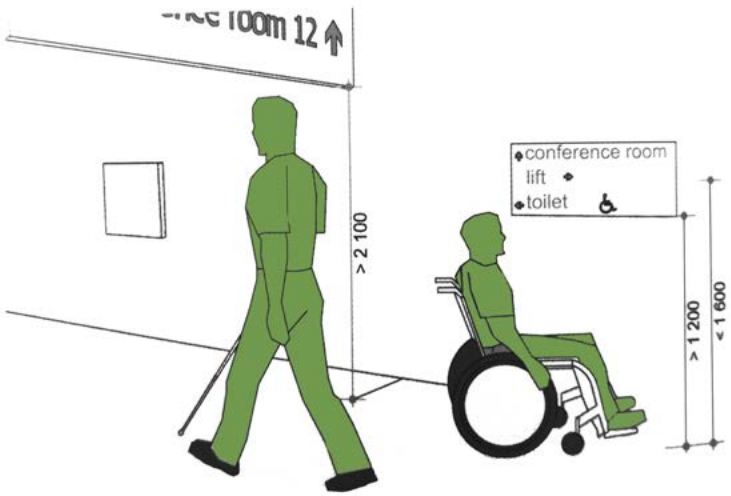


Figure 2.19. Signage considerations (Architective, 2013: 93)

Memory and concentration disabilities are far beyond the scope of this study; however, one universal design principle that would benefit all users relates to the universal design principle 3: Simple and intuitive use. Signage plays a vital role in the application of wayfinding principles. New buildings can be specifically designed using architectural principles of hierarchy of space to create clear visual links and movement patterns as well as the use of tactile indicators to assist with wayfinding.

Tactile indicators

When designing for universal access, special attention must be given to the details and finishes chosen. Textures play a vital role in experiencing a building, as a variety of textures that are perceived by the eye would stimulate interest, encouraging the person to reach out and feel the texture. Different textures are particularly crucial in architecture for children and people with disabilities because it stimulates their sensory perception and helps them orientate themselves. Textures can also be used to indicate different spaces, especially for people who are visually impaired, who extend their sense of haptic perception to

the end of a cane. In doing so, they can 'feel' a change in ground texture, thereby deducing that a different space has been accessed.

The section had intended to set out the considerations and understanding of the needs of the people who will be using an environment. It has incorporated the universal design principles and has made reference to the national building regulations as well as the practical experience of the writer. The next section looks at the National building regulations and guidelines applicable to the topic of inclusive education in South Africa

2.2.8 South African building standards

The purpose of this section is to review the regulations and guideline documents that inform decisions when designing the barrier-free built environments for full-service schools in South Africa. The list of regulations and guidelines below are extracted from the policy documents that were referenced in the Gauteng Department of Education policy on the configuration and establishment of full-service and special schools as resource centres in Gauteng, 2015.

- National Building Regulations and Building Standards Act, 1977,
- South African Bureau of Standards, SANS 10400-Part S, 2011
- National School Infrastructure norms, 2009
- DBE-Regulations relating to minimum uniform norms and standards for public school infrastructure, 2013
- Environmental Access Guide, 2009

The National building regulations for South Africa is comprised of two parts:

- National Building Regulations and Building Standards Act (Act 103 of 1977 that has been amended several times, more recently in 2008)

- Individual standards in South African Bureau of Standards, SANS 10400 (2011), form a body of knowledge that guides the industry on how to apply the South African Building Regulations.

South African Building Regulations (South African Bureau of Standards, SANS 10400, 2011)

In 2008, there were significant changes to the national building regulations of South Africa. South African Bureau of Standards, SANS 10400 was published in May 2008, and this replaced the previous South African Bureu of Standards 0400. The main reasons for the change were as follows:

The South African Bureau of Standards, 0400 contained 'deemed-to-satisfy' rules, which were NOT legislated requirements.

The regulations were revised to accommodate the newly restructured local municipality frameworks.

With the South African Bureau of Standards, SANS 10400 (2011), came "Part S' which specifically deals with the design of facilities for people with disabilities.

The Application of the National building regulations, South African Bureau of Standards, SANS 10400- Part S, 2011.

The regulation is written in technical terms and is aimed primarily at professionals in the built environment, most especially architects. The implementation of the regulations and appropriate design and detailing is a technical exercise that takes into account numerous factors such as the schedule of accommodation (number of students, facilities, etc.), budget, technical characteristics, social characteristics, coordination of services. It also covers building elements such as the entrances, lifts, handrails, assistive devices, ramps, and fire protection requirements. In

addition, the regulations note the requirements for parking sizes, locations, and the path of travel between spaces.

The provision of Part S as a stand-alone document is problematic in that the minimum sizes in SANS Part S is differenrent to the minimum standard of other parts of SANS, for example, the maximum riser permitted for a part S staircase is 200mm. Whereas it is 170mm in part M.This contradictory information makes it difficult to implement and regulate one standard.

National School Infrastructure norms, 2009

This guideline was written in response to sector policies that require physical learning and teaching environments that facilitate the vision of the policies. Previously, there was no norm or standard that applied to teaching environments in South Africa. From page 18, this document outlines the planning considerations for school design. It describes the selection of site conditions and sets out the planning ratios and sizes for consideration. Technical descriptions are given for specific items, such as classroom sizes. And table outline minimum and maximum sizes. The technical nature of the guidelines leaves room for misinterpretation as the lack of drawings makes it impossible to ensure understanding of the information. The intention of the Department of education was that these norms would be replaced in 2010 (Department of Education, 2009)

DBE-Regulations relating to minimum uniform norms and standards for public school infrastructure 2013

This guideline is a formalised representation of the norms and standards referenced above. There are no drawings in this document, which could be used to clarify technical requirements. Technical specifications can be used by a built environment specialist for design purposes; however, the stakeholders and

project leaders may be completely unaware of what the finished product looks like, and therefore could not tell if there were major problems.

The gap in literature on the topic of regulations and guidelines show that although SANS part S specifies the requirements for people with disabilities, and the Department of Education guidelines start to make specific recommendations for the design of schools, there is no national regulation that applies specifically to inclusive education, which gives sufficient detail on the technical requirements thereof.

> *Despite the fact that education is a universal human right, being denied access to school is common for the world's 93 million children with disabilities. In some of the world's poorest countries, up to 95% of children with disabilities are out of school. A combination of discrimination, lack of training in inclusive teaching methods among teachers, and a lack of accessible schools leave this group uniquely vulnerable to being denied their right to education. The rate at which students with disabilities aren't attending school is not much lower in developed countries, at 90%. (Rueckert, 2019)*

The citation above identifies the three main barriers to inclusive education as:

- discrimination,
- lack of training in inclusive education, and
- lack of accessible schools.

The UNESCO GEM 2016 report notes the need for countries to set minimum standards on school designs to ensure accessible environments, buildings, and transport systems. UNESCO has also designed a rating tool to assess the accessibility of schools, and this tool specifically covers physical accessibility. A similar tool is used in this research.

2.2.9 How Architecture influences children's development

Many articles describe architecture as a balance between the specific needs of the building users with the legislations, the project budget, and the technical and construction needs required by specialized fittings and fixtures. Described by Zaha Hadid, a legendary architect of the 21st century: "I don't think that architecture is only about shelter, is only about a very simple enclosure. It should be able to excite you, to calm you, to make you think"(Hadid, Z). This starts to paint a picture of what the built environment can do, over and above serving its primary function, which is to provide shelter, safety, and warmth to its inhabitants.

For a person with a disability, moving through spaces that have been designed without inclusion in mind can pose various challenges. For a person with visual disabilities, the use of colour and materials can either enhance or confuse the senses. For example, the excessive use of glass on building facades can cause disturbing amounts of glare and reflection. When people with visual disabilities experience spaces designed for the fully sighted, they then use their olfactory, tactile, and acoustic senses to understand a place.

The main goal, when designing buildings, is to create a dialogue between the building and the end-user. The spatial design and the choice of materials and textures all play a role in guiding people through an environment. Traditionally, the five main senses are sight, hearing, touch, taste, and smell. Architecture is primarily directed at the sense of sight. Architectural design often aims to excite and delight the sense of sight. Visual stimulation can also stimulate other senses in the body. While vision is directional and isolates an experience, the sound is omnidirectional and integrates experiences. Both sight and sound can create atmospheres in space, from intimate spaces to monumental spaces, inviting spaces to restricted spaces, and even formal spaces to informal spaces.

When looking at inclusion, “there are buildings and spaces which are specifically for children and these should be designed to positively influence them and their progress as they learn about themselves, life and their surroundings (Mistrey, 2011: 22). Numerous studies have demonstrated the need for children with disabilities to learn, play and grow in inclusive environments. Mitasha Mistrey’s research into architectural psychology uses case studies to “gain an understanding of the relationship between the environment and people, in order to understand the existing conditions on-site and to analyse what works and what does not.” (Mistrey, 2011: 14).

Research by Jessica Werbeach notes the difficulty in creating environments for people with different needs when she states that “The needs of diverse individuals are not easily generalized, but they do prove to be, in many ways, architectural”. (Werbeach, 2017: ii). From this, it can be seen that architecture should not only comply with minimum standards but should be used to influence the thoughts, actions, and emotions of its users.
The three architectural concepts that are further explored below are:

Topic 1: Scale and Hierarchy of space
Topic 2: Sensory Architecture
Topic 3: The spaces between buildings – play areas.

Topic 1: Scale and Hierarchy of space

Scale, in architectural terms, describes the relationship between buildings and the human body, and this relationship guides the design process to ensure that the needs of the end-users are catered for, into every detail of the building’s design

and specification in terms of fittings and fixtures. In dealing with a primary school, scale plays a vital role in attempting to keep children comfortable and secure in their environment. Children experience life from lower eye level and a smaller scale. They also experience difficulties in reaching door handles, washbasins, etc. If an environment is designed in a way that creates difficulties for children to perform routine daily tasks, this could result in a child feeling insecure and unconfident.

Similarly, children who are wheelchair users experience difficulties if the issue of scale is not addressed. The height of the space could also contribute to the emotional reaction of a child. An ample open space, with no boundaries, could be quite overwhelming for a little child; however, if this open space was treated appropriately, with low scale fixtures to which the child can relate, the same space could offer a myriad of opportunities.

Architecture also uses scale to create a hierarchy of spaces that lead a person from one area to the next. Bigger, higher, more open and accessible spaces are usually at the entrance, with narrower passages, pathways, and corridors, leading to the more private spaces. Designs should show a clear linkage of spaces both physically and visually. Clear pathways allow a person to find their way from one space to the next easily and using colour to group different areas could help with orientation and wayfinding.

Spaces should vary in scale according to the activity that occurs within the space. In the classroom, where the teacher is in control, and there is a large number of people in a contained space, the dimensions of the space should allow smooth movement, while at the same time, should reflect a smaller community, within a larger one. The students of each class could develop a bond between each other and treat each other as their family away from home, where the teacher becomes the head or parent. In the play areas, however, the children should have an

environment that is designed specifically for them, where the teachers or caregivers could observe them, but would not be able to move freely within the play structures. Dattner's adventure playground (Dattner, 1969:65-91) provides play structures that allow adults access; however, the scale of the structures makes the adults feel almost out of place.

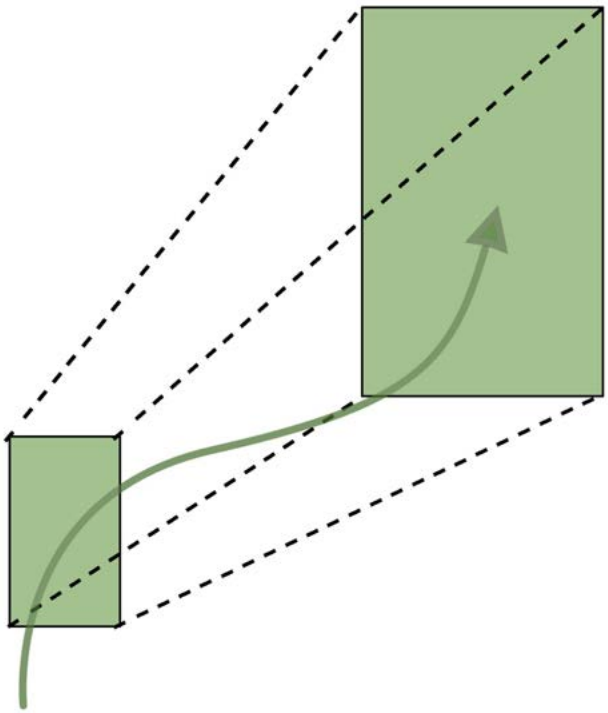


Figure 2.20. Scale & Hierarchy (Wyszkowski-Korwin, 2019)

Topic 2: Sensory Architecture

Sensory architecture is an approach to influencing how we experience our surroundings, including our built environment through hearing, sight, taste, touch, and movement. Mistrey's research has a deep focus on the psychology of space, sensory architecture and the post-structuralist learnings that ensures that the end-users experience is well planned and executed within the built environment. Mistrey writes of memories that are always linked to a place. The context, mood and so many other factors are influenced by the building or area in which that event occurs (Mistrey, 2011). It talks about the role of architecture as

more than just the creation of an enclosure, but also as an instrument that affects the social, psychological and educational development of children.

The sense of smell directly influences memories of places. Every space has a characteristic smell that could linger, hang heavily, or gush past. Materials chosen for finishes, cleaning agents such as furniture polish, and the integration of certain plants all add to the olfactory sensory experience. Smell presents an excellent tool for identifying spaces. The tactile sense of touch can most successfully create a connection between the body and the world around it. The skin is capable of reading texture, temperature, density, and weight. Light and colour can be felt against the skin, and certain colours reflect or absorb light, which creates a change in the temperature of a surface. Raw materials add a textural quality that connects a person to nature.

These concepts are used to enhance the experience of an inhabitant in a building. The designer has the responsibility of guiding a person through the different spaces, and with the use of sensory and tactile indicators, these transitions can be made much more clearly.

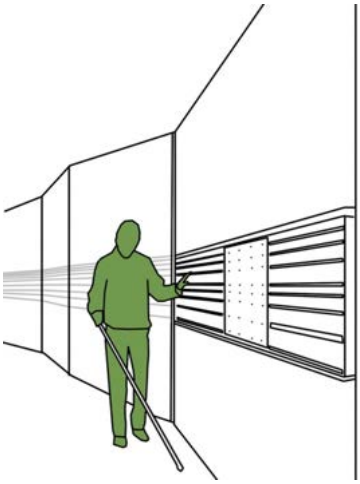


Figure 2.21. Sensory Architecture (Wyszkowski-Korwin, 2019)

Topic 3: The spaces between buildings – play areas

Play forms the central focus of a child's life. Through play, children learn, make friends, and nurture their creativity. Different cultural norms are transmitted to the child, whether these be negative or positive. The children accept morals and values without question. In a school environment, with a fully inclusive and integrated population, children can be taught to play with each other without discrimination. Playgrounds are spaces between buildings where fantasy takes over as children act out their imaginations. It is where children go to do the opposite of schoolwork in order to create a balance in their daily activities. It is playing that forms the central focus of a child's life, and through playing, children learn, make friends, and nurture their creativity.

Play is, therefore, a social factor that represents the desired regulations of society in miniature. Therefore, it is essential to create environments that would both discourage discrimination and encourage the essential values and nurture the highest aspirations of society. A well-designed playground is especially crucial to children with disabilities whose needs are much higher than that of a child without disabilities. According to research by Dattner, although children with disabilities do face obstacles on the playground, they mostly play identically to that of children without disabilities, whereby play is used for the same function and creates the same enjoyment. (Dattner, 1969). However, children with special needs require playgrounds that are designed to cater to the various problems which they would encounter safely. Furthermore, these playgrounds need to respond to their healthy capabilities in order to encourage growth and development physically, mentally, and socially.

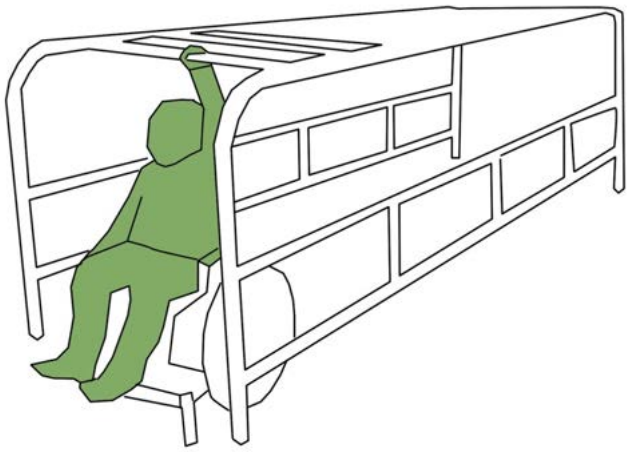


Figure 2.22. Play (Wyszkowski-Korwin, 2019)

While architecture may not solve all the issues arising from the implementation of inclusive education, it can help mitigate them. “By developing a comprehensive, versatile, behavior-and need-specific set of spatial strategies and demonstrating their implementation in an existing early childhood academic setting in conjunction with the tactful integration of ancillary programmatic elements, it will become apparent that architectural intervention can play an essential role in the reinforcement of teaching strategy and the catalysis of educational efficacy.” (Werbeach, 2017: 3). The architectural approach would be to unpack existing problems, analyse and test different theories and find fit for purpose design solutions. Part of the research work involved would include looking at precedent.

2.2.10 Precedent Study



Figure 2.23. Birds-eye view of Hazelwood School. Photo courtesy of Alan Dunlop Architects. https://aasarchitecture.com/2016/09/hazelwood-school-glasgow-alan-dunlop-architect.html/ (accessed 12-12-2019)

Building name: The Hazelwood School

Location: Glasgow, Scotland

Architect: Alan Dunlop

Year: 2004 - 2008

The Hazelwood school, located in Glasgow, contains innovative facilities that successfully cater for 54 students with a range of disabilities – namely visual, hearing, mobility and cognitive impairments (unknown, 2016). One of the biggest drivers of the building was to allow for children with disabilities to feel a sense of independence. The building's facilities, materials, layout and intuitive design allowed for children to navigate effectively, avoid unnecessary assistance in corridors, bathrooms, thresholds and play areas, and ultimately enforce confidence in the individual children. Although the school is categorised to cater for severe and highly complex needs (aasarchitecture, n.d.), the dramatically

improved physical environment allows the staff to teach and navigate school life focussing on emotional, social and intellectual needs of the children.

Specific aspects of the building allowed the building and its occupants to function optimally. Dunlop stated that “even the smallest feature of the architecture could also be conceived as a learning aid”. Toilet layouts and sanitary fittings chosen to assist in complete independence, but also educate children of a variety of toilet types they may come across in other circumstances. The building layout eliminated, as far as possible, long, dark corridors, and rather brought in natural daylight through clerestory windows and full visual panel windows in between classrooms, allowing even natural light and visual cues to assist in navigation. Rails and visual and tactile cues are placed along the floors and walls to accommodate for low visual impairments. ‘Rail trails’ along all walls allow for clues of location and direction within the buildings (Dunlop, n.d.).

The cork walls, which provide a sense of warmth and safety in a tactile surface, also damp excessive noise that may travel within corridors, to assist children with cognitive and hearing disabilities. The classrooms themselves, located on the quiet northern edge of the building, are also lit by clerestory windows - storage boxes block off unnecessary external stimulation in the classroom environment, allowing for concentration levels to remain constant and for classroom items to be efficiently packed away (aasarchitecture, n.d).



Figure 2.24. Leading corridors with sensory design applications.



Figure 2.25. Play with scale and Light.

Photos courtesy of Alan Dunlop Architects. https://aasarchitecture.com/2016/09/hazelwood-school-glasgow-alan-dunlop-architect.html/ (accessed 12-12-2019)

With the sensory experience being such a vital part of the building, materiality played a big role. The wood chosen for the structure has a particularly defined grain, while slate and zinc external tiles provided different tactile and visual qualities. The building also allowed for as much outdoor access as possible away from the classrooms themselves. The sensory experience of outdoor space can be seen as a critical part of a child's wellbeing, especially when certain senses are deprived (Dunlop, n.d.). Soft and light play areas are accommodated, with varying private and social environments to suit every child's need.



Figure 2.26. Site plan of Hazelwood school in Glasgow (Dunlop, n.d.)

2.2.12. Full-service schools in South Africa

The current global status on disabilities finds its place somewhere between a world that was built on segregation and a new world that is fighting to ensure freedom, equality, and accessibility for all its people. This study was conducted in South Africa, where the current legal system governing education and schools, specifically requires inclusive education at the forefront of all developmental strategies.

The full-service school concept, adapted from the inclusion strategy set out in White paper 6 fits into a 'Continuum of Support' (Du Plessis, 2013).

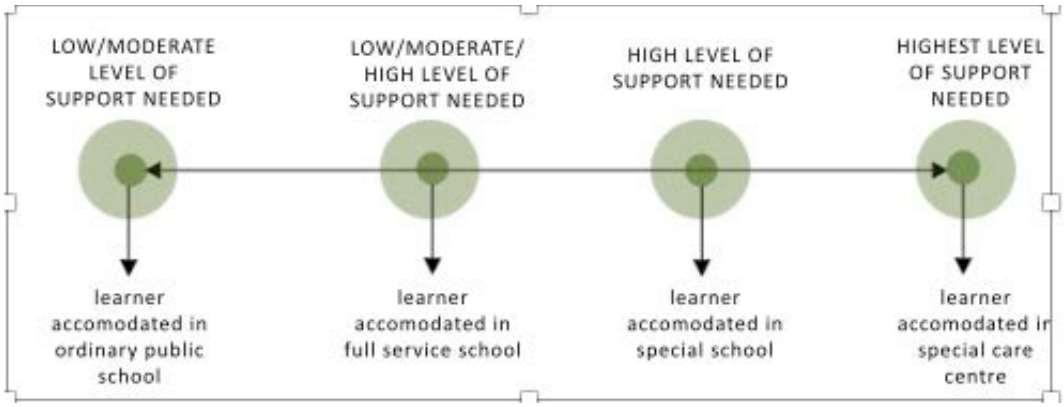


Figure 2.27. Full-service school continuum of support

Adapted from Du Plessis, 2013. (Wyszkowski-Korwin, 2019)

The four categories of schools are as follows:

- Ordinary Public Schools: Accommodates learners requiring low to moderate levels of support.
- Full-Service Schools: Accommodates learners requiring low, moderate, and high levels of support
- Special Schools and Resource Centre's: Accommodating learners requiring high levels of support
- Special Care Centre's: Accommodating learners requiring the highest level of support.

The strategy aims at creating a network of support for all categories of schools that become interrelated and interdependent. The roll-out of this plan included:

1. The initiation of advocacy and awareness campaigns on inclusive education
2. The conversion of special schools into resource centres
3. The conversion/ establishment of full-service schools that would demonstrate the holistic approach to inclusive education, including the physical improvements made to the infrastructure.
4. The establishment of district-based support and institutional support teams
5. The introduction of formal support structures made up of management bodies, professional staff, training, and early identification procedures.
6. The intention to mobilise 300'000 children with disabilities, who were outside the school system. (Department of Education, 2001)

This research deals with strategy 3, which sets out the vision, plan, and approach to converting existing mainstream schools into full-service schools. The perspective for this study differs from most other studies conducted on this topic in that the primary focus of this study is on the physical environment, and not on the organization, management and skills development perspective.

The Department of Education saw the Full-Service School as a flagship for inclusive education. (Du Plessis, 2013). With the conversion of four existing mainstream schools, the example would be set for other schools to learn from. The success of getting this model implemented correctly would determine the way forward with the roll-out of the remaining schools targeted by the full-service school strategy. In an Inclusive Education and Special Education Progress report presented by the Department of Basic Education (Department of Basic Education, 2017), it was stated that there are 715 schools registered as full-service schools in South Africa. In Gauteng, 19 schools had been designated as full-service schools.

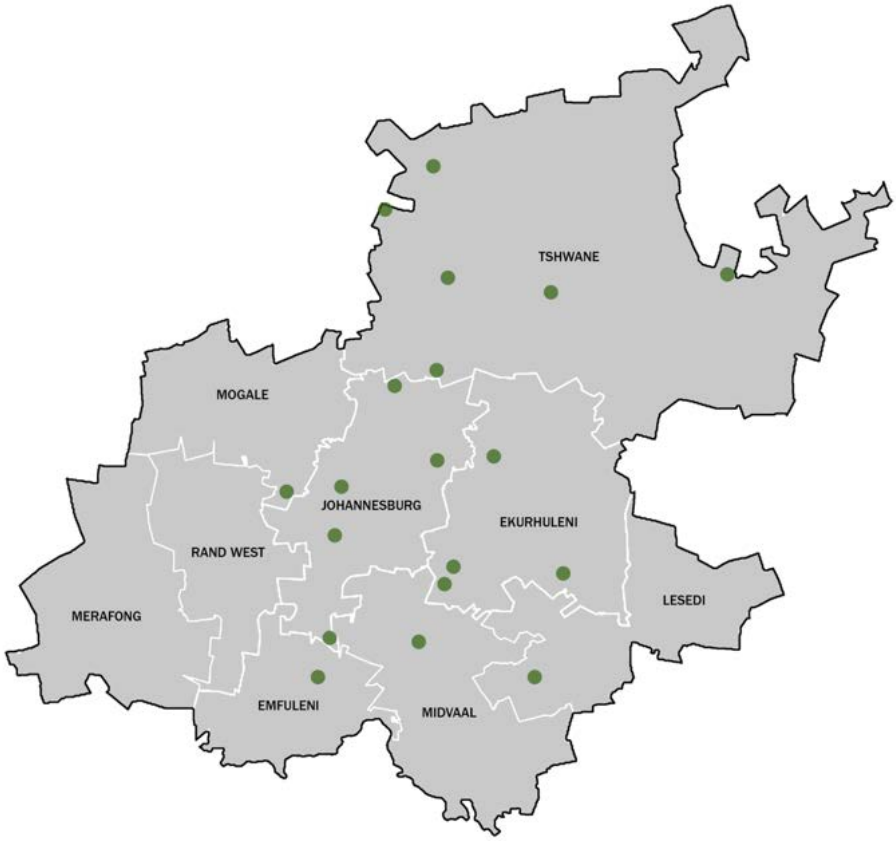


Figure 2.28. Full-service schools in Gauteng (Wyszkowski-Korwin, 2019)

Figure 2.25 above indicates the locality of the 19 full-service schools identified in the Gauteng Department of Education policy on the configuration and establishment of full-service and special schools as resource centres (Gauteng Department of Education, 2015). Of these 19 schools, 4 schools were selected to be converted into Full-service schools in 2008 (Gauteng Department of Education, 2015). The research has been conducted on these 4 schools.

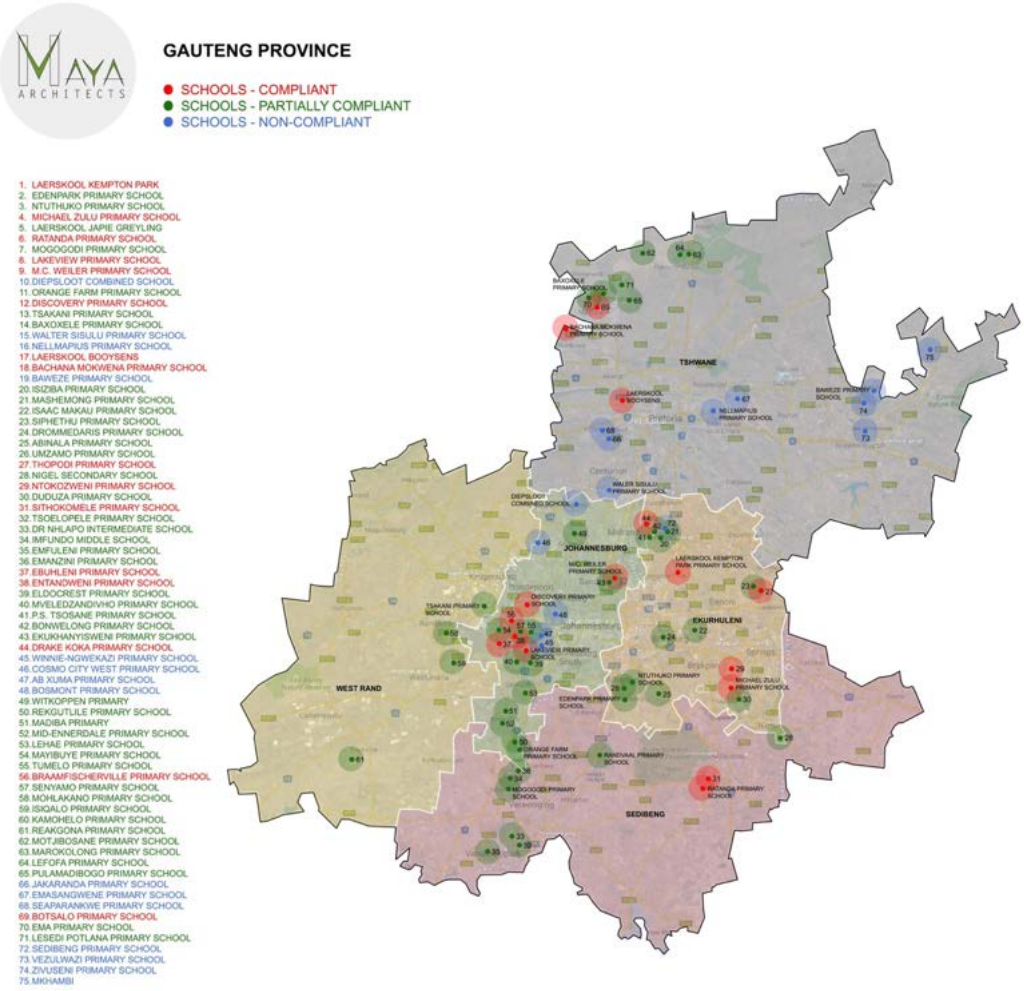


Figure 2.29. Full-service schools mapping study (Wyszkowski-Korwin, 2019)

Figure 2.26 above shows the mapping study conducted using a number of different lists of schools that have been categorised according to accessibility. The true status of these schools are yet to be measured in order to verify the current status of all schools that have been categorised as full-service schools.

2.2.12 Conclusion

History has demonstrated that there has been minimal concern regarding the social, political, and economic position of people with disabilities who have had to face exclusion from mainstream life. This has had major psychological impacts on

the way that they were seen, not as individuals, but rather as a group of people who were 'disabled.' Because of this approach, it was difficult to define what disability meant in the past.

"To date, it is still uncommon to find learners living with physical disabilities in mainstream schools. Which is a clear indication that there is still a lot of change that needs to happen. Changing policies is not the only factor that influences change in schools or any other institution. Education White paper 6 acknowledges that disability is a site for discrimination and that there are still environmental barriers that prevent people living with disabilities from fully participating in society." (Mphanda, 2018: 12)

Although the legislative framework is extensive and the point of inclusive education being at the forefront of infrastructure development has become mandatory, the tools for the correct understanding of the current physical accessibility status of 'transformed' schools seem to be missing. Although there are numerous policies and guidelines, there lacks practical information on what the building transformations would entail. Furthermore, all information on the topic is fragmented, including statistics that show slow progress towards inclusive education in South Africa.

Although the literature presents information on various aspects of inclusive education, this study focusses on the built environment and on understanding how inclusive education can be affected by architecture. As stated by Jessica Werbeach (2017), "The information used to dictate design must be a result of the synthesis of these three bodies of information- those of special education, early childhood education, and educational architecture. Because this synthesis implies a body of knowledge that does not currently exist, it will be important to support conjecture through observation and data collected from experienced educators and architects." (Werbeach, 2017:

3. RESEARCH METHODOLOGY

This chapter explains how the research method was designed based on the outcomes of the literature study and the research questions generated. An architectural study of the built environment usually provides a range of text and graphic information that can be systematically collected, analysed, reported on, and used to understand the problem statement. This information can then be used to support the architectural design of inclusive school environments in South Africa.

3.1 The scope of this study

3.1.1. The problem statement

The findings from the literature study provided the research with a clear problem statement as follows:

It became evident that there was a disconnection between the legislative changes intended to promote a fully inclusive school environment and the transformation of the built environment that should have resulted from this legislation to realise this in practice.

This problem statement directly translates into the research questions below.

3.1.2. Research Questions

Before proceeding with the design of the qualitative research process, the research questions were defined in order to create the first set of study boundaries. “While you are considering what your research question will be, you must also consider what the case is.” (Baxter & Jack, 2008: 545).
The case is further defined as the “unit of analysis” (Miles and Huberman, 1994: 25). In this study, the aim was to investigate the success with which the policy of

access in full-service schools had been implemented, and what the hindrances might be. The case would be the measurement of physical accessibility and the decision-making factors that determined the results. The research questions were:

1. Are full-service schools that were "transformed" to provide physical access to education, actually accessible to learners with physical disabilities?
2. What are the factors that affect this outcome?

With the research questions defined, it was possible to plan the research methodology.

3.2 The research approach

To further investigate the problem statement, it was necessary to investigate the causes of the outcomes. Because the problems occur in the built environment, an architectural study was conducted. It was necessary to investigate the physical environment of schools that had implemented universal access interventions to do this. Before questioning "why" this outcome presented itself, it was essential to define the context of the study and test the conditions on-site against the building standards applicable to a full-service school in South Africa. This immediately meant that fieldwork would be required to measure the accessibility of the school environments. Through the literature review, the recommendation for accessibility audits came up in the Guidelines for Full-Service Schools, 2010, wherein clause 12.1 states "*that the school should carry out a full access audit of the building and school grounds, involving the learners*." (Department of Basic Education, 2010

An access audit is a specialist service that should be carried out by a professional such as an architect or an access consultant. "Access audits identify elements of a school environment that may cause barriers to its use and suggest how these could be improved." (National Disability Authority, 2012). Access audits are

measured indicators of the various architectural elements that enable or disable users. Access assessments are used to evaluate the physical accessibility of the environment as experienced by people with disabilities and are meant to cover various different types of disabilities. This information usually translates into a report giving the designer (and client) an accurate reflection of the status of accessibility in the built environment, as well as recommendations on how to increase the accessibility of the environment in question.

As fieldwork was being conducted, a case study approach was investigated. Yin describes a case study as an "empirical inquiry that investigates a contemporary phenomenon within its real-life context using multiple sources of evidence" (Noor, 2008: 1). A case study is an in-depth study, that, in the case of this topic, would have included:

- An analysis of the building plans
- On-site access audits
- Interviews with Head of School, teachers, parents, and children
- Observations at school, of children, staff and service providers

The first challenge was that only one school has possession of the building plans, making it difficult to conduct a complete appraisal of the compliance of the school, to minimum design standards. The second challenge to the research was the stringent ethics requirements for research involving children and the difficulties in trying to generate rich information from this age group. Due to the sensitive nature of conducting research on children with disabilities, this research did not include interviews with or observations of children. This results in a case study approach, which was applied across the four schools, facilitating the generalisability of the data.

Looking further into a case study approach, "Anderson sees case studies as being concerned with how and why things happen, allowing the investigation of

contextual realities and the difference between what was planned and what actually occurred." (Noor, 2008:1). In this study, the policies, legislations, and regulations have been studied to understand the availability of information to lead the process of transformation of the built environment of schools. The legal context of the topic outlines the legislative framework to give the research an accepted standard to measure the physical environment. It had already been established that the study aimed to enquire "why" the research showed that *It became evident that there was a disconnection between the legislative changes intended to promote a fully inclusive school environment and the transformation of the built environment that should have resulted from legislation to realise this in practice.* The contextual conditions were relevant to this study because it investigated the physical environment which is central to the focus of this research.

> "According to Yin (2008) a case study design should be considered when: (a) the focus of the study is to answer "how" and "why" questions; (b) you cannot manipulate the behaviour of those involved in the study; (c) you want to cover contextual conditions because you believe they are relevant to the phenomenon under study;" (Baxter & Jack, 2008: 545)

At this point, it was confirmed that the case study approach was appropriate, however, the question of *why* the strategies, plans and commitments did not appear to be successfully implemented, would still be unanswered through a literature review and site assessment. This gap in the research design resulted in the addition of interviews to understand the conditions that existed during the transformation process, which resulted in a mixed-methods research design. By mixing both quantitative and qualitative methods when designing research, the research is grounded in the notion that neither method is sufficient by itself. (Creswell, 2009).

3.3 A mixed methods research

"Mixed methods research is defined as a procedure for collecting, analysing, and "mixing" both quantitative and qualitative data during a single study, either concurrently or sequentially, to gain a better understanding of the research problem" (Creswell, 2009)

The aim of a quantitative study is to quantify things in order to understand an outcome, whereas the qualitative approach seeks to provide a complete, detailed description of what is being observed. (MacDonald & Headlam, 2009). The aim of this study is to understand why the implementation strategies did not meet the milestones of inclusive education efforts in South Africa.

A quantitative study seeks to provide generalisability, prediction and causal explanations. (MacDonald & Headlam, 2009). This is relevant to the access audits and the interview data collected from the 4 schools. The data was generalised, checked for predictability and reported on in terms of causal explanations.

3.5 The research design

To this point, it had been established that:

- The research would be planned to use a case study approach
- A mixed-method would be designed
- Fieldwork in the form of access audits would be conducted
- Interviews would be conducted

The following sub-sections describe the process followed to define the context, boundaries, type of case study, population, sample, restrictions, and permissions related to the study.

3.5.1. Binding the case

"One of the common pitfalls associated with case study is that there is a tendency for researchers to attempt to answer a question that is too broad,
or a topic that has too many objectives for one study" (Baxter & Jack, 2008: 546)
With a topic focused on children, physical disabilities, and access to education, the field of study is vast. The following are a list of defined boundaries created for this research:
The study would be based on South African primary schools.
The study covers the suitability of the adaptations to the built environment for children with physical disabilities.
It excludes intellectual and cognitive disabilities due to the specialised nature of the study.
The study focusses on public schools that have been participants in the transformation strategy rolled out by the South African government via the Department of Education.

3.5.2. Type of case study

According to Baxter and Jack, once a qualitative case study has been chosen, the type of case study should be selected. A descriptive study is a "used to describe an intervention or phenomenon and the real-life context in which it occurred (Yin, 2008; Baxter & Jack, 2008: 548). This is definitely true of different school environments, where each school would receive similar interventions, but would be built based on numerous different variables such as budget, location, size of the land, and slope of the land. For this reason, it was decided that a descriptive, multiple case study would be used so that the results could be measured and then compared. It is also a cross-sectional study "involving the collection of data

from a defined population over a short or single period of time." (Lukas, 2016: 192)

3.5.3. Population

The population of interest in this study includes all primary educational institutions globally. The South African legislative framework was investigated to contextualise the study. This created the first boundary to the case study selection process. The legislation directed the research towards the public-school sector which was the focus of the full-service school inclusion strategy. The nature of qualitative study results in the output data being "in the form of words, pictures or objects" (MacDonald & Headlam, 2009:8). This requires an interpretive data analysis method. The depth of the research required a smaller sample that could be representative of the specific needs of the population and could be thoroughly investigated.

3.5.4. Sampling

According to statistics published by the Department of Basic Education (2015), in a Report on the Implementation of Education White Paper 6, the number of full-service schools in South Africa was quoted as 793 (Department of Basic Education, 2015: 17). Maria Mayan writes that "If you want to study context, analysis must be in-depth and focused on only a small sample or a few individuals' situations" (Mayan, 2016:11). As this study required the physical assessment of school environments, convenience sampling was used to select Gauteng as a second boundary to the study, as this study was completed in Gauteng, and this gave the researcher easier access to the schools. Further to the statistics quoted above, 74 full-service schools were located in Gauteng (DBE, 2015: 16).
Of these 74 schools, 19 had been earmarked by the department of education in Gauteng for the Fully Inclusive School Strategy. (Ref). Within this sub-sample, the

architectural focus of the study deemed it relevant to select schools that had either undergone the building transformation process or had been built to be inclusive and were actively classified by the Department of Education as Full-service schools. A telephonic survey was conducted on these 19 schools, to check which schools had been participants of the FSS transformation Strategy and had undergone renovations to the physical environments. Four of the schools that had been contacted had been participants in the FSS transformation strategy and were awarded funding for the physical changes to the built environment that was dedicated to inclusive education as well as all other related needs such as teacher training, vehicles, and learning material. All four schools were included in this study, making this a 100% sample in the local region at the time of the study.

3.5.5 Key Informants

The selection of the interviewee was the next challenge. Ideally, the school principals would have been the preferred key informants as they would have the relevant information regarding challenges and successes, processes and plans for transformation, support structures in place, as well as valuable experience on the topic of inclusion. At two of the four schools, the principals were interviewed. In the case of one school, the principal was unavailable and was represented by two specialist teachers who were part of the transformation strategy implementation. In the fourth case, the Deputy Head of School was interviewed. All four interviewees were a part of the school structure at the time of the renovations, were well conversant in English, and were eager to partake in the study.

3.5.6 Ethical considerations

With the use of interviews in collecting data and the sensitive nature of disabilities and children, an ethics clearance application was made to the University of the Witwatersrand Human Research Ethics Committee and met the requirements and

standards and achieved a clearance certificate, as well as the approval from the Gauteng Department of Education for conducting of the research (see appendix 1: Approvals for study). This research was conducted in a manner that was respectful and considerate of the human rights and dignity of all. Furthermore, careful consideration was given to the confidentiality rights of the participants, whereby information gained from the interviews was coded using an alphabetical key namely: School A, School B, School C and School D.

Information was not shared between schools, and the participants were aware of their rights to partake or decline to partake in the study. In terms of the informed consent requirement, the researcher ensured that all requirements and details of the interview were explained clearly (see appendix 2: Interview sheets). Anonymity was clearly explained and maintained in the publication of this research. All four informants were willing to speak on the topic of their transformation strategy.

3.5.7 Summary

The mixed methods, multiple, cross-sectional case study approach was designed to give the research a comprehensive insight into the cases and to compare the results. It also created the opportunity to "collect and analyse data from multiple sources, which were then converged to illuminate the case." (Baxter & Jack, 2008: 556). This method is applied to the study in the data analysis chapter.

3.6 Data generation

Data generation has been chosen as the heading of this chapter in line with the thinking of Maria Mayan who believes that "Referring to data as being collected implies that "data pre-exist, ready to be picked like apples from a tree" (Mayan,2009: 26). By conducting interviews and site assessments, tools are

designed to create the data that is then analysed. In line with this thinking, Ray Lucas defines qualitative research methodology as the design of "a set of practical and pragmatic activities that allow you to ask the relevant questions and achieve some robust conclusions" (Lucas, 2016: 36)

The following subchapters summarise the design of the data generation tools in line with the relevant data sources, describes the data management process, and prepares the reader for the data analysis report.

3.6.1 Data sources

According to Maria Mayan, "Qualitative data are found in various empirical sources (movement, image, text, sound, etc.)." (Mayan, 2016: 11). The sources used for this study are as follows.

Drawings

In this study, only one of the four schools had possession of drawings of the school. This also poses a massive concern for fire compliance, as noted below in the Discussion chapter. In the absence of plans, google earth images were used to get an idea of the site layout and conditions.

Universal access audit form

As a practicing Architect, the aim was to ensure that there was no bias in creating the tools for the study. An international, universal design assessment format was used, and each element was measured on-site, in line with the audit form questions. A desktop study was conducted on global universal access auditing practices to find an appropriate, pre-existing audit form. Direct Access is a company that was started in 2004 and comprised of universal design specialists, based in the United Kingdom. This company had been conducting work on some of the most "iconic construction projects, UNESCO world heritage sites and major transport infrastructure" (directaccessuk.com). Their experience in

the schooling sector of universal access spanned thirteen years. Their audit sheet used was available online at the time, and this was reviewed for its relevance to this research. The audit sheet was found to be simple to understand and implement. Mr. Steven Mifsud, director of Direct access, was contacted for permission to use the audit sheet, and this request was accepted via email, with the proviso that the source would be referenced. See appendix 4 for the Audit template used for this study.

Interview 1

The initial interview format took the form of semi-structured interviews with the interviewees at each of the four schools selected. Semi-structured interviews (see appendix 2) were chosen in order to follow a set framework whilst allowing for flexibility whereby the interviewer could develop the interview according to the answers received and thereby formulate themes and issues as they arise. (MacDonald and Headlam, 2009). This study was intended to gain insight into the experiences and recommendations of these interviewees. The results showed that the data generated from this approach, although useful, did not answer the emergent questions raised by the results of the access assessment.

A combination of both interview questions probed into the factors that influenced the built environment changes that were made. The questions also led the participants to talk about the responsiveness to the changes in the built environment, from an educator's perspective. Other questions included how successful the inclusion strategy has been in terms of the individual children with disabilities and the overall social effects that had been observed. Questions led to discussions about the challenges experienced, the prevalence of bullying, and accommodation of children with physical disabilities in sporting fixtures and on the playgrounds. The final questions were directed at the usability of the support structure of resource schools that have been built for the implementation of the inclusion strategy.

3.6.2 Preparation for fieldwork

Architectural fieldwork, as described by Ray Lukas in his book, Research Methods for Architecture, requires planning. “Visiting a site requires preparation ahead of the journey: gathering information about the social, political and historical context is a worthwhile exercise” (Lukas, 2016: 73). In light of this approach, a desktop study was conducted on the four schools by means of internet searches. The school websites were the first source of data, as this is a platform for schools to showcase the initiatives and achievements attained. It also provided an indication of the school’s values, vision and belief systems. This data was reviewed at the time of data analysis and has been referenced in the chapter 5: Discussion.

In preparation for the access audits, the audit format was reviewed to understand the tools of the architectural trade required. A measuring tape and laser measuring device was used for verification of dimensions on site. The gradient of ramps was measured with the level function of the iPhone compass application. The accuracy was checked by testing the results between the iPhone application and a traditional spirit level. Photographic evidence was collected via the same iPhone camera application. The photographs were taken by the researcher in a manner that is sensitive to the ethical considerations of anonymity. Care has been taken to avoid/ remove/ conceal any identifying features of the relevant school.

In preparation for the interviews, the questions were read and possible requests for clarification were considered. The iPhone voice note application was used to record all interviews to ensure that no information was lost.

3.6.3 Arrangements for fieldwork

Once the tools and processes for fieldwork were clearly planned, meetings were arranged with the interviewees for the fieldwork. At this stage, it was decided that triangulation would be implemented for the verification of the results of the assessment. Hiten Bawa of Studio HB is a registered architect and access consultant based in Johannesburg, and a good colleague of the researcher. Hiten had audited a number of buildings for the University of Johannesburg, University of the Witwatersrand, and the Department of Higher Education and Training (DHET). His aim is to transform the built environment into an inclusive and accessible environment for as broad a spectrum of people as possible and is a specialist on the topic. The first universal access assessment was conducted in parallel with Mr. Bawa. Further details on the triangulation can be found in section 3.10 Trustworthiness.

3.7 Fieldwork

Upon meeting the Interviewee, the research study was briefly explained, the consent forms were explained, and all Interviewees signed both the participation consent and the recording consent. Before the interview began, the researcher requested as-built plans for the school, as this is a legislated requirement for all buildings in South Africa. Only one of the four schools had a copy of their school plans. The remaining three plans were then searched for at the relevant local municipal council, and this was unsuccessful. Therefore, a comprehensive compliance assessment of the school property could not be included in this study.

The data collection process was then conducted in three parts as follows:

1. Interviews:

   The 20-minute interview was conducted, and data was stored in the dedicated, password-protected folder on the researcher's personal phone temporarily.

The second interview was conducted telephonically after the first set of data were analysed.

2. Universal access assessment:
   The physical assessment was conducted directly after the interview. All questions were answered manually on the paper forms. Photos were taken in the relevant positions in order to strengthen the verification and reporting functions.

3.8 Data Management

All information was collected and stored within a password protected, referenced folder on the researcher's personal computer. The coding system used for storage and reference is as follows: the schools were labelled in alphabetical order from A to D. The Interviewees were then labeled according.

IA = Interviewee from school A (The school Principal)

IB = Interviewee from school B (The school Head of Department)

IC = Interviewee from school C (The school Principal)

ID = Interviewee from school D (A specialist support teacher)

The interview sheets, with notes from the interview, were scanned and saved electronically. The voice notes were downloaded and saved electronically. All data were stored on a dedicated hard drive in an encrypted folder, with access only given to the researcher. A second copy of the information was stored on the researchers' personal desktop, which is password controlled. Before data analysis began, the voice notes were reviewed to check for mention of the school's name or other information that could compromise anonymity. Once this was verified, the voice notes were sent to a transcriber for direct transcription.

3.9 Data Analysis

Data analysis involved careful planning of the steps followed when sorting, categorising, prioritising, interpreting, summarising, comparing, and reporting the data. This process was intended to result in a comprehensive summary of the study that leads to a meaningful discussion of the topic. Maria Mayan writes that content analysis is the best analytical technique for a descriptive or exploratory qualitative study. (Mayan, 2016). Mayan further explains the difference between 'manifest' content and latent content analysis. A manifest content analysis uses a system of counting the number of times words or ideas are used in the content of the data. These numbers generate statistics that are then analysed. A latent content analysis uses a system of sorting, coding and categorising the patterns that are found in the data (Mayan, 2016). This study explores the underlying meaning of the data. The interpretive nature of the interviews and the opportunity to code a participant's intent within a context (Mayan, 2016), leads the research towards a latent content analysis.

Through the access assessments, the physical building elements were checked and measured on site. Notes were made regarding the appropriateness of the building solution in relation to the site context. Thoughts were noted regarding potential risks and possible rectification of the issues. This process supported the use of latent content analysis. This data was then expanded with the inclusion of the South African National Standards (SANS part S), and the National Disability Authority's' guidelines: Improving the Accessibility of School buildings (NDA: 2012). This analysis provided insight on the difference between international standards and South African standards.

Before the analysis began, the transcribed interviews were read, checked for discrepancies between the recordings and researchers notes, and was then ready for reporting.

3.6.1. Method of data analysis for interviews

Coding and sorting the data

The method for data analysis was adapted from Maria Mayans' description of content analysis, which starts with coding the data (Mayan, 2016). Each interview was individually read and subsequently reread with highlighting added to any data that was "striking" (Mayan, 2016: 94).

The next step involved categorising the data according to similar outcomes. This was again done individually for each interview. There were nineteen categories that emerged across all four interviews at the first attempt. Maria Mayan recommends limiting the categories to ten to twelve, and that "the researcher has to be willing to move excerpts around, relabel or dissolve categories, or develop subcategories (Mayan, 2016: 94). This process was then repeated with some of the categories joined together, and others dropped. The resulting six categories were shared across the four interviews. The data was reorganised and grouped according to these six categories.

The third step involved rereading the data to ensure that it was relevant to the category it was assigned to. At this stage, repeated data was noted and then removed. Filler words were removed, and each category was written up in a summarised format.

The fourth step looked at judging the categories by two criteria: internal and external homogeneity. For internal homogeneity, this method, prescribed by Mayan, looks for relevance in the data within each category. This is to ensure that data is allocated to the correct category and that the emerging themes are in line with the data. An external homogeneity check looked at the difference between each category, which, according to Mayan, should be bold and clear (Mayan, 2016).

Themes and conclusions

“Theming, then, is the process of determining the thread(s) that integrate and anchor all of the categories” (Mayan, 2016:97). For this step, the categories were grouped together according to a common thread that anchored the data. There were four themes that emerged. Once this vertical analysis was complete and data was arranged according to the categories with a key indicating the relevant theme, the data was then horizontally analysed across the four interviews, in the format of a comparative table.

The final step with this data focused on formulating a narrative about the interviews, which is presented in the data findings section of this dissertation and is further explored in the discussion chapter.

3.6.2. Method of data analysis for accessibility assessments

Data generated from the accessibility assessments were analysed following the procedures employed by the originator of the assessment form. The assessment form is divided into three columns. The first column describes what the auditor is looking at or measuring and asks a question that requires a yes or no answer in the form of a tick box (which is column two). Column three required a comment in response to each question and usually included a description of the current solution and or possible solutions.

The column with yes or no questions converted to quantitative data, the ‘yes’ gave a score of 2 points, and the ‘no’ gave a score of 0 points. Some questions were given a score of 1. This meant that the element met specific requirements and could function on-site, however, it still did not meet minimum standards. Answering yes to a question meant that the minimum standard for accessibility had been met, and the area/ building component complied with minimum standards in South Africa (SANS Part S). The higher the score, the more elements were found to be compliant. The schools were tallied individually, with vertical

analysis. They were then compared horizontally, looking for similarities in the outcomes. The schools were measured against each other for overall compliance under each category as measured on site. The column with comments was used for further explanation of what was seen and an indication of whether there was a possible solution that could benefit the site.
The final step with this data is presented in the data findings and discussion chapters that follow.

3.10 Limitations of the Study

Before presenting the research findings, this section describes the known limitations of the study. Limitations differ from case boundaries in that case boundaries are purposefully placed on the research, by the researcher. Limitations are regarded, in this study, as the external conditions that limit the full potential of the research.

When planning for built environment changes, it is imperative to have a set of drawings of the school in an as-built condition, in order to check for compliance with building standards and in order to plan for future changes. It is also imperative to have these plans in order to provide an updated fire evacuation plan for the school premises. As this information did not exist for three of the four schools, the research does not include a complete architectural analysis of the floor plans for compliance checking.

A considerable limitation and disadvantage are the lack of accurate numbers of children with disabilities in the country, and furthermore, the accuracy of the number of children with physical disabilities is questionable. In most statistics studied, there is no differentiation between children with intellectual disabilities and those with purely physical disabilities.

These limitations, as noted, did not prevent the researcher from conducting the fieldwork.

3.11 Trustworthiness

In order to demonstrate the steps that were taken by the researcher to validate the credibility of the study, questions are used to determine whether the findings are accurate from the standpoint of the researcher, the participant, or the reader's account (Creswell & Miller, 2000). The triangulation strategy was used to check the credibility of the findings in this study.

The triangulation of information involved the examination of the data from two sources. Section 3.6.3 refers to the first interview being conducted by the researcher and Mr. Bawa, in parallel, on site. This allowed for the synchronization of the Apple iPhone apps used to measure ramp angles and to test the timing and the understanding of the audit requirements. Results were compared at the end of the exercise to establish if there was consistency in the interpretation of the access audit procedure.

The second strategy incorporated into the research is the use of thick descriptions. “Thick description refers to the detailed account of field experiences in which the researcher makes explicit the patterns of cultural and social relationships and puts them in context” (Holloway, 1997). This research contextualises the data through the desktop study, which enabled the researcher to understand the school mission, vision, and ethos. Questions in the interview were addressed towards community involvement and support structures. This allowed the context to inform the interpretations. All four schools located nearby shared very similar contextual factors.

Thick descriptions were also used to describe the process of data collection and analysis. By explaining the steps taken, in detail, the researcher aimed to add to the validity of the research. The data, without interpretation, is presented in the next chapter, with a discussion chapter following that.

3.12 Conclusion

The mixed methods research methodology was designed to accommodate the use of technical architectural tools as well as conventional data-generating systems. The use of fieldwork was essential and, therefore, led the direction of the research design. The research methodology started with the findings of the literature review and unpacked the problem statement to determine the aims, sources of information available, population and sample selection.

Four case studies were selected, providing a 100% sample at the time of the research. The case studies were analysed vertically and were then compared horizontally through descriptive content analysis. Further queries emerged from the initial data analysis, and a second, closed, structured interview was conducted. This data is summarised in chapter 4 Data and further examined in chapter 5 Discussion.

4. RESEARCH RESULTS

In this chapter, the findings of the research are presented. The findings are the results of the data generation, management, sorting, categorising and prioritising systems as set out in the research methodology chapter above. The themes were organised in response to the research questions and have been reported accordingly.

4.1. INTERVIEW DATA

The research has presented the researcher with valuable information on the challenges, opportunities, negative, and positive outcomes of the Full-service school inclusion strategy. The data is presented in the following subchapters according to the themes that emerged as follows:

- 4.1.1. Experience, vision and unique contribution
- 4.1.2. Processes and structures
- 4.1.3. Financial strain & funding
- 4.1.4. Number of learners with disabilities
- 4.1.5. Architecture – guidelines, specifications, and illustrations

4.1.1. Experience, vision and unique contribution

All four interviewees were part of the FSS Implementation Strategy involving renovations to the built environment to accommodate learners with disabilities. All four interviewees had more than 20 years of experience in education and had played leadership roles during the FSS Implementation project.

All four interviewees were passionate about the Inclusion Strategy and spoke about independent initiatives that were spearheaded by their school management teams to contribute towards the shared vision of inclusive education. To support the implementation strategy, IA had organized meetings

and brainstorming sessions with the community members and teachers before, during, and after the FSS Implementation Strategy was implemented.

School B had focused on communication and awareness campaigns and the potential to provide essential facilities to children closer to home. School D introduced a buddy system that was working well to alleviate bullying. The second initiative at School D was assisting other schools wherever possible to strengthen the support network.

4.1.2. Processes and structures

The schools were linked to specialised resource Centre's in the district for support. The intention was to encourage collaboration, awareness and the sharing of information. Two of the four schools were involved in training, workshops, and brainstorming sessions. All four interviewees were aware of assistance and support rendered by the Resource Schools and the Department of Education.

All four schools selected for transformation went through a screening process. IA described the process of checking the compliance, policies, and leadership of the school, including the qualification and experience of the management team.

4.1.3. Financial strain & funding

The issue of financial strain was a common theme in the interviews. All four interviewees were aware that the school needed maintenance and renovations; however, they did not have additional funding to advance the school's environment further. All four interviewees invested part of the money on transport vehicles, ramps, handrails, and paraplegic toilets.

The issue of overcrowding in the classrooms was of concern by all four interviewees. School C had new, bigger classrooms built; however, IC stated that these classrooms were also overcrowded.

4.1.4. Number of learners with disabilities

IA quoted sixteen learners with physical disabilities, with a total of 40% of the school's learners having some form of disability, most of which are cognitive disabilities. These students had coped with the infrastructure at the school and had been accepted and welcomed by their peers. The principal did advise that the students with physical disabilities had mild cases of mobility impairments and that none of the students used wheelchairs.

IB quoted that there were no children with physical disabilities attending the school at that time, although she did recall one learner with a mild physical disability in the past.

IC quoted two learners with physical disabilities attending the school at that time. Neither of these students used wheelchairs.

ID quoted four learners with disabilities attending School D. One of these learners was a wheelchair user.

None of the four schools had implemented strategies to reach more learners and increase the number of children with disabilities attending the school. All four interviewees expressed interest in reaching out to more learners in the future.

4.1.5. Architecture – guidelines, specifications, and illustrations

When asked about the physical alterations made to the built environment, three of the four interviewees did not recall consultation with an architect. IA advised that she used her senses when determining how to add ramps and handrails to the corridors.

ID did recall the presence of an architect as there were additional blocks built at the same time. She also stated that there were ramps built without handrails.

IC advised that once School C received the funding, the management team consulted with the neighboring school to seek advice on the installation of ramps and handrails. IC then contacted builders who made changes as described.

IB recalled a meeting with a representative from the Special Resource Centre, whereby the management team was assured that the changes would be made to the environment. IB advised that although the ramps are built, and paraplegic toilets are demarcated, they are not operational.

A guideline, with pictures, drawings, and explanation of the ergonomic requirements, was described, and all three interviewees advised that they had not seen such information. ID recalled a document with diagrams being available at the time of the building works, although she could not recall the name of the document.

The interviewees were asked about the areas of the school that required upgrading and due diligence checks. Their concerns were noted as follows:

- Three interviewees mentioned the lack of compliant toilet facilities.
- IA mentioned the need to upgrade the sporting facilities.
- IB mentioned the need to cover their existing corridors.

- All four interviewees stated that the classrooms were overcrowded, and classroom sizes needed to increase, or the number of learners need to decrease.
- ID showed more knowledge of the technical details and mentioned that door thresholds were not level, that the infrastructure needed to be altered and that learners/ visitors with auditory and visual disabilities still need to be considered.

When asked about changes to the play areas, all four interviewees stated that no changes were made to create accessible play areas. Similarly, all four interviewees advised that the sporting facilities had not been specifically upgraded for inclusion. Although this is the case, IA noted that students from neighboring schools do attend sporting activities at the sports ground. The other three interviewees noted that although the facilities had not been amended, children with disabilities partake wherever possible.

The findings from these interviews, in particular, 4.1.5., Architecture –guidelines, specifications, and illustrations, are discussed further in section 4.3., Data Analysis. Section 4.2 below makes reference to the illustrations referred to in order to demonstrate the technical nature of the non-compliance found at the schools.

4.2. ACCESSIBILITY ASSESSMENT DATA

This section reports the findings from the access assessments conducted at each school concerning the compliance of each school to minimum building standards in South Africa, as well as universal access principles. The data is reported according to the themes set out in the access audit format used as follows:

4.2.1. Approach Routes (Author, 2019)

4.2.2. Car Parking Compliance (Author, 2019)

4.2.3. Compliance of external ramps (Author, 2019)

4.2.4. Compliance of external steps (Author, 2019)

4.2.5. Entrances (Author 2019)

4.2.6. Compliance of reception areas and lobbies (Author, 2019)

4.2.7. Compliance of corridors and internal surfaces (Author, 2019)

4.2.8. Accessible ablutions (Author, 2019)

4.2.9. Implementation of wayfinding principles (Author, 2019)

4.2.10. Lighting & Acoustics (Author, 2019)

4.2.11. Means of Escape (Author, 2019)

4.2.1. Approach Routes

Table 4.1. Approach Routes (Author, 2019)

SCHOOL	A	B	C	D
Checklist 1 - Approach Routes & Street Furniture	50%	33%	50%	46%

From the assessment conducted, schools A & C scored 50% in the assessment, with school D scoring 46% and school B scoring 33%. These schools have routes that have the potential to be safe as they were wide enough and had an appropriate ground cover. They did not comply with adequate signage, dropped curbs, or raised curbs guiding the path of the wheelchair.



Figure 4.1.
Edge of walkway
(Author, 2018)



Figure 4.2.
Approach signage
(Author, 2018)



Figure 4.3.
Obstruction in path
(Author, 2018)



Figure 4.4.
Uneven ground
(Author, 2018)

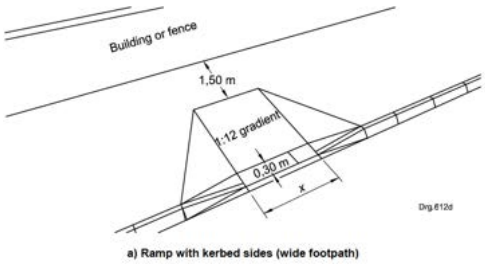


Figure 4.5. Ramp & kerb (SANS-S,2011:13)

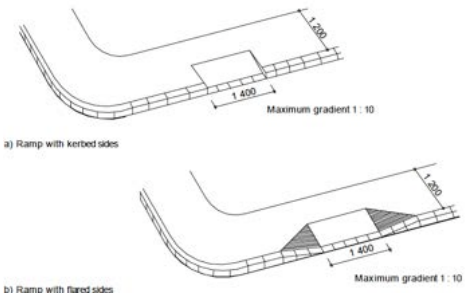


Figure 4.6. Types of kerbs (Department of Public Works, 2001: 22)

South African Bureau of Standards, SANS 10400-Part S (2011): Compliant with a minimum of 1.5m wide pathway.

Non-Compliant: signage, obstructions in the pathway, tripping hazards on ground finishes, incorrect edging and kerb details. No rest areas along the way.

4.2.2. Car Parking Compliance

Table 4.2. Car Parking Compliance (Author, 2019)

SCHOOL	A	B	C	D
Checklist 2 - Car Parking	16 25%	14 29%	16 31%	14 50%

Of the schools surveyed, all scored below 50% with regard to the physical accessibility and safe layout of the parking areas. Although there was adequate space, the school's lost points with signage, demarcation of accessible parking bays, and demarcated pedestrian routes.



Figure 4.7. Example of car parking at schools visited (Author, 2018)

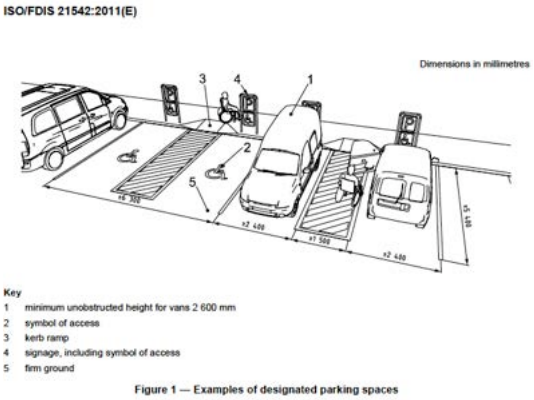


Figure 4.8. Example of a designated parking space. (ISO/FDIS 154. 2011:14)

South African Bureau of Standards, SANS 10400-Part S (2011):

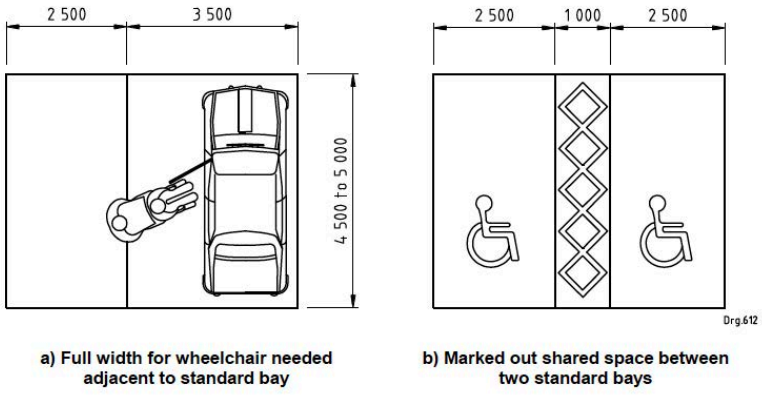


Figure 4.9. Accessible parking bays (SANS-S, 2011:11)

Non-compliant with the demarcation of disability parking bays, vehicular and pedestrian separation is not implemented, kerb details are not implemented for the guidance of wheelchairs. No use of tactile floor surfaces to guide users.

4.2.3. Compliance of external ramps

Table 4.3. Compliance of external ramps (Author, 2019)

SCHOOL	A	B	C	D
Checklist 3 - External Ramps	88%	0%	50%	75%

The schools surveyed varied in compliance. School A was designed around a series of connecting ramps. The non-compliant elements were the handrails that were installed but were incorrectly designed and built. School B was non-compliant and scored 0% with the worst cases of non-compliant ramps seen.

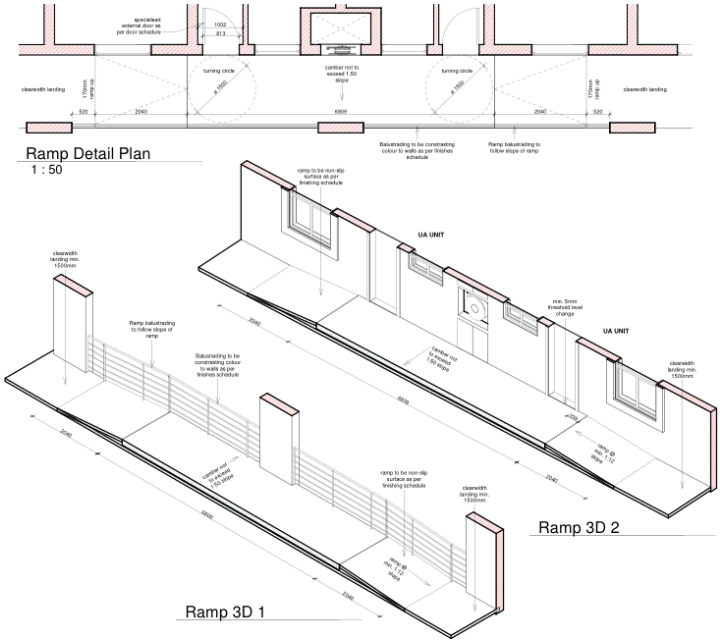


Figure 4.10. Ramp detail drawn up in line with SANS minimum standards (Wyszkowski-Korwin, 2019)

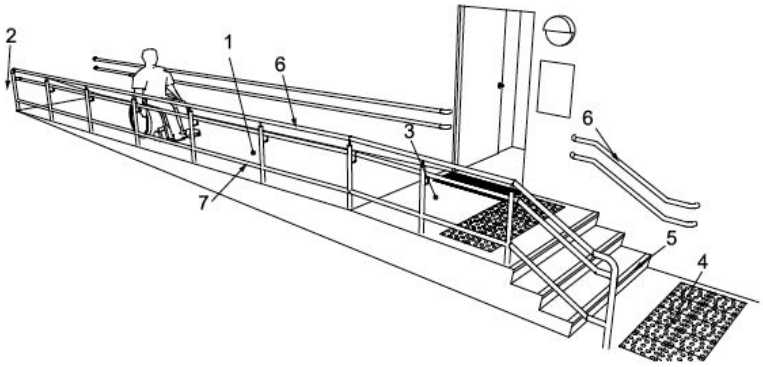


Figure 4.11. Ramp detail drawn up for ISO FDS 21542 (ISO/FDIS 154. 2011: Fig 8)



Figure 4.12. Examples of non-compliant handrails & ramps at the schools audited. (Author, 2018)



Figure 4.13. Examples of non-compliant handrails & ramps at the schools audited. (Author, 2018)



Figure 4.14. Examples of non-compliant handrails & ramps at the schools audited. (Author, 2018)



Figure 4.15. Examples of non-compliant handrails & ramps at the schools audited. (Author, 2018)



Figure 4.16. Examples of non-compliant handrails & ramps at the schools audited. (Author, 2018)



Figure 4.17. Examples of non-compliant handrails & ramps at the schools audited. (Author, 2018)

South African Bureau of Standards, SANS 10400-Part S (2011):

Examples of non-compliance: gradient averaged 1:6 in the worst cases and were 1:10 in the best cases (should not be steeper than 1:12). Non-compliant and non-existent landings in worst cases were resulting in dangerous scenarios and in contradiction to clause 4.8.3. Handrails were installed extensively but were either incorrectly detailed or were not designed to be robust enough.

4.2.4. Compliance of external steps

Table 4.4. Compliance of external steps (Author, 2019)

SCHOOL	A	B	C	D
Checklist 4 - External Steps	64%	14%	29%	43%

School A scored the most points for compliance with regards to external stairs. The remaining schools did not have suitable handrails, and two of the schools had risers, which varied in height.

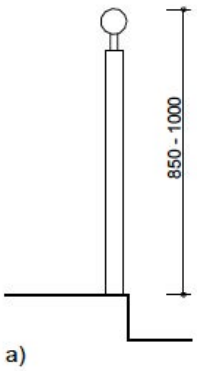


Figure 4.18. Handrail detail (Department of Public Works, 2001:21)



Figure 4.19. Example of non-compliant stairs at the schools audited (Author, 2018)

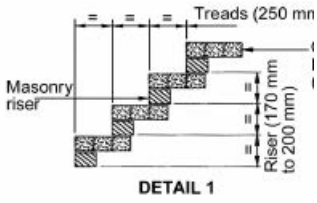


Fig 4.20. Stair detail (SANS Part M, 2011:9)

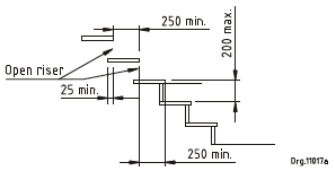


Figure 4.21. Stair detail (SANS Part M, 2011:9)

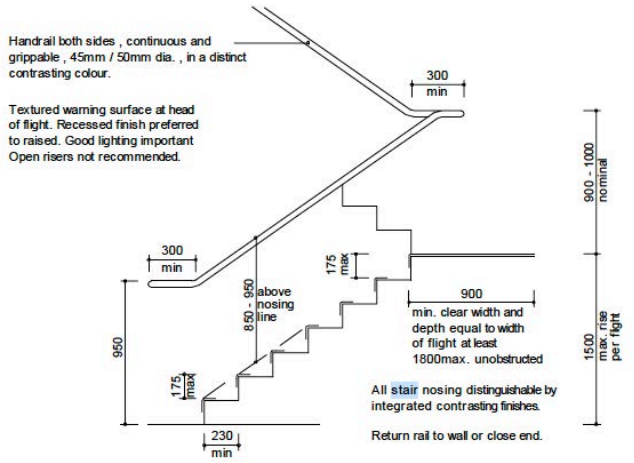


Figure 4.22. Stairway & handrail detail (Department of Public Works, 2001:23)

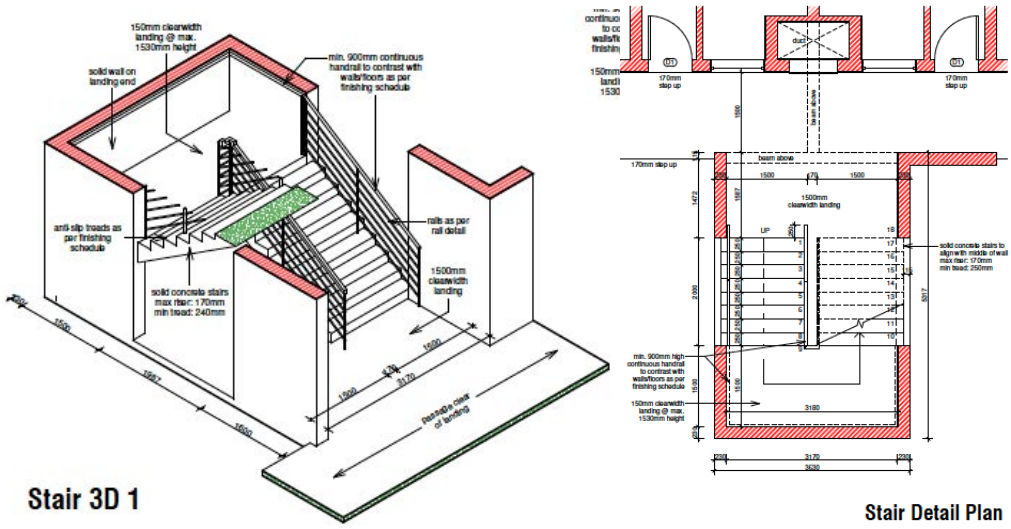


Figure 4.23. Stair detail drawn up in line with SANS minimum standards (Wyszkowski-Korwin, 2019)

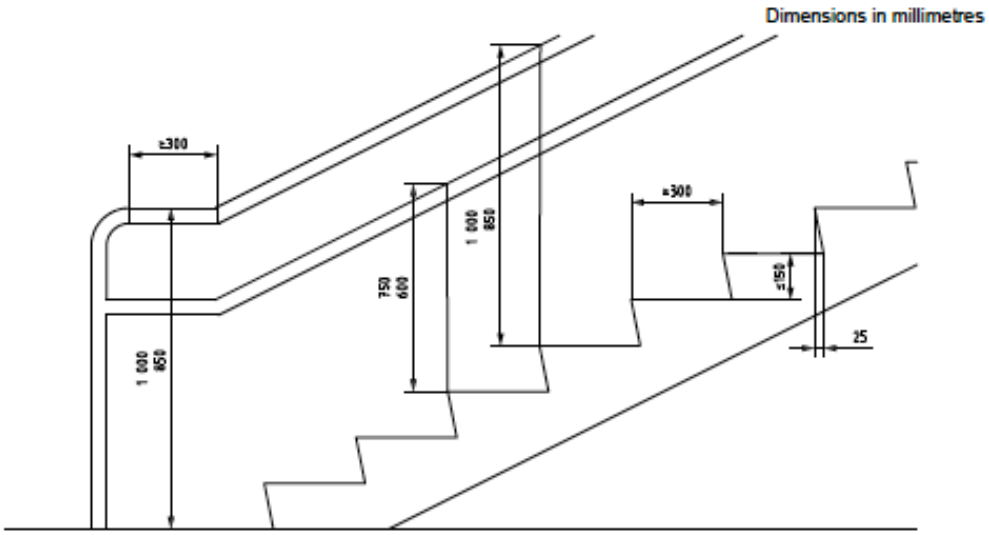


Figure 4.24. Stair detail (ISO/FDIS 154. 2011: 33)

South African Bureau of Standards, SANS 10400-Part S (2011):

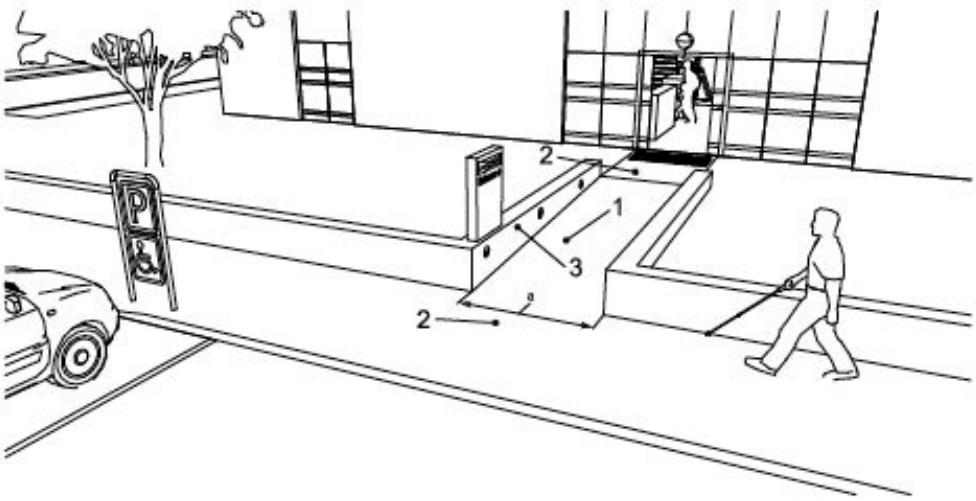
Examples of non-compliance: uneven risers and treads (different heights and lengths of steps). Non-compliant handrails, poor maintenance results in broken building elements. Non-compliant with a requirement for closed risers (no spaces between steps). No tactile guidance. No landings at the top of the stairs.

4.2.5. Entrances

Table 4.5. Entrances (Author, 2019)

SCHOOL	A	B	C	D
Checklist 5 - Entrances	18 50%	20 5%	18 78%	20 60%

The schools surveyed were appropriately positioned; however, the signage and route demarcations were not immediately identifiable. School B had the non-compliant main entrance ramp discussed in checklist three above and, therefore, only scored 5% for the location of the entrance. The remaining schools had entranceways that were at least 900mm wide, with level thresholds at two of the three schools and suitably positioned door controls. None of the schools had appropriate visual links or weatherproof slip-resistant mats at the entrances.



Key

1 sloping path (when the slope is steeper than 1:20 (5 %) the path shall be constructed as a ramp)
2 horizontal landing at both ends of sloping path, intermediate landings spaced according to Table 2
3 wall as tactile clue on direction
[a] Width of sloping path min. 1 200 mm.

Figure 4.25 Example of a sloped path entrance to a building. (ISO/FDIS 154. 2011: Figure 3)

South African Bureau of Standards, SANS 10400-Part S (2011):

Examples of non-compliance noted:

Damaged, uneven, and incorrect ground cover with no use of tactile indicators.

Non-compliant doors and handles.

Incorrect signage installations.

4.2.6. Compliance of reception areas and lobbies

Table 4.6. Compliance of reception areas and lobbies (Author, 2019)

SCHOOL	A	B	C	D
Checklist 6 - Reception Areas and Lobbies	40%	20%	10%	20%

School A scored 40% in this category, and the other three schools scored much lower. School A had an advantage because the reception desk accommodated people in wheelchairs and children, with the inclusion of a lower reception counter. The average height for a counter is 1100mm above the floor level. For universal accessibility, counters should be 800mm above the floor level. School A also had an advantage with the reception area lighting being brighter than the other three schools and therefore, visibility was better. All four schools did not

have adequate signage, did not have suitable finishes, and did not have induction loops fitted for persons with hearing disabilities.

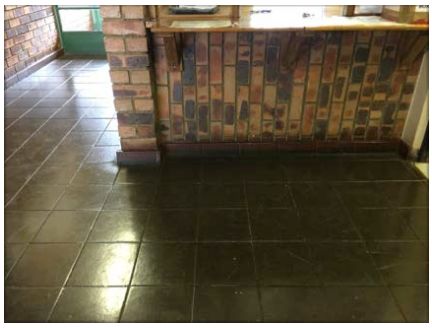


Figure 4.26. Reception areas at one school audited. (Author, 2018)

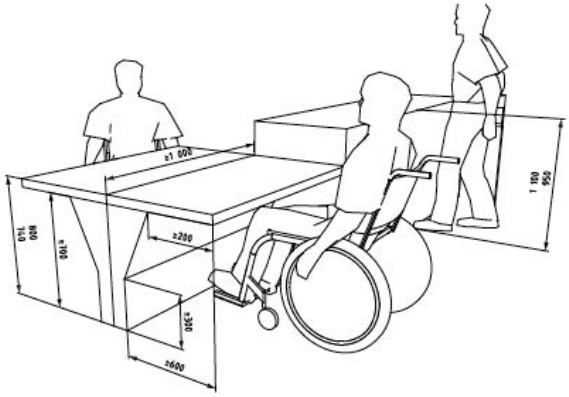


Figure 4.27 Counter heights (ISO/FDIS 154. 2011:56)

South African Bureau of Standards, SANS 10400-Part S (2011):

Example of non-compliance noted: Counter heights should be 800mm above the ground for inclusive design. Finishes were not contrasting, and signage was not clear. Children with hearing disabilities were not included in the design of the environment.

4.2.7. Compliance of corridors and internal surfaces

Table 9. Compliance of corridors and internal surfaces (Author, 2019)

SCHOOL	A	B	C	D
Checklist 7 - Corridors and Internal Surfaces	12 67%	12 33%	12 75%	12 75%

School C and D scored 75% for corridors that were wide enough (1.5meters wide), were unobstructed, and had appropriate finishes that are non-slip. School A and B had numerous obstructions blocking off part of the corridors.



Figure 4.28. Corridors and finishes at schools visited (Author, 2018)



Figure 4.29. Corridors and finishes at schools visited (Author, 2018)



Figure 4.30. Corridors and finishes at schools visited (Author, 2018)



Figure 4.31. Corridors and finishes at schools visited (Author, 2018)

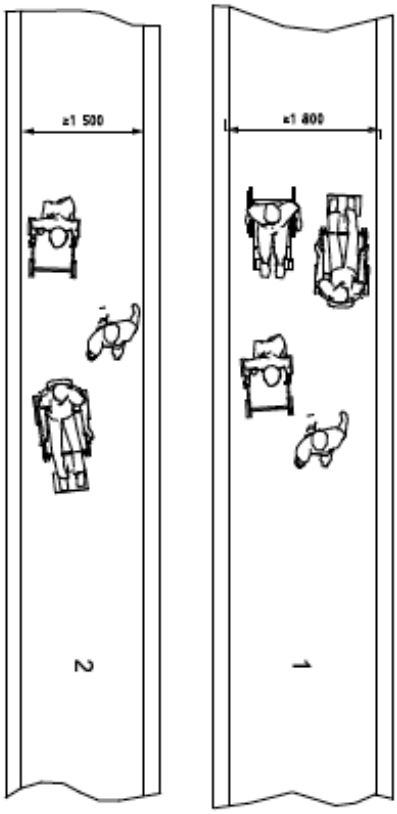


Figure 4.32. Example of corridor widths determined by the intensity of use. (ISO/FDIS 154. 2011:30)

South African Bureau of Standards, SANS 10400-Part S (2011): Compliance noted: 1500 wide corridors.

Non-compliance noted: protrusions and hazards in corridors including doors opening outwards, window cill protrusions and storage of refuse bins, gas cages, and protruding ramps. All these items impede on compliance requirements.

4.2.8. Accessible ablutions

Table 4.8. Accessible ablutions (Author, 2019)

SCHOOL	A	B	C	D
Checklist 12 - WC Provision & Changing Areas (Accessible ablutions)	12 8%	14 36%	12 42%	14 36%

All the four schools surveyed had paraplegic ablutions; however, the interpretation of the requirements has resulted in non-compliant facilities. In one

case, the bathroom was oversized with a bathtub that had no support rails around. The basin was far away from the toilet, and the handrails were non-compliant as they were not correctly positioned, were not level or loop type handles and did not have low effort mechanisms. The other schools had poor maintenance policies as the toilets were locked or the stall was being used for storage. The ramps and paths into the toilet blocks are challenging to manoeuvre, and poor stormwater and drainage management systems result in the pooling of water around these buildings.

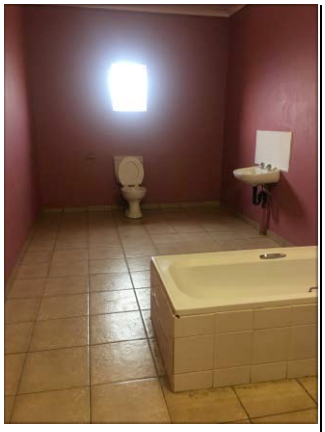


Figure 4.33. Accessible toilet 1 at schools visited. (Author, 2018)



Figure 4.34. Accessible toilet 2 at schools visited. (Author, 2018)



Figure 4.35. Accessible toilet 3 at schools visited. (Author, 2018)

Applicable South African Bureau of Standards, SANS 10400-Part S (2011) regulations:

4.6.2.1 -Door handles

4.2.1 -Signage

4.12.1 – Facilities

4.12.2 – Dimensions & 4.9.3 - Stormwater

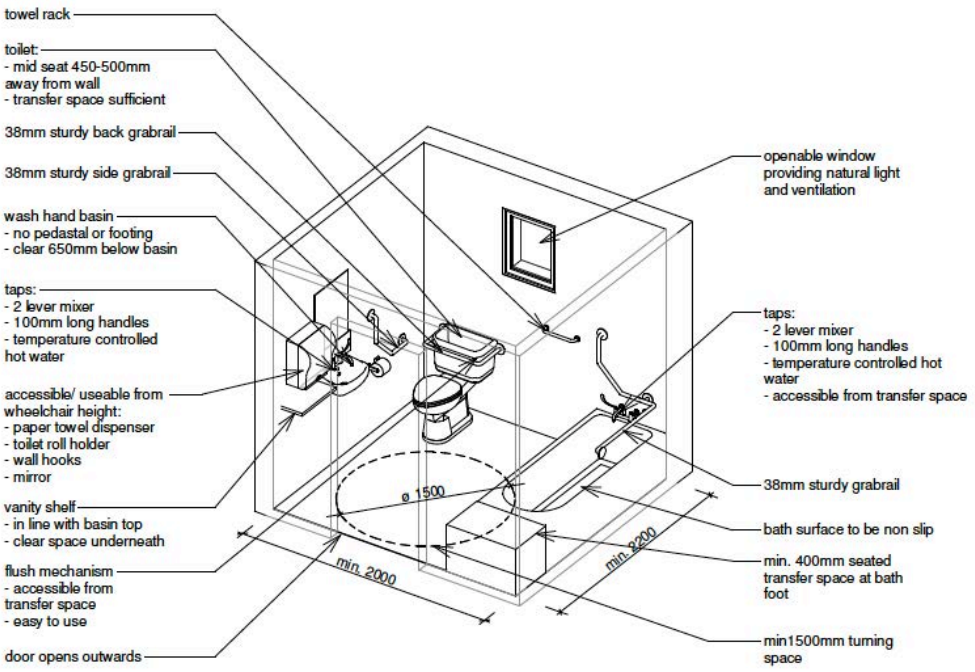


Figure 4.36. UA toilet and bath detail (Wyszkowski-Korwin, 2019)

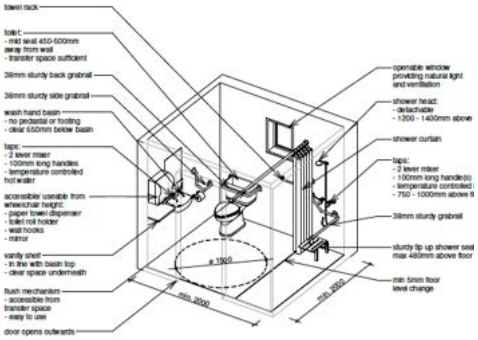


Figure 4.37. UA toilet and shower detail (Wyszkowski-Korwin, 2019)

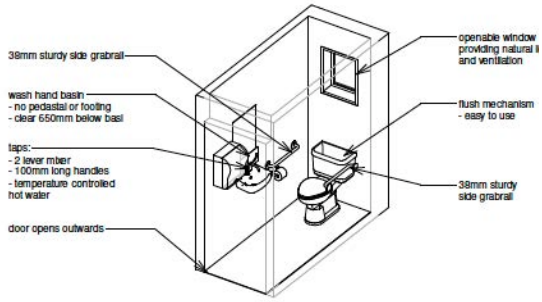
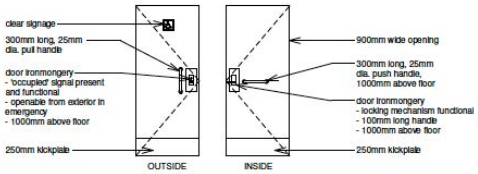


Figure 4.38. Assisted toilet detail (Wyszkowski-Korwin, 2019)



UA DOORS

Figure 4.39 UA bathroom doors (Wyszkowski-Korwin, 2019)

These details are being drawn up, by Maya Architects (MA, 2019) in compliance with South African Bureau of Standards, SANS 10400-Part S (2011), for the practical application of the building regulations. Similar details can be found in the SANS, Department of Public Works (2001) and ISO regulations. All studies are done at an adult scale.

4.2.9. Implementation of wayfinding principles

Table 4.9. Implementation of wayfinding principles (Author, 2019)

SCHOOL	A	B	C	D
Checklist 15 - Way Finding	20%	50%	60%	40%

All four schools had accessible routes around the main areas of the school and into the common areas. All four schools had room signage but not directional signage.

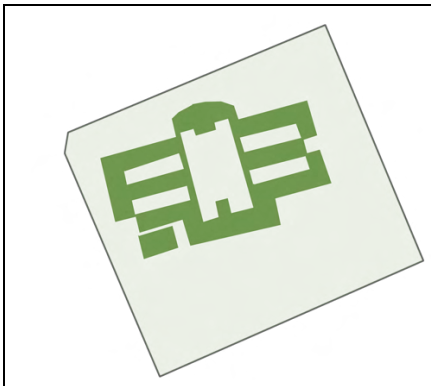


Figure 4.40. School footprint 1 (Author, 2019)

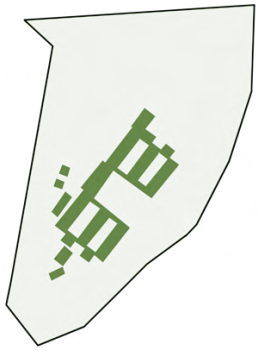


Figure 4.41. School footprint 2 (Author, 2019)

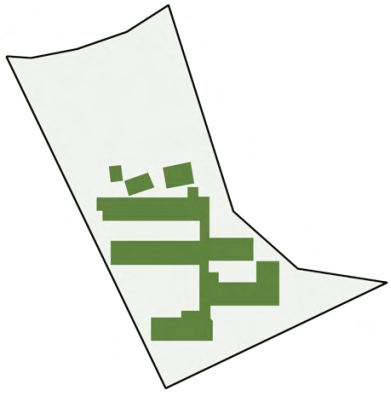


Figure 4.42. School footprint 3 (Author, 2019)

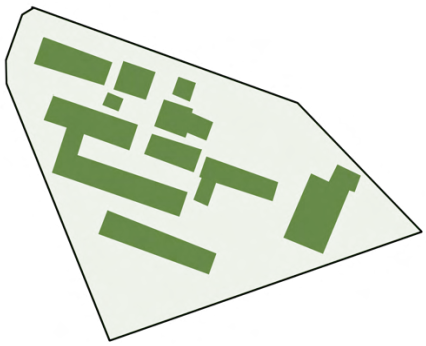


Figure 4.43. School footprint 4 (Author, 2019)

South African Bureau of Standards, SANS 10400-Part S (2011): 4.2.2; 4.2.4; 4.2.5: Signage

Limitation of the study: Lack of drawings inhibits the ability to look at the master planning of the school in detail.

4.2.10. Lighting & Acoustics

Table 4.10. Lighting & Acoustics (Author, 2019)

SCHOOL	A	B	C	D
Checklist 16 - Lighting & Acoustics	0%	8%	8%	33%

The schools surveyed had a large number of hard surfaces. The classes were small and overcrowded with furniture. There was ample light in most cases; however, the finishes were dark, and therefore, the spaces were dull. Acoustically, there was no design intervention with the use of textures and finishes to include acoustic considerations. Further, there were no induction loops fitted at any of the schools.

South African Bureau of Standards, SANS 10400-Part S (2011):

Sans does not make accommodation for hearing disabilities.

Department of Public Works, 2001: 5.5 specifies the requirement for assistive devices.

Limitation of the study: Lighting and acoustic levels were not tested during the access audit.

4.2.11. Means of Escape

Table 4.11. Means of Escape (Author, 2019)

SCHOOL	A	B	C	D
Checklist 17 - Means of Escape	50%	50%	50%	60%

Table 13 shows that all schools scored equally non-compliant with the fire escape routes losing points for the absence of visual alarm systems and refuge bays. Fire management systems were not to the compliance level required for the schools.

Only 1 school had a fire evacuation plan. Lack of drawings results in non-compliance with fire requirements.

Overall, School D scored the highest, with 60%, the rest scoring 50%. The schools had added ramps and handrails, to their existing school infrastructure to accommodate children with disabilities.

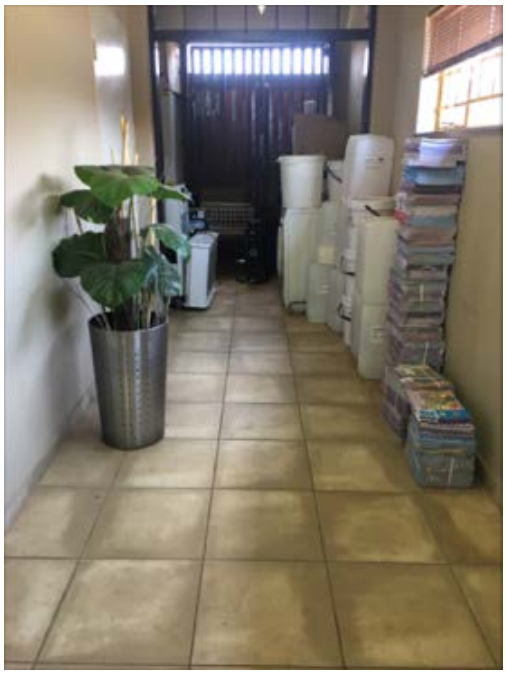


Figure 4.44. Escape routes at schools visited (Author, 2018)



Figure 4.45 External routes at schools visited (Author, 2018)

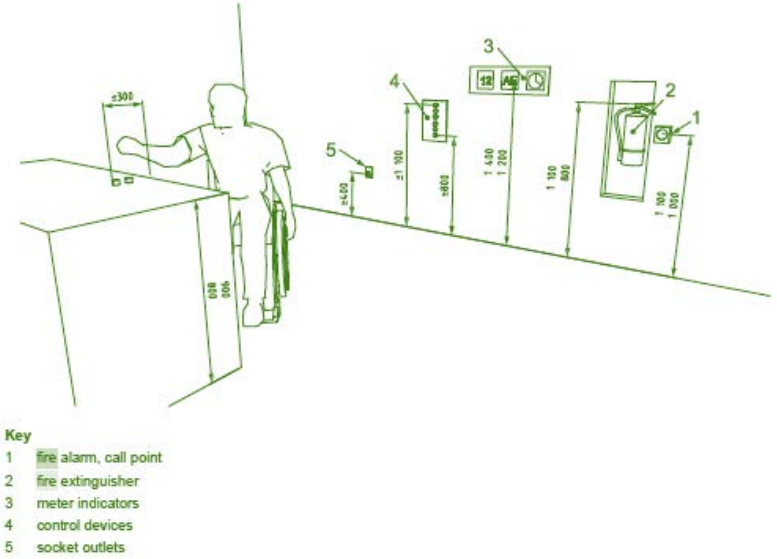


Figure 4.46. Fire compliance detail (ISO/FDIS 154. 2011:56)

South African Bureau of Standards, SANS 10400-Part S (2011):

4.4.3.4 – Signage

South African Bureau of Standards, SANS 10400-Part T (2011): Fire regulations.

4.3. DATA ANALYSIS

Data used in this analysis of findings include the outcomes of the literature review, interviews and access audits.

4.3.1. Regulations and guidelines analysis

The study of technical building regulations and the use of relevant guidelines provides the researcher with a definitive set of constraints to measure the buildings against. In reviewing South African Building standards, it has been discovered that:

1. South African National Standards 10400 Part S is designed to be a separate part of the regulation and therefore creates a contradiction with the other parts of the document. This leaves room for misinterpretation.
2. Part S is not comprehensive in that it does not make provision for hearing disabilities.
3. Part S uses adult scale dimensions throughout, and there is no anthropometric representation of children in a school setting.
4. Numerous guidelines referenced in the FSS policies lead to documents with text descriptions of the building standards. These documents are not comprehensive and do not contain vital universal design requirements.
5. The Department of Public Works, Standard Electrical, Mechanical and Architectural Guideline for the Design of Accessible Buildings (Facilities for Disabled Persons) March 2001 is an excellent guide which incorporates text, technical drawings, anthropometric studies and 3D representations of the standards.
6. The ISO FDIS 21542: 2011 is an international standard that is another excellent guide that incorporates text, technical drawings, anthropometric

studies and 3D representations of the standards. This guideline was published in 2011.

7. Both the Department of Public Works, 2001 and ISO are built on adult scale anthropometrics. Furthermore, neither of these documents are comprehensive in coverage of universal design- for the application to an inclusive school environment.
8. Technical information was available, however fragmented and difficult to find.

4.3.2. Interview analysis

The interviews were conducted on the day of the access audit and were collected and analysed separately before the findings were verified, and analysed, in this chapter, with the results of the literature review and the access audits. The following is a report on these outcomes as follows:

- Experience, vision and unique contribution

The commitment of the leaders of transition is critical for the effective implementation of strategies of this nature. All policy documents speak of united efforts across all sectors to work together towards an inclusive South Africa. The entire inclusive education strategy is based on the 'continuum of support' that relies on an interdependent relationship to receive and to give support to the network. The positive feedback speaks of a support structure that works. The negative feedback speaks of difficulties in accessing assistance and support. There seems to be mixed responses about the support received; however, the vision is strong and seems to be motivating all four leaders to make their own efforts to help their situations, where help is not being received. The literature study also showcased the numerous papers, legislation, acts, guidelines, and standards that have been published. The intention and effort of the South African transformation

strategists are clearly demonstrated in the literature available. This intention, belief and passion were successfully transferred to the interviewees of this study.

- Processes and structures

The Policy on Screening, Identification, Assessment and Support (2014) refers. The system of screening, and then applying for the funding to implement the changes required to assist a child with his/ her specific disability, means that the school environment will only be upgraded/ renovated as and when new learners with disabilities are admitted to the school. This is a reactive approach, as opposed to a proactive approach. It means that after a child has been screened, he/she would wait until the school had assessed the relevant needs, applied for assistive devices/ building alterations, implemented those requests, and, thereafter, would start attending school. These findings could mean that the implementation policies, such as the Policy on Screening, Identification, Assessment and Support could be creating a bottleneck if they are not being implemented and managed correctly.

- Financial strain & funding

The financial strain felt by the school leaders shows clearly in some regions of the school, where maintenance has been neglected. Unfortunately, with poor maintenance, comes non-compliance. This has shown up consistently through the audit.

Furthermore, the nature of construction makes alteration projects extremely expensive. At all four schools, there was evidence of financial investment into the physical accessibility renovations at the schools. All four showed non-compliance in some areas that were renovated within the past five years, as a result of incorrect detailing. For example, one school had robust, steel

handrails installed throughout the school. The handrails were undamaged; however, the detailing was incorrect, and the handrail is non-compliant when measured against minimum standards of the South African Bureau of Standards, SANS 10400: 2011. Another school had aluminium handrails installed with the correct profile detailing; however, the design was not robust enough and there are extensive areas of damaged, broken, and missing pieces that now pose a safety hazard. Both cases show the misdirected use of funding.

- Number of learners with disabilities

The most significant number generated from the interviews is that out of all four schools that had ramps and handrails installed, there was only one child, with a mobility disability in attendance.
Here again, the difficulty in generating statistics was experienced. When asked about the number of children with physical disabilities in attendance, the initial answers were based on the total number of children with disabilities, which included learning disabilities. The number of children with learning disabilities far exceeds the number of children with physical disabilities only; therefore, this makes it difficult to accurately assess the numbers accurately. Furthermore, some children have multiple disabilities which makes it more challenging to categorise.

4.3.3. Interview, Access Audit and Building regulation analysis

- Architecture – guidelines, specifications, and illustrations

This last set of findings from the interviews will be reported adjacent to the access audit findings, and they have a common thread. According to three of the four interviewees, the information that was made available to the decision-makers at the time of the renovations did not enable them to judge the accuracy of the

interventions that were implemented. There was a profound lack of interaction between the key informants (interviewees) and built environment specialists.

In one case, the school underwent transitional planning without an architect. A few years later, an architect was appointed to add new buildings and renovate; however, the architect was never appointed to complete an access assessment on the existing school. ID commented that “even though there was an architect, some ramps are built incorrectly.” Further discussion with ID showed that the architects appointed were responsible for the design of the new school blocks and not the overall school design.

Approved as-built plans for the school, as well as an approved, updated fire evacuation plans are a legislated requirement in South Africa. Lack of these drawings will impede on the ability to maintain building compliance, carefully plan, and execute new building projects. Crucial risk management planning is therefore required.

- Three interviewees mentioned the lack of compliant toilet facilities.

This was verified with the results of the access audits on site. All four schools had too few toilets, and all four have non-compliant toilet fittings and fixtures.

- IA mentioned the need to upgrade the sporting facilities.

This was verified with the results of the access audits. All four schools had sporting facilities that were not designed for inclusive use.

- IB mentioned the need to cover their existing corridors.

This was verified with the results of the access audits, which showed uncovered walkways extensively on site.

- All four interviewees stated that the classrooms were overcrowded, and classroom sizes needed to increase, or the number of learners need to decrease.

This was verified with the results of the access audits. All four schools showed overcrowding in classrooms, classroom furniture layouts did not allow for inclusion of wheelchairs or visually or hearing-impaired children.

- ID showed more knowledge of the technical details and mentioned that door thresholds were not level, that the infrastructure needed to be altered and that learners/ visitors with auditory and visual disabilities still need to be considered.

All of these points were verified to be true on site, and this has demonstrated the benefit of having appropriate guidelines available to the leaders and management teams as it grows awareness of what is required for inclusive environments to work.

All other items picked up in the access audits are factual findings that do not require further analysis. Most items require design intervention whereby the Architect would look at the findings of access (and compliance audit), assess the needs of the client and users, assess the numbers of scholars, staff and visitors, and proceed with a project appraisal. The design process would start with the compliance assessment of the existing plans and would be checked against the National Building Regulations South African Bureau of Standards, SANS 10400 (2011). In the absence of drawings, the schools would be measured up, physically on site, by a professional architect, and drawings would be generated for the process to proceed. Once design proposals are presented to the client, the standard architectural scope of work would ensue.

The data collected has been rich with information that could start a new conversation regarding the implementation strategy for transforming school

environments. The discussion chapter below unpacks the opportunities to move beyond reporting on facts, commitments, and questionable statistics.

5. DISCUSSION

The idea of a transformation strategy may, at first, seem simple. The legislation is written, a guideline or standard is written, and these are implemented. However, implementing a transformation strategy is a much more complicated task. Therein lies the challenges to ensure that key personnel across the board are committed, qualified and experienced to lead a National level intervention. The efforts made by policy writers and those dedicated to implementing change can be seen in the documentation produced on the topic. The implementation on the ground shows different outcomes. Before addressing the opportunities ahead, the initial research questions are addressed.

5.1 Question 1: Are full-service schools that were "transformed" to provide physical access to education, actually accessible to learners with physical disabilities?

Full-service schools are not universally accessible to children with physical disabilities because:

1. There was no allowance for braille and visually impaired children/ adults.
2. There were no assistive devices for children/ adults with hearing disabilities.
3. Building interventions were incorrectly designed and constructed.
4. Maintenance management requires review as there were many issues related to maintenance non-compliance.
5. Classrooms were all overcrowded and did not meet minimum space standards.

Although the schools have scored very low in the accessibility assessments, three schools reported that children with mild physical disabilities had managed to cope in the environment. However, even though this is the case, there are some aspects of safety that cannot be overlooked, even if a place can actually function for its purpose.

5.2 Question 2: What are the factors that affect this outcome?

The interviews showed enthusiasm and positive outlooks from the interviewees, despite the challenges they face. They showed pride when talking about their inclusive design interventions. One of the interviewees specifically visited the new ablutions with the researcher to demonstrate the progression at the school. Closer inspection showed that the universal access bathroom had been built within the past five years and was non-compliant in design. This demonstrates a disconnect between what the client pays for and what they actually get. This demonstrates the importance of awareness on the topic of inclusive design.

To answer the question, it appears that there is a network of information specifically designed for this topic and the implementation thereof. However, due to the fragmented and incomplete nature of the information, the results show confusion as to what is required for a school to be truly inclusive in terms of its architecture. The factors affecting the outcomes of the inclusive strategies are explored below.

a. Statistics of persons with disabilities

The inaccuracy of the number of learners with disabilities in South Africa shows that it is a general phenomenon that exists. The 2011 and 2016 census studies have provided the first level of comparison for accurate statistics to be produced.

The issue of inaccurate statistics affects the efficiency of the infrastructure planning of a country.

b. Policies and Legislations

The research findings show that there is existing legislation in the form of policies, reports and papers that are all developed for the implementation of the inclusive education strategy. It also shows that there is inconsistency with referencing to guidelines and standards that would apply. The information is abundant however it is fragmented, repetitive and contradictory.

"Top-down approaches stress the importance of policy clarity, as well as the control and direction by policymakers to systematically implement policy. Bottom-up approaches, on the other hand, highlight the importance of understanding the perspectives and experiences of target groups and service deliverers" (Matland, 1995; Stofile, 2008). This study leads to a discussion regarding the review of current policies. A bottoms-up approach is taken for the understanding of a very complicated and multi-facetted subject. This would lead to a policy review, which could then be implemented with a top-down approach.

c. Building standards and guidelines

The research findings from the study of the architectural guidelines shows the same outcome. There is abundant information available and minimal direction on a technical natured topic. As a professional architect, it was extremely difficult to find the correct, relevant and latest framework of guidelines applicable. None one of the guidelines for South Africa showed a comprehensive set of generic details for inclusive educational facilities.

It is the intention to start a conversation about an entirely new set of National Building regulations that moves away from South African Bureau of Standards, SANS 10400-part S (2011), and reflects ONE standard, based on best practice in the South African context. This standard should be written with the background of a new anthropometric study conducted on children and adults with varying physical disabilities.

d. Anthropometric studies.

Anthropometric studies could be conducted on the variances between South African Bureau of Standards, SANS 10400 (2011), and ISO 2011. The ISO regulations are valuable tools for understanding the requirements for inclusive design. Having looked at the school environments, it appears that the manner in which adults use buildings differs from child-like behaviour. This could explain why the handrails in one school was damaged. An adult, although heavier and bigger than a child, would not climb onto the stringers of a handrail, whereas children often do. Also, adults walk down corridors whilst children run. This could relate into the minimum width required for corridors. It is a hope that this research will present the opportunity to conduct anthropometric studies on children with disabilities in educational settings.

e. Reporting on implementation strategies

The Guidelines for Full-service Schools (2010), clause 12.1 states that the school should carry out a full access audit of the building and school grounds, involving the learners (Department of Basic Education, 2010). Although these strategies are all documented in policies, guidelines and implementation strategies, these are all still “only on paper” as “none of these strategies have been implemented in full” (Du Plessis, 2013).

f. Collaboration on a comprehensive strategy

The opportunity to unpack the various challenges in implementing inclusive education would need to be the starting point for a conversation between all stakeholders from the built environment, representatives from Disabled People South Africa, social sciences, medical, governmental, and other relevant professionals/ stakeholders.

5.3 A new conversation

The conclusions of this research are seen to be opportunities for change. The gap in research that this dissertation aimed to fill was to conduct a review, on policies that specifically reference architectural regulations. The development of this could result in a roadmap to start with policy review, strategy mapping, testing of theories and applications, interface with stakeholders and industry specialists and resulting in new building standards, guidelines and ultimately, policies.

The areas of particular interest to this study, would include anthropometric studies in various scenarios, on various people, with disabilities. These studies could be used to workshop design solutions based on experience and real-life situations. The research by Jessica Werbeach (2017) included work with teachers and therapist with expertise in child development and management of children with disabilities. The resulting work includes diagrammatic representations of personalized spatial requirements based on the needs of different children. It is studies like these, and other work from the architectural, built environment, social studies, human sciences and education sectors that could be brought together for a comprehensive approach.

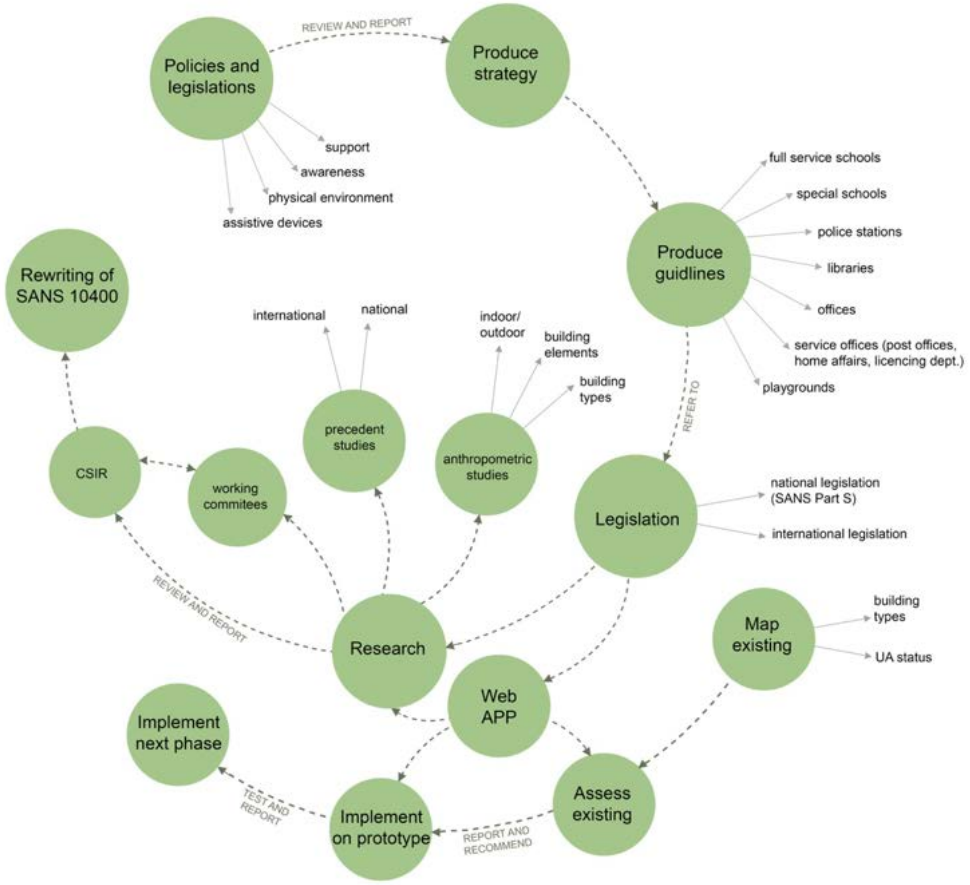


Figure 5.1. Mind-mapping (Author, 2019)

Work by architects like Mitasha Mistrey shows the theoretical underpinnings of defensible architecture and the application to universal design and child-friendly spaces. Social science masters graduate, Esther Mphanda has written a mini-dissertation on the topic of inclusive education in South Africa and here she recognizes the hinderances of the physical environments. (Mphanda, 2018). On the other side, there have been numerous reviews listing and summarizing policies related to inclusion in South Africa. There have also been numerous reports done on statistics and milestones that have been set out, revised and revised further. In all cases, support structures form the key component required for strategy to work. What is required is a solid and structured plan for implementation, and stringent tracking and reporting requirements.

5.4. Conclusion

The South African National Standards 10400 sets out the national building regulations and standards that all South African buildings must comply with. Part S of the South African Bureau of Standards, SANS 10400 (2011) suite outlines the minimum requirements for the design of buildings that accommodate persons with disabilities. However, there is more to design considerations than applying minimum standards to the planning phase of the project. Although the policies have been set in place, and there are initiatives on several fronts that aim to create an inclusive society, access to education remains a major hurdle. In order to ensure the successful integration of children with disabilities into mainstream schools, there is a requirement to provide schooling environments that are physically accessible by all learners. In the study conducted, this was not actually the case; despite the architectural interventions that had been introduced.

It would benefit the study to have a generic illustrated guideline to provide the principals/ leaders and planners with a user-friendly document that would assist with understanding the general architectural requirements for people with disabilities. A tool of this sort could be used to conduct self-evaluations on the school environment, plan future changes, track progress, and generate updates that the school could use to report to stakeholders and the community. The critical maintenance plan and tracking thereof should be incorporated into this system.

In the case of existing schools, the buildings condition, maintenance, and minimum standards need to be adequately assessed before any plans are made to increase the number of children or build new facilities. By conducting a universal access assessment, it would ensure that the environment is assessed holistically before a strategic plan is designed for renovation work or additions. Architects are able to assist the school with the appropriate design and detailing

of the built environments. With access to the correct information and the correct professionals, leaders of schools can play a more prominent role in assisting the decisions made on infrastructure development plans and avoid wasteful expenditure.

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7. APPENDICES

Appendix 1: Approvals for study

Gauteng Department of Education

Ethics Clearance

Use of Direct Access Audit sheet

Appendix 2: Interview sheets

Participant Information Sheet

Consent Form

Interview schedule

Appendix 3: Interview data received

School A

School B

School C

School D

Appendix 4: Audit sheets

Direct Access Assessment Sheet

Appendix 5: Audit data received

Summary of findings – quantitative data

Assessment reports

School A

School B

School C

School D

Appendix 1

Approvals for study

GAUTENG PROVINCE
Department: Education
REPUBLIC OF SOUTH AFRICA

8/4/4/1/2

GDE AMENDED RESEARCH APPROVAL LETTER

Date:	**06 June 2017**
Validity of Research Approval:	**06 February 2017 – 29 September 2017** **D2015/366A**
Name of Researcher:	**Haripersadh N.**
Address of Researcher:	**P O Box 599**
	Kelvin
	Johannesburg, 2054
Telephone Number:	**082 565 8259 086 627 8988**
Email address:	**nadira@mayarch.co.za**
Research Topic:	**Enabling Elemental Architecture: An investigation into the role of Achitecture in intergrating children with physical disabilities into mainstream schooling through the innovative design of the built environment and playground facilities**
Number and type of schools:	**Four Primary Schools**
District/s/HO	**Gauteng East, Johannesburg central, Johannesburg East, Johannesburg West and Gauteng East or Tshwane West**

Re: Approval in Respect of Request to Conduct Research

This letter serves to indicate that approval is hereby granted to the above-mentioned researcher to proceed with research in respect of the study indicated above. The onus rests with the researcher to negotiate appropriate and relevant time schedules with the school/s and/or offices involved to conduct the research. A separate copy of this letter must be presented to both the School (both Principal and SGB) and the District/Head Office Senior Manager confirming that permission has been granted for the research to be conducted.

06/06/2017

Office of the Director: Education Research and Knowledge Management
7th Floor, 17 Simmonds Street, Johannesburg, 2001
Tel: (011) 355 0488
Email: Faith.Tshabalala@gauteng.gov.za
Website: www.education.gpg.gov.za

1. *The District/Head Office Senior Manager/s concerned must be presented with a copy of this letter that would indicate that the said researcher/s has/have been granted permission from the Gauteng Department of Education to conduct the research study.*
2. *The District/Head Office Senior Manager/s must be approached separately, and in writing, for permission to involve District/Head Office Officials in the project.*
3. *A copy of this letter must be forwarded to the school principal and the chairperson of the School Governing Body (SGB) that would indicate that the researcher/s have been granted permission from the Gauteng Department of Education to conduct the research study.*
4. *A letter / document that outlines the purpose of the research and the anticipated outcomes of such research must be made available to the principals, SGBs and District/Head Office Senior Managers of the schools and districts/offices concerned, respectively.*
5. *The Researcher will make every effort obtain the goodwill and co-operation of all the GDE officials, principals, and chairpersons of the SGBs, teachers and learners involved. Persons who offer their co-operation will not receive additional remuneration from the Department while those that opt not to participate will not be penalised in any way.*
6. *Research may only be conducted after school hours so that the normal school programme is not interrupted. The Principal (if at a school) and/or Director (if at a district/head office) must be consulted about an appropriate time when the researcher/s may carry out their research at the sites that they manage.*
7. *Research may only commence from the second week of February and must be concluded before the beginning of the last quarter of the academic year. If incomplete, an amended Research Approval letter may be requested to conduct research in the following year.*
8. *Items 6 and 7 will not apply to any research effort being undertaken on behalf of the GDE. Such research will have been commissioned and be paid for by the Gauteng Department of Education.*
9. *It is the researcher's responsibility to obtain written parental consent of all learners that are expected to participate in the study.*
10. *The researcher is responsible for supplying and utilising his/her own research resources, such as stationery, photocopies, transport, faxes and telephones and should not depend on the goodwill of the institutions and/or the offices visited for supplying such resources.*
11. *The names of the GDE officials, schools, principals, parents, teachers and learners that participate in the study may not appear in the research report without the written consent of each of these individuals and/or organisations.*
12. *On completion of the study the researcher/s must supply the Director: Knowledge Management & Research with one Hard Cover bound and an electronic copy of the research.*
13. *The researcher may be expected to provide short presentations on the purpose, findings and recommendations of his/her research to both GDE officials and the schools concerned.*
14. *Should the researcher have been involved with research at a school and/or a district/head office level, the Director concerned must also be supplied with a brief summary of the purpose, findings and recommendations of the research study.*

The Gauteng Department of Education wishes you well in this important undertaking and looks forward to examining the findings of your research study.

Kind regards

.....

Ms Faith Tshabalala
CES: Education Research and Knowledge Management

DATE: 06/06/2017

Office of the Director: Education Research and Knowledge Management
7th Floor, 17 Simmonds Street, Johannesburg, 2001
Tel: (011) 355 0488
Email: Faith.Tshabalala@gauteng.gov.za
Website: www.education.gpg.gov.za

Research Office

HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)
R14/49 Haripersadh

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER: H17/06/14**
PROJECT TITLE	En-abling elemental architecture: An investigation into the role of architecture in intergrating children with physical disabilities into mainstream schools, in Gauteng, through a study of the current transformation status of inclusive school environments
INVESTIGATOR(S)	Mrs N Haripersadh
SCHOOL/DEPARTMENT	Architecture and Planning/
DATE CONSIDERED	23 June 2017
DECISION OF THE COMMITTEE	Approved
EXPIRY DATE	7 August 2020

DATE 8 August 2017 **CHAIRPERSON** pp _____
(Professor J Knight)

cc: Supervisor : Dr A Janse Van Rensberg

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University. Unreported changes to the application may invalidate the clearance given by the HREC (Non-Medical)

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to completion of a yearly progress report.**

_____ _____/_____/_____
Signature **Date**

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES

Subject: Re: Access audit - Masters study
Date: Tuesday, 17 December 2019 at 09:45:54 South Africa Standard Time
From: Steven Mifsud
To: Nadira Haripersadh
Attachments: image001.jpg, image002.jpg, image003.jpg, image004.png, image005.png, image006.jpg, image007.jpg, image008.jpg, image009.jpg, image001.jpg, image002.jpg, image003.jpg, image004.png, image005.png, image006.jpg, image007.jpg, image008.jpg, image009.jpg

Hi Nadira,

Lovely to hear from you again,

Absolutely you have my permission to use it and please ask if I can help any further.

Best wishes

Steven

Steven Mifsud NRAC
Managing Director / NRAC Access Consultant

Direct Access Consultancy Ltd
Regents Park, London Road
Nantwich, CW5 6LW

t: +44 845 056 4421
e: smifsud@accessaudits.com
w: www.accessaudits.com

This message is confidential. It may also be privileged or otherwise protected by work product immunity or other legal rules. If you have received it by mistake, please let us know by e-mail reply and delete it from your system; you may not copy this message or disclose its contents to anyone.

> On 17 Dec 2019, at 03:22, Nadira Haripersadh <nadira@mayarch.co.za> wrote:
>
> Hi
>
> Hope you are well.
>
> Apologies, I have been swamped with work and flagged this email ages ago to reply.
>
> I am writing to you because I handed in my masters and my topic is the role of architecture in integrating children with physical disabilities into full service schools in

south Africa.

I previously (about 2-3 years ago) got your approval to use your direct access audit sheet for my studies. I did use it however lost a lot of my records and lost your email in the process.

I need an email from you to say that you acknowledge me using it.

Please let me know if you remember, or if you need further info 😊

Kind regards
Nadira

MAYA ARCHITECTS

Nadira Haripersadh
Director

t | 010 216 9116
c | 082 565 8259
a | The District, 8 Kikuyu Road, Sunninghill
e | nadira@mayarch.co.za
w | www.mayarch.co.za

From: Steven Mifsud <smifsud@accessaudits.com>
Date: Monday, 23 September 2019 at 15:48
To: Nadira Haripersadh <nadira@mayarch.co.za>
Subject: Re: Access audit - Masters study

I am so sorry but I missed this email completely,

This is my direct email address and would be happy to help where I can.

Steven Mifsud NRAC
Managing Director | NRAC Accessibility Consultant
Connect with me on LinkedIn

Direct Access

Direct Access Consultancy Ltd
2, The Grove
Regent's Park Business Centre
London Road
Nantwich, CW5 6LW

t: +44 (0)845 056 4421
e: smifsud@accessaudits.com
w: www.accessaudits.com

Appendix 2

Interview sheets



PARTICIPANT INFORMATION SHEET FOR THE PRINCIPAL of: (NAME) Full Service Primary School

PRINCIPLE RESEARCHER: Nadira Haripersadh
ORGANISATION: The University of the Witwatersrand

My name is Nadira Haripersadh and I am currently studying towards a Master of Architecture degree through the University of the Witwatersrand. My topic of research will deal specifically with the physical accessibility of the School environment in relation to the needs of the child with a physical disability.

I would like to invite you to be a part of this study by permitting me to conduct an interview with you and to conduct an access audit on your School Property. Furthermore, by fulfilling the role of 'Gatekeeper' in my research study, I would request your permission to access the architectural drawings for the school which will be required for the architectural analysis which will form the first part of the access audit. Gatekeepers are defined as the persons from whom the researcher will seek approval for access to the archives, information and sites. (Creswell, J.W: 21).

The purpose of this study, is to look at the minimum allowances for Universal design, assess the mechanisms in place and the degree of accessibility in the School Environment. I will also look at design proposals that could be implemented in the future to achieve 100% barrier free access.

I will use two types of data collection methods as follows:

1. Interviews with the Principals of each of the four Full Service Schools as referred by the Department of education. This should not take more than one hour.
2. Physical access audits. This will take no longer than three hours, however there may be a need for a follow up site visit for verification purposes.

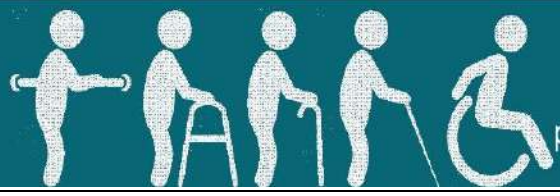
You do not have to agree to participate in this study. Choosing to participate or not will not affect either you, or your School in any way. You may stop participating in the interview at any time that you wish without losing any of your rights.

Please note that there will be no reimbursement for time taken to complete this research work on site.

I will not be sharing information about my findings to anyone other than my two supervisors until it is ready to be submitted in the form of a Masters research thesis. A copy of which will be issued to Department of Basic Education. Thereafter, we will be sharing what we have learnt with you and the other participants. I will also use the information gained to make submissions to the local government to amend some of the standards that are currently being used to design schools and playgrounds. I will also publish the results in order that other interested people may learn from our research.

If you have any questions you may ask them now or later by contacting any of the following people:

ME: NADIRA HARIPERSADH
PHONE: 011 656 8758/ 082 565 8259 |EMAIL: nadira@mayarch.co.za
MY SUPERVISOR: Dr ARIANE JANSE VAN RENSBURG
PHONE: 011 717 7627 | EMAIL: Ariane.JanseVanRensburg@wits.ac.za
MY SUPERVISOR: DR FASLOEN ADAMS
PHONE: 011 717 3714 | EMAIL: Fasloen.Adams@wits.ac.za



EN-ABLING ELEMENTAL ARCHITECTURE

An investigation into the role of Architecture in integrating children with physical disabilities into Mainstream Schools, in Gauteng, through a study of the current transformation status of inclusive school environments.

CONSENT FORM FOR THE PRINCIPAL of: (NAME) Full Service Primary School

PRINCIPLE RESEARCHER: Nadira Haripersadh
ORGANISATION: The University of the Witwatersrand

I have read, or have had read to me in my first language, and I understand the Participant Information Sheet.	Yes ☐	No ☐
I am satisfied with the answers I have been given regarding the study and I have a copy of this consent form and information sheet.	Yes ☐	No ☐
I understand that taking part in this study is voluntary (my choice) and that I may withdraw from the study at any time without any effect.	Yes ☐	No ☐
The procedures regarding confidentiality have been clearly explained (e.g. use of names, pseudonyms, anonymisation of data, etc.) to me.	Yes ☐	No ☐
I wish to remain anonymous	Yes ☐	No ☐
I know who to contact if I have any questions about the study in general.	Yes ☐	No ☐
I understand my responsibilities as a study participant.	Yes ☐	No ☐
I wish to receive a summary of the results from the study.	Yes ☐	No ☐

Declaration by participant:

I hereby consent to take part in this study.

Participant's name:

Signature: Date:

Declaration by researcher:

I have given a verbal explanation of the research project to the participant, and have answered the participant's questions about it.

I believe that the participant understands the study and has given informed consent to participate.

Researcher's name:

Signature: Date:

EN-ABLING ELEMENTAL ARCHITECTURE

An investigation into the role of Architecture in integrating children with physical disabilities into Mainstream Schools, in Gauteng, through a study of the current transformation status of inclusive school environments.

PRINCIPLE RESEARCHER: Nadira Haripersadh
ORGANISATION: The University of the Witwatersrand

SEMI-STRUCTURED INTERVIEW SCHEDULE FOR THE PRINCIPAL/ GATEKEEPER

Copies of the consent forms and Information sheets were provided to each participant and explained where necessary. Participants were given an opportunity to ask questions. Ground rules were explained as follows: *Before we start, I would like to remind you that there are no right or wrong answers in this discussion. I am interested in knowing what you think, so please feel free to share your point of view. It is very important that your opinion is heard.*

INSTRUCTIONS
Ask all questions in a clear manner, expanding and explaining wherever possible.
Review the Introduction – information sheet.
Use probes to encourage the interviewee to explore the question further.

NAME OF SCHOOL: _____

SECTION 1: BIOGRAPHICAL DATA

Name: _____

Age: _____

What is your role / position at this school? _____

Briefly share with me your qualifications and experience: _____

_____

_____

SECTION 2: HISTORY OF THE SCHOOL ENVIRONMENT

Was the school designed to function as it is or was it refurbished to cater for inclusivity?

_____

_____

_____

_____

Background of the integration of children with disabilities: when did integration start and how?

_____

_____

Brief history and development of the first child/ group of children that entered the system ie. Success rate and did the child/ children progress to secondary and tertiary?

_____

_____

_____

Has there been changes and advances in the school environment or built environment? Refurbishments to the classroom and play structures?

_____

_____

_____

_____

SECTION 3: INCLUSIVE LEARNING AND PLAYING- THE PHYSICAL ENVIRONMENT

What has been the positives that came out of inclusive learning/ teaching?

_____

_____

_____

What has been the negatives that came out of inclusive learning/ teaching?

_____

_____

_____

What are the biggest challenges/ barriers that the children with disabilities face.

_____

_____

_____

Have there been any incidents on the school premises whereby children with physical disabilities have been hurt?

_____

_____

_____

What are the main areas of concern that need to be addressed in terms of the physical environment?

_____

_____

_____

_____

What are your observations in terms of social interaction between the children on the playground?

_____

_____

_____

Have there been incidents of bullying of children with disabilities?

_____

_____

_____

_____

What initiatives does the school pursue to assist the integration of children with disabilities into the mainstream system?

_____

_____

_____

_____

How do you find the sport and recreational abilities of the children with physical disabilities? Do they participate? Are there specific facilities for them or do they accommodate within the existing sporting structure?

_____

_____

_____

SECTION 6: CLOSE-OFF

Do you have any questions you want to ask me?

_____

_____

_____

NOTE:

- During this initial interview, the Gatekeepers role and requirements will be discussed as per the Information sheet attached to the participant consent form.
- Discussions will follow regarding the requirement for recommendation of learners in the school.
- Architectural plans of the school will be requested.
- Access to the school for observational studies will be sought.
- Follow on interviews to discuss concepts that emerged from the observation and individual interviews will be constructed at a later stage.

Appendix 3

Interview data received

Interview A

I: Interviewer

P1: Principal

P2: Principal

I: Thank you for giving me the opportunity to interview both of you. My first question is in relation to your number of years in education. Can you please tell me what is your number of years in education?

P1: I got 22 years of experience, I started with mainstream for 10 years and then went over to remedial education to date.

I: Wonderful, can you please tell me what is the current number of children with disabilities at school?

P1: We have plus minus four children.

I: Okay, so they are cognitively okay but physically disabled?

P1: Yes.

I: Can you both tell me what are your roles or positions in the school?

P1: It is to help learners academically and physically. We also deal with behavioural problems, learners with behavioural problems, we support them as well as the educators. We also refer them to special schools.

I: Was the school built as a full service school or was it transformed to a full service school?

P1: It was transformed to a full service school.

I: Do you know how this school was chosen to undergo this transformation?

P1: This school was the pilot school, it was a mainstream school and then they chose this school and three others.in our District.

I: Was there any sort of screening process to check how the school would be chosen and if it would be appropriate?

P1: Yes, there was screening.

P2: The school was chosen because there was a high need in the area.

I: Were either of you at the school during the transformation?

P1: No we were not at the school.

P2: We were nearby in the District and we were moved to come and help at the school.

I: So, you would not know if there was any assistance from a professional during the transformation process itself?

P1&2: We know because they used to present a workshop here, a short course from UJ. The teachers were trained every Saturday on how to support the learners.

I: But that is from a learning perspective, how to deal with the situation, I am talking from the point where it was decided to transform the school into a full service school and install ramp etc., was there a professional at that point, like an architect that assisted?

P2: A ramp was installed but without a rail that goes to the classroom and two toilets were built.

I: Once the school was transformed, how did the integration of children with disabilities start in the school?

P1: In the past, the principals of schools in the area did not understand the meaning of full service schools, they just took children and say they do not belong here, they did not understand what inclusion is.

P2: This is the only school that accommodate children with disabilities.

I: Okay, so you think at that point of time there was still a lot of teething problems in terms of how the children would be assessed?

P2: Yes, we were also helping the neighbouring schools?

I: Is there plan at the moment to get more children with physical disabilities into the school? Are there any initiatives in place?

P: No, not at the moment.

I: Okay, so is it just from the District that children are referred?

P: Yes, from the Department.

I: Would you be able to tell me about the history and development of the first child or group of children that you experienced going through the system and what the success rate was, whether any children progressed from primary to tertiary?

P2: I can say that we have children that came here that lacked mobility, so Department of Health assisted us with wheelchairs to help the children move around. We had two children that could not walk alone and we assisted them with crutches and wheelchairs and now they developed movement. That was an achievement.

P1: And Koketso too, remember him, he is in high school now, he started with us in Grade R or Grade 1. He moved schools twice and we helped him all along and there was a great improvement. We have another girl who does not want to use a wheelchair, Nkosi but we use it when we go for camps.

P2: I remember the one time we went to the zoo, other learners assisted her and pushed her in the wheelchair. So she enjoyed a lot.

P1: At the last camp that we were not part, we encouraged them to take the wheelchair along and we saw her in photos swimming in the pool assisted by a person.

I: Has there been any changes and advances in the school environment or any refurbishments to the classrooms or the play structures since the initial transformation? This library building, I think, came after the transformation, so that would be an advancement, am I right?

P1: The library was donated with books but we want to build a ramp and we have balance balls in the library.

I: In terms of classroom numbers, was there a reduction of children in the classrooms?

P1: No reduction, the classrooms are overcrowded.

I: It is problem, of course with wheelchairs, you need more space to move around.

P1&P2: Yes.

I: Can you tell from your experience what are the positives that came out of inclusive learning is?

P1: The attitudes of learners have changed. The children don't wonder why the other children are different. The children no longer run, they used to run and bump other children, they don't run anymore in the corridors:

P2: Better collaboration between teachers and willingness and parental involvement is good, they recognize us. We also have a resource centre next to us that support us with learners, we have workshops and for those learners with severe disabilities that do not perform academically, we do have a resource centre and they support us with education. Psychologists and social works come here and we go there. It is a good collaboration.

I: Do you think there is anything negative that came out of the whole experience?

P1: There is a few educators that do not understand inclusion. We had one teacher leaving education as she did not want to deal with inclusion.

I: What do you find is the biggest challenges or barriers that children with disabilities face at school?

P1: The infrastructure.

P2: Resources, those who face auditory or visual problems, the classrooms are overcrowded.

I: Are you aware of any incident on the school grounds where a child with a physical disability has been hurt?

P1:No.

I: What are the main areas of concern that have to be addressed in terms of the physical environment, you mentioned there is ramps but no handrails, is there any other items that have to be addressed?

P1: The door threshold is not flat.

I: In terms of paraplegic toilets, are there enough?

P1: No, there is not enough. The play area is not up to standard, it is not flat.

I: So, we are talking about playgrounds, what are your observations in respect of the social interaction between the children with and without physical disabilities, you mentioned they have a buddy system?

P1: Yes, they a buddy system, they stick together.

I: Do you know of any incidents of bullying?

P2: It is rive, it is a challenge we face in Alexandria. We also had an incident where a child from another school stole a bag and we had the principal come and sort out the problem. Hide and seek …

P1: We also have bullying in the transport of children when they mix with other children.

I: So did you hear anything about that, are children with physical disabilities more prone to bullying?

P1: Yes, in transport they are being pushed.

I: How do you find the sport and recreational abilities of children with physical abilities, do they partake, are there specific facilities for them or do they get accommodated for in the existing structure?

P1: They are trying to accommodate them.

I: But there is no specific facilities for them?

P1: No, they just fit in.

I: In terms of financial support after the transformation has happened because I know the Department of Education has injected a certain amount of money for the transformation to happen, thereafter was there any support financially to take the next step?

P1: The Department of Education put in money for the full service school and then there is an audit and with the first audit there was a misunderstanding as they did not understand that the money was to be used for ramps etc. Nothing was done.

P2: We depend on the Department of Education and we work hand in hand with them but we do not know what happen to the money.

I: I believe there is a system in place where you can specifically according to the child's needs order what is needed after the assessment has been done on the child. How is this system working, is it being used?

P1: No, we don't know how it works. We just know that the money is put into the resource centres and we go to them when we need something.

I: In all this process, did you see any documentation explaining the environment and how it needs to be or any picture or photo of what for example a paraplegic toilet should look like?

P1: Yes, we have.

I: Do you know what it is called?

P2: Teaching and learning guidelines, I think.

I: That for me is very important, can I just phone tomorrow and confirm? The guidelines are very important.

P2: Yes, it has pictures and all of that.

I: Thank you, I think we can conclude the interview.

INTERVIEW B

I – Interviewer

P - Principal

I: Ma'am, I just want to say thank you very much for agreeing to be part of my study. The first question I have for you, can you please tell me how many years of experience you have in education?

P: Thirty years of experience in education and I have been teaching the foundation phase and the learner one school since I have started.

I: Currently what is your role or position at the school?

P: I am a HOD in the foundation phase.

I: What is the number of children with physical disabilities at the school.

P: So far, none.

I: In the past, since the transformation, have there been any children with physical disabilities that have been integrated?

P: Not really.

I: Do you know how this school has been chosen as one of the full service school that is part of the Department of Education's project?

P: Yes, the school was chosen because it was performing very well and secondly, they came to check on the facilities we have around us, we have a hospital near by, about a kilometre away. We have a police station also about a kilometre away and we have a community forum where they support children (teenagers) that go through abuse and they have social workers working with them.

I: At that point you were chosen as one of the schools to go through the process, was there a professional that came through and gave advice on how to proceed with the physical environment to transformation?

P: Yes, the Department sent a gentleman from Head Office to come and work with us and he was working with us as a support system to look at the infrastructures. He said that we did not need to worry too much about the infrastructures as the Department will give the school a lumpsum to try and transform the school to build ramps and toilets for the physical disabled. As you can see we, in our school, we have those ramps but we did not have a professional to advise us. Some of them are not working.

I: Is there a plan or movement to bring more physical disabled children into the school?

P: There is no plan as such as the plan that we have as a full service school we take learners who have problems cognitively or physically. If physically, provided the learner can be able to participate in a main stream school and it is only their physical appearance that affects them. We have few children like that in our communities. We have only those with cognitive disabilities with barriers in language and mathematics for now.

I: Okay, so where they have cognitive disabilities but not really physical disabilities?

P: Yes.

P: Only one time we had a midget in our school while we were still piloting and the advocacy had to be done and it was done very well. We talked to the learners about it and they were very supportive, the learners as well as the parents until she excited our school.

I: Excellent, that is wonderful, that is a success story.

P: Yes.
I: Do you remember the first child or group of children that entered into the system with physical disabilities? In fact, actually this question was just answered with your previous answer because it talks about progressing into secondary and tertiary, so I would say that that would be the student.

P: Yes, that's right.

I: Has there been changes and advances in the school environment or built environment with regards to the classroom and play structures to be more accessible?

P: Yes there is, because in each and every block every class has a ramp to the class and rails, we only have one class room block that have rails to help to hold on to although it is not well fitted but we have.

I: And the play structures?

P: The play structures are not that much accommodating to learners with challenges.

I: What do you think has been the positive feedback or the positives that have come out of inclusive learning and teaching?

P: The positive from inclusive learning and teaching has been in the teacher's attitudes a lot, because as teachers we need to support our learners and we were scared in the beginning to start when we were told to pilot inclusive learning as a full service school. We did not know what to expect and as we went through training and development, we now know understand what it meant, nothing was really going to change, it was just to support the learners who were struggling and be positive in a situation when you are standing in front of your class, you know how to apply your differentiation and all that, you know how to support your learners who are slow and those who come with physical challenges, we are kind of ready for them.

I: It is a wonderful thing, with enlightenment, you actually become so more empowered.

P: Yes, much empowered, and even our parents are so much more empowered because now we have a strategy of having a meeting in a meeting, we have a start to talk about inclusive education, to help the parents who are going to bring learners or who are sitting with learners at home, being scared to take them to school because they are scared they think they are going to be discriminated against and we have seen a positive reaction in our learners as well, very accommodative and helpful even before we started. We once had a learner in our school who got crippled through arthritis and we went to fetch her, she was in a wheelchair, so that she could at least complete her Grade 7 but through her social whatever she could not, it was her behavioural style, it was not the school. There was learners supporting her, pushing her because we told them in assembly that God created us like this and we need to accommodate one other like this and sometimes we have someone like this at home, so learn to support,

I: Beautiful, wonderful, it has actually made a difference.

I: Do you think there has been anything negative that has come out of this whole journey that you have been on?

P: Nothing negative as such.

I: It is good, it just has been a positive journey.

P: It is a positive journey, it only has been the support that is needed, much of the support from the district and from the Head Office.

I: What do you think are the biggest challenges or barriers that children with disabilities face?

P: The challenges are the community, the community need to be taught how to treat other people with something different from you because as a teacher who is a SBST coordinator, I have spoken to them.

I: Okay.

P: You find a parent with a learner with a certain disability is not comfortable of receiving the news that your learner cannot go through this school because of this reason, the accessibility is not right or we did not have facilities to help your child. They forced their learners to come here, some of them we found the learners needed to go to LSEN schools but they want them registered here and we will tell them we don't have those facilities but they will tell you that in the LSEN schools the ids there are mad which means that they don't have that knowledge that is does not mean that those learners are mad, it just means that they are different from others and that the parent first need to accept the learner before taking the child out to the world.

I: Yes, that is right.

I: Has there been any incidents on the school premises where the children with physical disabilities have been hurt?

P: No.

I: Good.

I: What are the main areas of concern that need to be addressed in terms of the physical environment of the school?

P: We need rails and our corridors are not covered. We need toilets that are functioning, our toilets are not really functioning which is a hazard to a learner who could be found in this school with that kind of disability.

I: What has been your observation in terms of social interaction between the children on the playground, so when there were kids with physical disabilities, what did you find in terms of their social interaction with others?

P: Kids will always be kids, they are rough and what we would do normally, we address them, every time we go into assembly, we are able to talk to them about that issue of being able to support one another and accept one another, if you play and you know you are rough, don't play rough with certain kids who have certain challenges, we don't call them disabilities as such, we call them challenges because each of us have been challenged at some point.

I: Yes, wonderful.

I: Have there been any incidents of bullying with children with disabilities?

P: No.

I: What initiatives does the school pursue to assist the integration of children with disabilities into the main stream system? So, with this we are talking about, I think you did mention that there is a bit extra support that a kid would get when they come into the school and they are physically challenged?

P: We are a full service and what we do and according to the policy of the Department of Education, as a full service school, we are supporting the neighbouring schools, those who are not well developed and not in receipt of some kind of training on inclusive education, that is the assistance we have. I remember another year we had to assist our neighbouring school by receiving 12 learners from their school that they felt they cannot support, that it was too much for them, so we received them in the school system and we started supporting them and there have been successes there among them and others could not.

I: How do you find the sport and recreational abilities of the children with physical disabilities? Do they participate? Are there specific facilities for them or are they accommodated within the existing sporting structure?

P: They are accommodated, unfortunately not every sport will allow them to participate with others.

I: Ma'am, that is the extent of the interview, I just want to ask if there are any questions that you would like to ask me?

P: No questions Ma'am, I just have a comment to say that there is a challenge that you never asked me and I felt like you could not ask me. Finances, learners with challenges need more support than financial and we found that because of finances in schools, we don't reach that level where we can support them to access their needs, let me say so, because some of them I remember, like I quoted an issue with the midget, I think she could have been having her own table and her own chair.

I: Oh, wonderful, right, okay.

P: We did not have those, and in case we find, we are just scared sometimes if we find someone who cannot take herself to the loo, we do not have the assistance. So those are some of the things we feel the system could look at it as well.

I: In fact, now that you have mentioned that part as well, which is very vital, there is actually two other questions that I thought of that I should ask. In terms of the legislation and the guidelines for accessible environments or universal design, has there been access to any of that type of documentation which gives guidelines on how a paraplegic bathroom should look or what gradient the ramp should be or anything of that sort because there is a lot of guidelines but has anything come to the school's table to say, look that this is what you need to follow or this is what we need to remember or anything of that sort?

P: That is the greatest challenge that we have faced since we started piloting full service, because we have been given the finances, we had to draw a business plan, we did not have any idea what is that in the first place, we had to put up ramps, we did have any guidelines hence you can see our ramps are not right, the guidance was not there, we were given our nearest lsat school as a resource school but only to find that there to, we don't have enough information because they were not fully informed themselves. The principal and teachers

found the school already erected and everything was fine for them but we it came to advising us in respect of challenges, they tell about big terms like MID whatever and all those things which was far from us to understand, we feel like we should have received guidance from an advocate from the Government who says this is how it is supposed to be because we don't have the knowledge.

I: Definitely, it is the missing link.

I: The last question is now going to be, from what I have read in terms of the policy talking about full service schools and what the structure is of the process is when you integrating a new learner in, I understand that a learner would apply and once the learner is accepted into the school, there is a process to follow whereby there would be a full assessment specific to that child, to say what are your needs, so for example you mentioned about a kid who is vertically challenged, who would need a special desk and a special chair, that kind of thing I understand would come out of this initial assessment. How do you find that process to be in terms of the kid being accepted into the school then going through the assessment, then applying for whatever changes need to be made to accommodate the child, waiting for it to be implemented? Do you find that to be a good, smooth system to go through or do you think something different needs to happen?

P: There is no smooth sailing in the Department of Education because I believe in certain cases we were supposed to have a phycologist or social worker to counsel our learners but we find that we don't even have a social worker from the Department of Education. We have to rely on the social services of the community but the social services of the community is overwhelmed with the weight that they have. They have to prioritise who to attend to first and then it becomes very difficult. We find, as teachers or as a school, we are expected to improvise which is not easy process, you know, there is a life of a person at stake.

I: Yes, days matter, weeks matter, months matter.

P: Yes, months matter and if they would ever come to meet you or talk to you or advise you, it is another area, we have to follow and follow and until a year goes by and a second year until you get used to it and as a teacher, I don't think it is fair to the learner.

I: Thank you Ma'am, thank you for your time and I am really inspired by what you do.

School C – Interview transcribed

I: Interviewer
P: Principal

I: Good morning Ma'am, I want to say thank you very much for partaking in this study of mine. The first question I want to ask, can you tell me how many years you have been in education?

P: Twenty-nine years now in education.

I: At the moment, what is the number of children with physical disabilities in the school?

P: At the moment, we only have two.

I: What is your role and position at the school?

P: I am the principal.

I: Since the transformation to a full service school, how many children with physical disabilities have been part of the school that you can remember of?

P: I can remember seven.

I: Can you tell me how was the school chosen to be part of the full service school program?

P: The school was chosen by the late Dr. Musima because we were participating in the program of helping learners with learning difficulties, then Dr. Musima recommended us as a school and we were chosen to pilot full service schools and so far we were busy also helping other nearby schools by presenting workshops or anything they need and helping them to fill in support forms for learners and hence we recognized and chosen to be a full service school.

I: Once you were transformed, how did the integration of the children with physical disabilities actually start or were there children with disabilities before the transformation?

P: It started with a parent meeting, we told parents that it is not important to take their learners very far due to financial constraints, we are here to help them, we are here for them, we admit learners with mild disabilities and mild challenges but because parents do not understand to that extent and another thing, learners who are cognitively challenged, you cannot see that by looking at them, you find it when you work with them, therefore those also we have challenges with them and fill in recommended forms and send it to the District, whereby they obtain LSEN numbers and then they are placed in special schools.

I: That is if they can't be accommodated within the school?

P: Yes, when they can't be accommodated, those learners we found very profound with physical disabilities, we refer them to special schools like our resource centre, Prospectus Novus School in Pretoria.

I: When you were going through the transformation of the school and physical environment, by putting in ramps and that type of thing, were those done after the school was built?

P: Yes.

I: When the ramps were put in and hand rails and all of that., was there a professional architect or any professional that was advising on the implementation of the alterations being done to the buildings?

P: I can't really tell, but I was just aware that transformation was taking place, people came in but you could not tell whether they were architects or builders because there was also classrooms added.

I: Yes, okay.

P: Because they built two bigger classrooms with double doors, initially we did not have that.

I: So that would you allow for better access for wheelchairs, bigger doorway, okay.

I: In terms of the first child or group of children that entered through the system once the transformation had occurred, can you tell me a little bit about that whole experience, what was the success rate, did the children progress through to secondary, how did you find that?

P: I remember the first child, he was not the first child but he was amongst the first group. This child did not have hands, so not having hands to these normal learners is something which they would like to see and tease the child. We took the child to the assembly and to his classroom, and we said to the learners, you see this child is just like us, he is a normal child and even if his hands are not like ours but he is already used to what he has and no one should tease him and not play with him. We said everyone should play with him, he is our friend, we love him. His name was Zandile and Zandile became the most popular child in the school. Our children now make friends with the children with disabilities, they like them, they touch them, they kiss them, they are so friendly.

I: Wonderful and where did Zandile go from here?

P: Zandile was with us until his Mother's marriage broke up and he went back to Swaziland.

I: Okay.

I: Were there any children with physical disabilities who went from primary school to secondary school?

P: No, we don't have any, we did not have any serious ones, we have not yet experienced a child in a wheelchair.

I: Okay, no problem. Is there a plan of any sort to actually get more children with physical disabilities into the school because there are the ramps that are provided and there is a certain amount of work that has gone in to creating a full service school, do you just take children as they come to the school and apply to be enrolled or is there any other way that children are brought in or found, is there any movement of that sort?

P: No, we definitely do not have a plan, as a school we admit any learner that come and those that are identified to go to a full service school come to us via the District.

I: So that is how they come.

P: Yes, they come via the District but as I have already told you, I am visioning a full service school happening, we will want ways to advertise and admit such learners.

I: So, in terms of the changes and advances in the school environment, the classrooms you mentioned to me that there were two additional classrooms added with double doors - were the existing classrooms changed in any way to accommodate children with wheelchairs, well you say you haven't had wheelchairs so that really does not apply because it is a matter when wheelchairs go into the classroom the number of children might need to reduce because there is more space required but you haven't really had those circumstances.

P: Exactly. There were not two classrooms added, two blocks were added and a sick bay. There was nothing done to the original classrooms.

I: In terms of play structures and play areas, I have seen there is a very big open area. Were there play structures on the property that was not accessible to children with physical disabilities and was there anything done about that because you know play is such an important part of the whole education of children?

P: Nothing was done to accommodate the play structures and we were relaxed because no one came, if they were there, something would have been done definitely. We would like to have a play structure that accommodates them for when they come.

I: What do you find the biggest positive that came out of this whole transformation, whether it would be amongst the staff or learners, just generally what do you find have been the biggest positive factor?

P: The biggest positive is that the school grew, the number of teachers increased and therefor positions came up as the number was growing and it has humbled our learners because I know that our learners now treat people with sensitivity.

I: That is so beautiful.

P: The learners know that we have different talents and skills and our learners have now learned that you do not laugh at the child that is cognitively challenged and they have definitely realised that they need one another and the staff is also like that. Our groundsmen have increased in number and now are able to keep the school more clean as you have witnessed. Yes, it has come with advantages and going into buildings, we have ramps, we have two blocks of buildings, we have the sickbay. We also now have an administrative block, previously we were using a classroom. We definitely benefitted.

I: That is so wonderful.

I: Do you think there has been anything negative that has come out of it?

P: I definitely think so, but I think it is because we did not understand. We were supposed to have Assistant Teachers but we do not have them. We still have big numbers in the classroom and it is a challenge to handle because inclusive learners need more attention than normal children so by the time you attend to those ones, others are suffering. If you try to expand opportunities for them, then you fall behind because dealing with such children you cannot use the syllabus as scheduled but we are forced to go with the syllabus and leaving other children behind and not giving them individual attention. Those children can definitely benefit but because of time and the load of work we can definitely not push it.

I: What do you think would be the biggest challenge or barrier that a child with a disability faces?

P: At the moment, our ablution is up to standard fully. There is only a single toilet and not up to standard and because there is no people allocated to the toilet, the children use it for fun and they like to go in there because the height of the toilet is a little bit lower and the handrails are fun for them to hang onto. Yes, I think that needs to be given attention to and spaces in the classroom, we don't have spaces in the classroom because we did not yet experience, we did not yet have them. Even the bigger classrooms that were built for the school are being used as normal classrooms and as a result it create a problem for teachers because we admit more learners than we have space for and the teacher ends up with a large number of learners to fill the space.

I: Has there been any incidents on the school premises where children with physical disabilities have been hurt?

P: Not yet, no.

I: That is wonderful.

I: You have actually answered this question but I will just ask it again, what are your observations in terms of social interaction between children on the playground?

P: Children really don't see any difference and any problem, I have realised that they have learnt to understand these learners and they became more attracted to them because they are different from them.

I: To your knowledge, has there been any bullying of children with disabilities.

P: No, at all.

I: I have asked this question before, what initiatives does the school pursue to assist the integration of children with disabilities into the main stream system, so I asked before, whether there is a way to go and find children and bring them in, this is more related to, when a child with a disability is enrolled, what is the process, how do get them to be in a smooth space?

P: Yes, as I have indicated, we enrol them just as any other child. We start with educators accepting them, then we go to the learners and introduce them and talk to the learners and because these learners are different, the learners accept more than one another. Everyone likes to befriend them especially because there is a few of them.

I: Then it is a matter of actually addressing the differences and having those conversations that help them to accept.

P: To adapt, exactly.

I: How do you find the sport and recreational abilities of children with physical disabilities, when it comes to sport, do they participate, are there specific facilities for them or are they accommodated within the existing sporting structure?

P: They are being accommodated in existing structures and it is sometimes become a challenge for them and they end up not participating and thank you for opening our eyes, that we should do something for these learners, as well, thank you so much.

I: No problem.

I: In terms of the financial support that was given to the school to go through the full service transition, what has happened between then and now, how do you find the financial support?

P: It is a stress for me, it is really not sufficient, we are trying to make partnerships with businesses but as you know we don't succeed most of the time. One day I found a sponsor coach who was teaching how to ride and talk to sponsors, I even went to the extent of inviting him to the school. I then talked to the chairperson of the SGB that this would benefit the school and it is even development for employees. He came last week, he talked to us, we are hoping and thinking that if we use his strategies, maybe we would get something but definitely this was just the one thing we gained, we need it 10 times more.

I: So was there just one amount that was given to the school for transformation by the Department.

P: Yes, just once off, but every year when the Department gives out the budget for schools, money is given to our resource centres which helps with in-service training.

I: Okay, so there is an annual amount.

P: Yes, a certain percentage goes to the resource centres and then the resource centres have the responsibility of developing the school and teachers.

I: Does that money come out of your school's fund or is it additional?

P: It comes out of school's fund. I also want to say, that the initial amount was enough for us to buy two vehicles for the school but that was seven years ago and now the vehicles are aging and my fear is if they break, where are we going to get other transport, hence that is why we are thinking of sponsors and going into partnerships with businesses. This was in my head when I invited the sponsor coach. Maybe when he present to SMT and SGB members, he will help and he did. I said to the chairperson that we get a sponsorship we should take it and buy what we need.

I: From what I have been reading, the process that the Department has outlined for enrolling of a child is that once a child becomes enrolled, there is an assessment, specific to that child that is done, to understand the needs of that child. So for example, if the child is extremely short or small and needed a smaller desk and a smaller chair, that would come out of the assessment and then the school would apply to the District for whatever facility needed to be changed or somehow altered to accommodate the child that has been accepted. How do you find that system, is that system working, have you gone through that system because that is the process as I understand it according to the Department's paper?

P: Yes, that system is not working, we have not yet implemented it because we have not yet found learners like that but thank you for opening my eyes that we might, we are preparing for them to come in and we so wish for them to come in and those are one of the steps we will look at when we plan strategies, so that we will know what will happen when we have this. I was not even aware that we can have short learners who need specific desks.

I: Yes, that's right, from what I understand, as a child comes in, whether the child has a visual disability or a hearing impairment or whatever, the assessment will be done to understand what it is this child needs and then the application will be done to District and then District would come in. Obviously those things are going to cost money because now we need to put in brail rails in for a child that is blind. So I just wanted to know if the system was working because it is very important.

P: It is really not working.

I: The last question I want to ask you, from my point of view I am looking at the architecture and the built environment, so I want to know whether you as the principal of the school at any point has been given or if you had access to guidelines or regulations or documentation that explains to what is required of the physical environment, so for example, in my guidelines I have drawings of what a paraplegic toilet should look like which I want to know if you ever had access to, any guideline, whether it is written or in the form of drawings explaining how accessibility works from a physical environment's point of view?

P: No.

I: Do you think that would help you?

P: Very much, as I said, it is my dream. We would a difference to be seen in this school.

I: Oh, I would love that to happen Ma'am. Is there any question that you have or anything that you think I missed out on that you need to tell me as part of this?

P: You know the Department is doing a certain programme where we go every June holidays with a different specialist talking about inclusion but for physical building this is the first time.

I: So maybe I need to talk to them about this and ask them to include someone like me.

P: Yes, and I will also speak to them. I will also sell you, it is imperative, it is important and maybe we can also create a platform because I know other inclusive principals and maybe we can arrange a workshop.

I: That will be wonderful.

INTERVIEW D

I: Interviewer

P: Principal

I: Thank you for agreeing to be interviewed by me, I am just going to start by asking how many years have you been in education?

P: I have been working in education since 1988 until now.

I: How many children with physical disabilities attend this school?

P: We have plus or minus 16 learners with physical disabilities.

I: Is that with cognitive disabilities or just physical disabilities?

P: Most of them have physical disabilities, almost 40% of the enrolment has cognitive disabilities.

I: Was this school designed to be inclusive or was it refurbished to cater for inclusivity?

P: The school was refurbished to become inclusive.

I: What was your role during that transformation period?

P: My role during the transformation period was to communicate with all stake holders and involving everyone, including the community, so that everyone could understand about inclusive education and also we took the HDP of the schools and we did a brainstorming session so that everyone could know what was happening with inclusive education. We involve everyone holistically in the community.

I: How was the school chosen to be one of the full service schools?

P: We underwent a serious screening to be chosen because there were five schools in each province. It was a national project not a provincial project. The policies of the institution were checked, also the compliances, management and leadership especially of the manager were checked.

I: How old is the school?

P: The school started in 1996, which means it is more than 20 years old.

I: When the school was converted, children with physical disabilities started to come in, did it happen immediately? So the question is, the background of children with disabilities, when did the integration start and how?

P: The process of implementation started in 016.

I: When you were in the process of building the ramps, putting the hand rails in and type of thing, was there a professional architect that was advising you on what to do or how did you work out what to do at thee school?

P: To be honest, we did not have an architect, I used my senses.

I: Well done.

P: I just used my own understanding of ramps.

I: Okay, that's good. Sir, at the moment, is there any plan to get more children with physical disabilities into the school, how do find children that need to come to the school and show them that there is a facility, is there some plan of that sort?

P: Yes, .in other schools they just refer learners to the District, but when they go to the District, the District just assess them and refer them to the school. The challenge is that there is only one full service school, which implement inclusive education, especially in Soweto, Lakeview Full Service and they were having challenges of overcrowding. Many schools refer learners through the District to this school because this school is the best school, they adhere to all the policies of the Department of Education. To limit these problems, we are having a planning session about the infrastructure.

I: Can you give me a brief history of the first child or first group of children that entered the system when we had transformed and what was the success rate and did that child or group of children progress to secondary? How did they do it? How was it?

P: The first group that was transferred to the institution, they came through the District, we used the instrument SIAS, SIAS is used when you have a group to screen, identify and support, that system is easy as it has a functioning SBSG and specialised educators which they call LSE, Learner Support Educator, they put together, as an interim process, making the process simpler without problems, to be put in practice.

I: The children that entered the school, did they cope well with the ramps and things like that?

P: Yes, they cope well because remember we do not have severe physical disabilities, we have one child with a limp because his leg is shorter but he is becoming fully functional, we have more learners with cognitive disabilities and it was easier to adapt.

I: Has there been any wheelchair users that came into the school?

P: At the moment, no. We just have children that come from outside when there is a sporting activity that has well adapted and they can are capable to use their wheelchairs here.

I: Has there been any changes in the school environment or built environment with regard to the classroom and play structures, the classrooms for example, was there a reduced number of children that were in the class or did the classroom stay the same size from the beginning?

P: The classroom stayed the same size and number, from 1 to 40 children per class. We also have another category in this institution, called skills, those classes are reduced from 1 to 25 children per class. This school is three in one, we have mainstream, those learners who are full service and those learners that are severe, all in one school.

I: What do you find has been the most positive outcomes from inclusive learning and inclusive teaching?

P: The outcomes are very good, there are learners who have been referred to this institution who are having some challenges, having some learning challenges or learning barriers, you find that after a class that was introduced, we call it LSE – Learner Support Educators, a curriculum was designed for those learners who are having challenges. The curriculum was designed according to their pattern and from there, after they have attended that class, they need to go back to full service, to mainstream or to the class which they are supposed to be. We call it an individual support which has been designed specifically to them, now we find there is a correlation between them.

I: Do you think that there has been anything negative that has come out of this whole experience, or anything that you find that is not quite right?

P: Yes, there are some bullying challenges, you find that these learners are not being respected equally the same but we put a programme into place because at this institution we have a fulltime social worker who does counselling to the learners and at the same time we are also having occupational therapy. In the counselling we are telling the learners that everyone is unique, everyone is born unique and the programme is helping them so that the negatives become positives.

I: So I think that that is going to be the answer to the next question because I want to know what are the biggest challenges or barriers that children with disabilities face?

P: I think that one is already answered.

I: Definitely, has there been any incidents on the school premises where children with physical disabilities have been hurt?

P: No, never.

I: What do you think are the main areas of concerns that need to be addressed in terms of the physical environment?

P: Yes, I think there is a need for sporting facilities and there is not enough paraplegic toilets for the children, in each block we only have paraplegic toilet for boys and girls, that is not enough as 40% of the enrolment who are physical disabled, either cognitive or physical and they need to use those facilities but we do not have enough. About sporting facilities, we need to have more, we only have netball and a soccer field but we do not have the rest and that is challenging, we need more so that those learners do not become bored, they can't always be in classes, they need to go outside to do some life skills.

I: What have been your observation in terms of social interaction between children with disabilities and children without disabilities on the playground?

P: What I have observed on the playground is very good, there is a good communication and there is a good interaction and there is a good speaking and listening. In all, holistically I will

say that everything is well, is very good, they have the ground, the ground has been laid, you still remember we talked about everywhere we meet, we have assemblies from Monday to Friday, we talk in these assemblies about discrimination, we don't want to discriminate and the social workers also play an important role in that.

I: This question has just been answered because it is all about sport and then I want to find out, since the transformation process, has there been support from a financial point of view that is helping the school to continue to grow towards accessibility and to accommodate?

P: During the transformation process, we had financial support from Gauteng Department of Education, it was once off, during the transformation process in 2002, we got a financial injection from the Gauteng Department so that we could start this project, I managed to buy two busses with that financial support and further I also put in hand rails to make the environment suitable for inclusive education. We got this financial support once, it was not enough and we are still looking for more.

I: I know. From what I understand, there is a system or process that needs to be followed when a child with a disability comes to this school. Once the child has been admitted, from what I understand, the assessment will happen and if there is anything that comes out of the assessment that needs to be changed or adapted to suit that child or accommodate that child, then an application needs to be put in with the District and they will then come through and fulfil the needs. How do you find that process?

P: If the application has been done by the school through the District, the moment that application to through, they say that learner needs to come to Lakeview Full Service School, we have the capability to do it, we have resource schools which have benefited during the Apartheid area, they have all the resources, all the therapies e.g. physical and speech therapy. We get all the resources from these schools and we do not need to go back to the District. Here we have the people that can do, we have the functionality, we have SBFC and those teachers are the ones who know the learners. There is mild, moderate and severe disabilities and you can be mild but you can be severe. If the learner has been identified with mild disabilities, if that learner has been unlocked with challenges there is no barrier and that learner needs to go to mainstream, we do not segregate, they are in the same class, those learners have LSEN numbers to identify, that number is to say that learner A is not the same as learner B, is to identify what we call tracking, if the tracking is for example B, that learner is in the same class as A. If a learner is okay and continue with other classes, that learner might have some challenges, a barrier can be caused not only by the school but also by the

environment, sometimes we found that a principal from a previous school or parents can be a barrier. We use social workers and barriers can be unlocked, that is why this institution is full service, it is a key, this school is going to have an infrastructure for hostels so that when a learner comes from a poor background, they can't be going back because they will have the challenges again, they need to be here in this institution until such time. This is a primary school, the idea is to have a secondary school and then after the learner has achieved everything, the learner goes to the working place, we prepare the learner for life. We don't go back to the District, everything is done in the school. By law, all schools are going to have to be inclusive, this is still being drafted by the UN, South Africa has been chosen to lead, it is what happened to Israel, Israel was chosen by God, everyone must follow what Israel does. This is a national project but it is also a world-wide project. Everybody must follow this vision but it is only Lakeview that has been converted, five schools have been identified, Lakeview can't take everybody, we can only take 2% but we need to follow inclusive education. We are not drafting anymore, it is now implementation.

I: My last question is regarding the documentation and guidelines and I see that you definitely know your legislation, White Paper 6 and there is quite a bit of legislation that has been written towards legislating inclusive education. My question is did you come across documentation that contains guidelines or specifications with regards to the physical built environment, there is certain specifications that will tell you exactly what the gradient of the ramps need to be or what the height of the hand rails need to be. Did you ever see something like that?

P: No, I have never seen something like that but we do need to have that.

I: Yes, it is a very important document to have even with just a few drawings, you will be able to see what a paraplegic toilet should look like and whether your toilethrooms look like that, from my side as an architect it is important that you have seen this.

I: From my side, thank you for your time, is there any questions or feedback from your side?

P: No, everything has been covered.

Appendix 4

Audit sheets

SCHOOL ACCESS AUDIT CHECKLIST

Direct Access Consultancy Ltd
21 Saint Lawrence Court
Nantwich
Cheshire

T: 0845 056 4421
e: info@accessaudits.com
w: www.accessaudits.com

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School Access Audit Checklist – _____

Question	Yes / No	Details
Checklist 1 - Approach Routes & Street Furniture		
1.1 - Is the school within convenient walking distance of:- _ Public Highway and Pathways? _ Public Transport e.g. Bus Stops? _ Car parking? (For car parking refer to Checklist 2)		
1.2 - Route free of kerbs? Do crossings on approach have tactile paving? If there are pedestrian crossings, do these have turn cones to aid people who are DeafBlind?		
1.3 - Wide enough? If a route or pathway is narrow, is there a suitable passing place for wheelchair users? Is plantation trimmed back and are low branches avoided?		
1.4 - Surfaces even and slip resistant? Is paving flush with no cracks or gaps that could trap the wheels of a wheelchair?		
1.5 - Is the location of the school clearly identified from the street? Visual clues and sufficient landmarks to aid orientation?		
1.6 - Free from hazards such as bollards, litter bins? Are planting features kept to a minimum and are they colour contrasted?		
1.7 - Free from hazardous building features such as outward-opening doors, windows or overhangs? Do columns or structural posts have markings at two heights?		
1.8 - Adequate seating provided along routes? Is there seating where parents wait to pick up / drop off their children?		

Free School Access Audit Checklist Provided by Direct Access Consultancy www.accessaudits.com / This can be provided in Word format on request
If you would like a professional and full school access audit undertaken by an Access Consultant with an accessibility plan please contact us 0845 056442

Checklist 2 - Car Parking		
2.1 - Are accessible bays provided for badge holders?		
2.2 - Accessible bays clearly sign-posted from the school's car park entrance? Is there signage to the front of the bays?		
2.3 - Are bays marked out appropiately and easily identified? Can car doors be fully opened to allow disabled drivers and passengers to transfer to a wheel chair parked alongside?		
2.4 - Close enough to facilities the car park serves?		
2.5 - Routes from parking area to school entrance accessible, with dropped kerbs and appropriate tactile warnings? Car park surface smooth, even and free from loose stones?		
2.6 - For larger car parks, are safety marked out walking routes provided to guard slow moving persons or people with hearing impairments?		
Checklist 3 - External Ramps		
3.1 - Wide enough and suitably graded? Is there colour contrast to the surface of the ramp?		
3.2 - Suitable handrails on each side?		
3.3 - Surface slip-resistant, firmly fixed and easy to maintain?		
3.4 - Edges protected to prevent accidents?		
Checklist 4 - External Steps		
4.1 - Visual and tactile warnings at the top and bottom of steps?		

4.2 - Suitable handrails on each side? Are handrails suitably colour contrasted to aid people with impaired vision?		
4.3 - Lighting adequate and well positioned? Are steps appropiately illuminated during darker hours?		
4.4 - Treads long enough and all of the same length?		
4.5 - Risers shallow enough, all of the same height, and unlikely to trip users? Are there open risers?		
4.6 - Nosings readily identifiable? If nosings are painted, is the paint still durable with no wear and tear?		
Checklist 5 - Entrances		
5.1 - Main school entrances easy to find? Is the entrance clearly distinguishable from facade?		
5.2 - Door opening wide enough for all users? Enough space alongside leading edge for a wheel chair user to open the door while clear of the door swing?		
5.3 - Level or flush threshold?		
5.4 - If there are steps at the main entrance, is there signage indicating where the accessible entrance is located?		
5.5 - Can people each side of the door, either standing or seated, see each other and be seen? If the entrance is solid, is this due to security concerns?		
5.6 - Door control at a suitable height for both standing and seated users? Are door handles clearly located, easy to use and grip?		

5.7 - Door closer of appropriate type? Can the door be easily opened single handedly?		
5.8 - Entry phones and intercoms detailed to allow use by people with sensory or mobility impairments? Is there an LED display to accommodate people with hearing impairments?		
5.9 - Glazed entrance door: markings for safety and visibility? If manifestations are provided, are these suitably colour contrasted against their background?		
5.10 - Weather mat of firm texture and flush with floor?		
Checklist 6 - Reception Areas and Lobbies		
6.1 - Clear view in from outside? Can receptionists see visitors and provide assistance if necessary?		
6.2 - Transitional lighting? Is the entrance lobby and reception area well illuminated?		
6.3 - Reception/desk/counter/ checkout suitable for approach and use from both sides by people either standing and seated?		
6.4 - Surfaces suitable? Is there colour contrast to the flooring in front of the reception desk and are edges highlighted?		
6.5 - Induction loop fitted? Is there signage indicating the availability of the facility? Are front line staff aware of the facility and its purpose?		
Checklist 7 - Corridors and Internal Surfaces		
7.1 - Corridor wide enough for a wheel chair user to manoeuvre and for other people to pass? Turning space for wheel chair users?		

7.2 - Free from obstruction to wheel chair users and from hazards to people with impaired sight? Are there any internal columns that have a lack of colour contrast?		
7.3 - Are all key facilities within the school accessible for all users? Eg Sport Hall, Main Hall, Music Room, Changing Room etc. Where there are facilities not available can these be 'swopped' with a standard classroom?		
7.4 - Floor surfaces suitable for passage of wheelchairs? Junctions between floor surfaces correctly detailed?		
7.5 - Colours, tones and textures varied to help people distinguish between surfaces and fixtures and fittings? Do the floors suitably colour contrast against the walls (this can also be achieved by having well contrasted skirting boards)		
7.6 - Floor surfaces slip-resistant? Bright, boldly patterned floors avoided? Busy or distracting wall coverings avoided?		
Checklist 8 - Internal Doors		
8.1 - Distinguishable from surroundings?		
8.2 - Glass door: clearly visible when closed? Are manifestations suitably colour contrasted against the background?		
8.3 - Can people each side of the door, either standing or seated, see each other and be seen? Are vision panels kept clear of temporary notices? (for an example classroom entrances)		
8.4 - Clear opening width sufficient for a wheel chair user? Adequate space available alongside leading edge for a wheel chair user to open the door while clear of the door swing?		

8.5 - Door control at a height suitable for both standing and seated users? Easily gripped and operated? Control clearly distinguishable from the door itself?		
8.6 - Door light enough to open easily? Door closers of an appropriate type and with minimum necessary opening pressure?		
Checklist 9 - Internal Ramps		
9.1 - Ramp available for short rise within single storey?		
9.2 - Wide enough and suitably graded? Surface slip resistant?		
9.3 - Exposed edges protected to prevent accidents?		
9.4 - Suitable handrail each side?		
Checklist 10 - Internal Stairs		
10.1 - Treads long enough and each of same length?		
10.2 - Risers shallow enough, all of the same height, and unlikely to trip users?		
10.3 - Nosings readily identifiable?		
10.4 - Suitable handrails on each side? Do handrails extend 300mm beyond the first and last step pitch-line? Are handrails suitably colour contrasted?		
10.5 - Landings big enough and provided at intermediate levels in a long flight?		

Checklist 11 - Lifts		
11.1 - Passenger lift available for vertical circulation within a building of more than one storey?		
11.2 - Car dimensions sufficient to allow space for wheel chair user? Door opens wide enough for wheel chair users?		
11.3 - Support rails in car appropriately designed and positioned?		
11.4 - Is there a mirror within the lift car?		
11.5 - Delayed-action closer and override (not a door pressure system) to allow slow entry or exit?		
11.6 - Controls, including emergency call, located easily using visual or tactile information and within easy reach of all users?		
11.7 - Voice indication of floor reached? Is audio loud enough to be heard by hearing aid users?		
11.8 - Is there a floor level indicator inside and outside the lift to reassure people with hearing impairments?		
Checklist 12 - WC Provision & Changing Areas		
12.1 - Lobby door light enough to open easily? Lobby of sufficient size for easy access?		
12.2 - Slip-resistant floors throughout?		
12.3 - Fittings all easily distinguishable from background? Are hand dryers and sanitary ware easily seen against their surroundings?		

12.4 - Compartment door controls all easily gripped and operated? Are cubicle doors suitably colour contrasted against the panels?		
12.5 - Are urinals well contrasted and do they have grab rails to assist people with ambulant disabilities?		
12.6 - Are lever style taps provided within the WCs to aid people with dexterity impairments?		
12.7 - When there is no accessible WC available, is there a facility provided for people with ambulant disabilities?		
12.8 - Where there are shower facilities, is a grab rail provided? Is there a level access shower for disabled people?		
Checklist 13 - WCs: Wheelchair Users		
13.1 - Compartment large enough to allow manoeuvring into position for frontal, lateral, angled and backward transfer unassisted and with assistance?		
13.2 - Travel distance to a suitable WC no greater that that for able-bodied people?		
13.3 - Sufficient space available outside toilet compartment for manoeuvre? Is the entrance wide enough and does it open outwards?		
13.4 - Hand washing and dry facilities within easy reach of someone seated on WC? Is the hand basin suitably positioned in accordance to BS8300?		
13.5 - Door controls, lock and light switch easily reached and operated? Is there a grab rail to the inner face of the entrance?		

13.6 - Tap appropriate for use by a person with limited dexterity, grip of strength?		
13.7 - Suitably designed grab rails fitted in all positions necessary to assist manoeuvring? Are grab rails suitably colour contrasted to aid people with impaired vision?		
13.8 - Is there a back rest provided to the toilet pan?		
13.9 - Is the flush of a suitable spatula type and is it appropiately located on the transfer side of the toilet pan?		
13.10 - Is the transfer side of the toilet pan kept clear of any obstacles that may deny wheelchair users all of the transferring techniques in which an accessible WC is designed to provide?		
13.11 - Is there a cord alarm? Is this coloured red with two triangular bangles and easy to reach from floor level?		
Checklist 14 - Facilities		
14.1 - Are seats provided at intervals along long internal routes or where waiting likely? Seats stable, with armrests and provided in a range of heights? Space for wheelchair user to pull up alongside a seated companion?		
14.2 - Are chairs with armrests provided within the Staff Room and other key locations such as meeting areas?		
14.3 - Are a number of chairs with armrests available within each classroom?		
14.4 - Do dining room counters have provision on both sides for wheelchair users? Do these counters have an induction loop to accommodate hearing aid users?		

14.5 - Do vending machines have all operating parts at less than 1200mm off the floor level and are they suitably colour contrasted?		
14.6 - Does the dining room have appropriate seating rather than fixed seating which can be inaccessible for a range of users?		
14.7 - Is there a dropped counter and an induction loop available for the Library counter?		
14.8 - Where there are IT facilities i.e. within classrooms and the Library (if applicable) are height adjustable computer desks available?		
14.9 - In the Main Hall, is the stage raised? If so what is the current procedure for wheelchair users? For an example when receiving awards on Speech Day?		
Checklist 15 - Way Finding		
15.1 - Overall layout of school reasonably clear and logical? Is there signage available in Braille and tactile?		
15.2 - On entering the reception area, are signs designed and located to convey information to visitors with sight impairments and wheel chair users with lower eye levels?		
15.3 - Are standard toilet facilities suitably signed? On approach and on the actual entrances? Are the locations of the accessible WC facilities suitably identified and located? Does signage have the International Symbol of Access? (Wheelchair symbol)		
15.4 - Within stairwells are each of the levels clearly identifiable by tactile and visual information?		

15.5 - Are the location of the lifts clearly signed at key locations throughout the school? Is there lift signage near the reception area and on entry to key stairwells?		
Checklist 16 - Lighting & Acoustics		
16.1 - Lighting designed to meet a wide range of users needs? Level of lighting sufficient for intended use? Lights positioned where they do not cause glare, reflection, confusing shadows or pools of light and dark?		
16.2 - Can occupiers control lighting? Are light switch plates suitably colour contrasted and appropiately positioned for a wheelchair user?		
16.3 - Are classrooms appropriately illuminated and are blinds available to control the natural day lighting? Is glare avoided which can hinder attempts by people with hearing impairments to lip-read?		
16.4 - Quiet and noisy areas separated by a buffer zone? Environment free from unnecessary obtrusive noise (e.g. heating units)?		
16.5 - Good balance of hard and soft surfaces?		
16.6 - Are induction loops fitted within the key areas i.e.- Main Hall, Sports Hall, key study areas e.g. Music Room.		
Checklist 17 - Means of Escape		
17.1 - Audible alarm system supplemented by visual system?		
17.2 - Ground floor exit routes accessible to all, including wheel chair users, as entrance routes?		

17.3 - Once outside, can a wheelchair user get to a place of safety? Are pathways provided and are these wide enough?		
17.3 - Vertical escape from upper to lower floors possible using a fire-protected lift with an independent power supply?		
17.4 - If disabled people are unable to leave the building, is there a suitable refuge area? Is there an intercom provided within the refuge area and does this have accessible features such as an LED display?		
Checklist 18 - Building Management		
18.1 - External Routes; Including steps and ramps, kept clean, unobstructed and free from surface water, snow and ice?		
18.2 - Accessible parking; Designated spaces not used by non-disabled drivers and kept free from obstructions?		
18.3 - Horizontal circulation; Space required for wheel chair manoeuvre not obstructed by furniture, deliveries, storage etc.?		
18.4 - Vertical circulation; Lifts, platform lifts and stair lifts checked regularly for proper functioning?		
18.5 - Means of Escape; Exit routes checked regularly for freedom from obstacles (including locked doors) and combustible materials? Alarm systems, including those in WCs, regularly checked?		

Checklist Checked by		Date	

Further Information

With an access audit compiled by Direct Access Consultancy you would get a qualified access auditor who would also write a detailed accessibility / action plan and a report that contains lots of photographs. This is a very simple version of our report, which is far more detailed. Our access audits would also ensure that the school is doing what it can to meet obligations under the Equality Act 2010. For more details on our access audits for schools please check http://www.accessaudits.com/access-audits/education/ or visit our homepage, which is http://www.accessaudits.com

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Appendix 5

Audit data received

Nadira Haripersadh - M Arch (Research) Architecture

School Access Audit Checklist

SCHOOL	A		B		C		D	
Disclaimer for use of access audit checklist from Direct Access								
Question	Yes / No /	Score	Yes / No /	Score	Yes / No /	Score	Yes / No /	Score
Checklist 1 - Approach Routes & Street Furniture	26	50%	24	33%	24	50%	26	46%
1.1 - Is the school within convenient walking distance of:-	N/A	0	N/A	0	N/A	0	N/A	0
_ Public Highway and Pathways?	Yes	2	No	0	No	0	No	0
_ Public Transport e.g. Bus Stops?	Yes	2	Yes	2	Yes	2	Yes	2
_ Car parking? (For car parking refer to Checklist 2)	Yes	2	N/A	0	N/A	0	Yes	2
1.2 - Route free of kerbs?	No	0	No	0	No	0	Yes	1
_ Do crossings on approach have tactile paving?	No	0	No	0	No	0	Yes	1
_ If there are pedestrian crossings, do these have turn cones	No	0	No	0	Yes	1	No	0
1.3 - Wide enough? If a route or pathway is narrow, is there a	Yes	2	Yes	2	Yes	2	Yes	2
_ Is plantation trimmed back and are low branches avoided?	Yes	2	Yes	2	Yes	2	Yes	2
1.4 - Surfaces even and slip resistant? Is paving flush with no	No	0	No	0	Yes	1	No	0
1.5 - Is the location of the school clearly identified from the	No	0	No	0	Yes	1	Yes	1
1.6 - Free from hazards such as bollards, litter bins? Are	Yes	1	No	0	Yes	2	Yes	1
1.7 - Free from hazardous building features such as outward-	Yes	2	Yes	2	Yes	1	No	0
1.8 - Adequate seating provided along routes? Is there seating	No	0	No	0	No	0	No	0
Checklist 2 - Car Parking	16	25%	14	29%	16	31%	14	50%
2.1 - Are accessible bays provided for badge holders?	No	0	No	0	No	0	No	0
2.2 - Accessible bays clearly sign-posted from the school's car	No	0	No	0	No	0	No	0
2.3 - Are bays marked out appropiately and easily identified?	No	0	No	0	No	0	No	0
2.4 - Close enough to facilities the car park serves?	No	0	N/A	0	No	0	Yes	2
2.5 - Routes from parking area to school entrance	Yes	2	Yes	2	Yes	2	Yes	2
...with dropped kerbs and appropriate tactile warnings?	No	0	Yes	2	Yes	1	Yes	1
Car park surface smooth, even and free from loose stones?	Yes	2	No	0	Yes	2	Yes	2
2.6 - For larger car parks, are safety marked out walking routes	No	0	No	0	No	0	N/A	0
Checklist 3 - External Ramps	8	88%	8	0%	8	50%	8	75%
3.1 - Wide enough and suitably graded? Is there colour	Yes	2	No	0	Yes	1	Yes	2
3.2 - Suitable handrails on each side?	Yes	1	No	0	Yes	1	Yes	2
3.3 - Surface slip-resistant, firmly fixed and easy to maintain?	Yes	2	No	0	Yes	2	Yes	2
3.4 - Edges protected to prevent accidents?	Yes	2	No	0	No	0	No	0
Checklist 4 - External Steps	14	64%	14	14%	14	29%	14	43%
4.1 - Visual and tactile warnings at the top and bottom of	No	0	No	0	No	0	No	0
4.2 - Suitable handrails on each side? Are handrails suitably	Yes	1	No	0	No	0	No	0
4.3 - Lighting adequate and well positioned? Are steps	Yes	2	No	0	No	0	No	0
4.4 - Treads long enough and all of the same length?	Yes	2	No	0	Yes	2	Yes	2
4.5 - Risers shallow enough, all of the same height, and unlikely	Yes	2	No	0	No	0	Yes	2
_ Are there closed risers?	Yes	2	Yes	2	Yes	2	Yes	2
4.6 - Nosings readily identifiable? If nosings are painted, is the	No	0	No	0	No	0	No	0
Checklist 5 - Entrances	18	50%	20	5%	18	78%	20	60%
5.1 - Main school entrances easy to find? Is the entrance clearly	Yes	1	Yes	1	Yes	2	No	0
5.2 - Door opening wide enough for all users? Enough space	Yes	2	No	0	Yes	2	Yes	2
5.3 - Level or flush threshold?	Yes	1	No	0	Yes	2	Yes	2
5.4 - If there are steps at the main entrance, is there signage	N/A	0	No	0	N/A	0	N/A	0
5.5 - Can people each side of the door, either standing or	No	0	No	0	Yes	2	No	0
If the entrance is solid, is this due to security concerns?	Yes	2	No	0	Yes	2	Yes	2

5.6 - Door control at a suitable height for both standing and	Yes	2	No	0	Yes	2	Yes	2
5.7 - Door closer of appropriate type? Can the door be easily	Yes	1	No	0	Yes	2	Yes	2
5.8 - Entry phones and intercoms detailed to allow use by	No	0	No	0	No	0	No	0
5.9 - Glazed entrance door: markings for safety and visibility? If	N/A	0	N/A	0	N/A	0	Yes	2
5.10 - Weather mat of firm texture and flush with floor?	No	0	No	0	No	0	No	0
Checklist 6 - Reception Areas and Lobbies	10	40%	10	20%	10	10%	10	20%
6.1 - Clear view in from outside? Can receptionists see visitors	No	0	No	0	Yes	1	No	0
6.2 - Transitional lighting? Is the entrance lobby and reception	Yes	2	Yes	2	No	0	No	0
6.3 - Reception/desk/counter/ checkout suitable for approach	Yes	2	No	0	No	0	Yes	2
6.4 - Surfaces suitable? Is there colour contrast to the flooring	No	0	No	0	No	0	No	0
6.5 - Induction loop fitted? Is there signage indicating the	No	0	No	0	No	0	No	0
Checklist 7 - Corridors and Internal Surfaces	12	67%	12	33%	12	75%	12	75%
7.1 - Corridor wide enough for a wheel chair user to manoeuvre	Yes	2	No	0	Yes	2	Yes	2
7.2 - Free from obstruction to wheel chair users and from	No	0	No	0	Yes	2	Yes	2
7.3 - Are all key facilities within the school accessible for all	Yes	2	Yes	2	Yes	2	Yes	2
7.4 - Floor surfaces suitable for passage of wheelchairs?	Yes	2	No	0	Yes	1	Yes	2
7.5 - Colours, tones and textures varied to help people	No	0	No	0	No	0	No	0
7.6 - Floor surfaces slip-resistant? Bright, boldly patterned	Yes	2	Yes	2	Yes	2	Yes	1
Checklist 8 - Internal Doors	10	70%	12	0%	12	100%	10	80%
8.1 - Distinguishable from surroundings?	Yes	2	No	0	Yes	2	No	0
8.2 - Glass door: clearly visible when closed? Are manifestations	N/A	0	No	0	Yes	2	N/A	0
8.3 - Can people each side of the door, either standing or	No	0	No	0	Yes	2	Yes	2
8.4 - Clear opening width sufficient for a wheel chair user?	Yes	2	No	0	Yes	2	Yes	2
8.5 - Door control at a height suitable for both standing and	Yes	2	No	0	Yes	2	Yes	2
8.6 - Door light enough to open easily? Door closers of an	Yes	1	No	0	Yes	2	Yes	2
Checklist 9 - Internal Ramps	0		0		0			
9.1 - Ramp available for short rise within single storey?	N/A	0	N/A	0	N/A	0	N/A	0
9.2 - Wide enough and suitably graded? Surface slip resistant?	N/A	0	N/A	0	N/A	0	N/A	0
9.3 - Exposed edges protected to prevent accidents?	N/A	0	N/A	0	N/A	0	N/A	0
9.4 - Suitable handrail each side?	N/A	0	N/A	0	N/A	0	N/A	0
Checklist 10 - Internal Stairs	0		0		0			
10. Stairs available for rise within a double storey building?	N/A	0	N/A	0	N/A	0	N/A	0
10.1 - Treads long enough and each of same length?	N/A	0	N/A	0	N/A	0	N/A	0
10.2 - Risers shallow enough, all of the same height, and	N/A	0	N/A	0	N/A	0	N/A	0
10.3 - Nosings readily identifiable?	N/A	0	N/A	0	N/A	0	N/A	0
10.4 - Suitable handrails on each side? Do handrails extend	N/A	0	N/A	0	N/A	0	N/A	0
10.5 - Landings big enough and provided at intermediate	N/A	0	N/A	0	N/A	0	N/A	0
levels	N/A	0	N/A	0	N/A	0	N/A	0
Checklist 11 - Lifts	0		0		0			
11.1 - Passenger lift available for vertical circulation within a	N/A	0	N/A	0	N/A	0	N/A	0
11.2 - Car dimensions sufficient to allow space for wheel chair	N/A	0	N/A	0	N/A	0	N/A	0
11.3 - Support rails in car appropriately designed and	N/A	0	N/A	0	N/A	0	N/A	0
11.4 - Is there a mirror within the lift car?	N/A	0	N/A	0	N/A	0	N/A	0
11.5 - Delayed-action closer and override (not a door pressure	N/A	0	N/A	0	N/A	0	N/A	0
11.6 - Controls, including emergency call, located easily using	N/A	0	N/A	0	N/A	0	N/A	0
11.7 - Voice indication of floor reached? Is audio loud enough	N/A	0	N/A	0	N/A	0	N/A	0

11.8 - Is there a floor level indicator inside and outside the lift	N/A	0	N/A	0	N/A	0	N/A	0
Checklist 12 - WC Provision & Changing Areas	12	8%	14	36%	12	42%	14	36%
12.1 - Lobby door light enough to open easily? Lobby of	Yes	1	Yes	2	Yes	2	Yes	2
12.2 - Slip-resistant floors throughout?	N/A	0	No	0	Yes	1	Yes	1
12.3 - Fittings all easily distinguishable from background? Are	No	0	No	0	Yes	1	No	0
12.4 - Compartment door controls all easily gripped and	No	0	Yes	1	N/A	0	N/A	0
12.5 - Are urinals well contrasted and do they have grab rails	No	0	No	0	N/A	0	No	0
12.6 - Are lever style taps provided within the WCs to aid	No	0	No	0	No	0	No	0
12.7 - When there is no accessible WC available, is there a	N/A	0	Yes	2	Yes	1	Yes	2
12.8 - Where there are shower facilities, is a grab rail provided?	No	0	N/A	0	No	0	No	0
Checklist 13 - WCs: Wheelchair Users	22	14%	22	18%	22	23%	22	41%
13.1 - Compartment large enough to allow manoeuvring into	No	0	Yes	1	Yes	1	Yes	2
13.2 - Travel distance to a suitable WC no greater than that for	Yes	2	Yes	2	Yes	2	Yes	2
13.3 - Sufficient space available outside toilet compartment for	Yes	1	No	0	No	0	Yes	2
13.4 - Hand washing and dry facilities within easy reach of	No	0	Yes	1	No	0	No	0
13.5 - Door controls, lock and light switch easily reached and	No	0	No	0	No	0	No	0
13.6 - Tap appropriate for use by a person with limited	No	0	No	0	No	0	No	0
13.7 - Suitably designed grab rails fitted in all positions	No	0	No	0	No	0	Yes	1
13.8 - Is there a back rest provided to the toilet pan?	No	0	No	0	No	0	No	0
13.9 - Is the flush of a suitable spatula type and is it	No	0	No	0	No	0	No	0
13.10 - Is the transfer side of the toilet pan kept clear of any	No	0	No	0	Yes	2	Yes	2
13.11 - Is there a cord alarm? Is this coloured red with two	No	0	No	0	No	0	No	0
Checklist 14 - Facilities	18	28%	18	50%	18	28%	18	22%
14.1 - Are seats provided at intervals along long internal routes	No	0	No	0	No	0	No	0
14.2 - Are chairs with armrests provided within the Staff Room	No	0	Yes	2	No	0	No	0
14.3 - Are a number of chairs with armrests available within	No	0	No	0	No	0	No	0
14.4 - Do dining room counters have provision on both	Yes	1	No	0	No	0	No	0
Do these counters have an induction loop to accommodate	No	0	No	0	No	0	No	0
14.5 - Do vending machines have all operating parts at less	N/A	0	N/A	0	N/A	0	N/A	0
14.6 - Does the dining room have appropriate seating rather	Yes	1	Yes	2	Yes	2	Yes	2
14.7 - Is there a dropped counter and an induction loop	No	0	Yes	1	No	0	No	0
14.8 - Where there are IT facilities i.e. within classrooms and the	Yes	1	Yes	2	Yes	1	Yes	2
14.9 - In the Main Hall, is the stage raised? If so what is the	Yes	2	Yes	2	Yes	2	No	0
Checklist 15 - Way Finding	10	20%	10	50%	10	60%	10	40%
15.1 - Overall layout of school reasonably clear and logical?	No	0	Yes	1	Yes	2	Yes	2
Is there signage available in Braille and tactile?	No	0	No	0	No	0	No	0
15.2 - On entering the reception area, are signs designed and	No	0	No	0	No	0	No	0
15.3 - Are standard toilet facilities suitably signed? On	No	0	Yes	2	Yes	2	No	0
Are the locations of the accessible WC facilities suitably	Yes	2	Yes	2	Yes	2	Yes	2
15.4 - Within stairwells are each of the levels clearly identifiable	N/A	0	N/A	0	N/A	0	N/A	0
15.5 - Are the location of the lifts clearly signed at key	N/A	0	N/A	0	N/A	0	N/A	0
Checklist 16 - Lighting & Acoustics	12	0%	12	8%	12	8%	12	33%
16.1 - Lighting designed to meet a wide range of users needs?	No	0	No	0	No	0	Yes	1
16.2 - Can occupiers control lighting? Are light switch plates	No	0	No	0	Yes	1	Yes	2
16.3 - Are classrooms appropriately illuminated and are blinds	No	0	Yes	1	No	0	Yes	1

16.4 - Quiet and noisy areas separated by a buffer zone?	No	0	No	0	No	0	No	0
16.5 - Good balance of hard and soft surfaces?	No	0	No	0	No	0	No	0
16.6 - Are induction loops fitted within the key areas i.e.- Main	No	0	No	0	No	0	No	0
Checklist 17 - Means of Escape	8	50%	8	50%	8	50%	10	60%
17.1 - Audible alarm system supplemented by visual system?	No	0	No	0	No	0	No	0
17.2 - Ground floor exit routes accessible to all, including wheel	Yes	2	Yes	2	Yes	2	Yes	2
17.3 - Once outside, can a wheelchair user get to a place of	Yes	2	Yes	2	Yes	2	Yes	2
17.3 - Vertical escape from upper to lower floors possible using	N/A	0	N/A	0	N/A	0	Yes	2
17.4 - If disabled people are unable to leave the building, is	No	0	No	0	No	0	No	0

Haripersadh, N. 2019. The role of Architecture when integrating children with physical disabilities into Full-Service Schools: submitted towards a Master of Architecture Degree. University of the Witwatersrand, Johannesburg.

School Access Audit Checklist

SCHOOL A

QUESTION	YES/ NO	SANS 10400-S	OHS		DEFECTS BASED ON VISUAL ASSESSMENT	SPECIFICATION OF REMEDIAL WORKS
Checklist 1 - Approach Routes & Street Furniture						
1.1 - Is the school within convenient walking distance of:-						
_ Public Highway and Pathways?	Yes	4.4.1.2	2,1		+/- 100m From Main Road	n/a
_ Public Transport e.g. Bus Stops?	Yes	4.4.1.2	2,1		+/- 100m From Rea Vaya Bus-Stop	n/a
_ Car parking? (For car parking refer to Checklist 2)	Yes	4.3.2			Car park at entrance to school	n/a
1.2 - Route free of kerbs?	No	4.4.3.7	3,5		Multiple curbs on site	Work with local municipality to upgrade the pedestrian routes within the area - to incorporate tactile floor coverings to indicate crossings and signage etc. Guidelines for external environments to be adhered to.
_ Do crossings on approach have tactile paving?	No	4.4.3.7	3,5			Work with JRA - recommendation
_ If there are pedestrian crossings, do these have turn cones to aid people who are Deaf / Blind?	No	BEST PRACTICE				Work with JRA- recommendation
1.3 - Wide enough? If a route or pathway is narrow, is there a suitable passing place for wheelchair users?	Yes	4.3.2	2,1		+/- 2m Wide pavement from the Main pedestrian gate to the school entrance.	n/a
_ Is plantation trimmed back and are low branches avoided?	Yes	4.4.3.1	1,6		Clear and easy visibility. Trees are cut back along the pathway.	More trees could be planted along the way and maintained - in time, this would provide shading along the way.
1.4 - Surfaces even and slip resistant? Is paving flush with no cracks or gaps that could trap the wheels of a wheelchair?	No	4.5.1			Cracks, raised areas visible. Loose gravel and stone shifts onto paving.	Continuous maintenance required generally. Curbs to be raised along the edge and ramped changes in level at pathway intersections. Paving to be removed and re-fitted to create an even surface. All obstructions to be removed.
1.5 - Is the location of the school clearly identified from the street? Visual clues and sufficient landmarks to aid orientation?	No	4,1	Part T (b)		Sign on the school wall but no directional signage leading up to the school.	Directional signage from major intesections and more visible positioning of School Name outside the entrance.
1.6 - Free from hazards such as bollards, litter bins? Are planting features kept to a minimum and are they colour contrasted?	Yes	4.4.3.1	1,6		Pathway is clear from freestanding hazards. However there is a sign with one column in the pathway.	The Column - in pic 4 below, to be removed and re-fitted outside of the pathway.
1.7 - Free from hazardous building features such as outward-opening doors, windows or overhangs? Do columns or structural posts have markings at two heights?	Yes	4.4.2.2; 4.4.3.1.			The pathway does not run along a building.	n/a
1.8 - Adequate seating provided along routes? Is there seating where parents wait to pick up / drop off their children?	No	4.4.1.7			There is no seating along the patway	Seating areas to be provided along the pathway.





Checklist 2 - Car Parking						
2.1 - Are accessible bays provided for badge holders?	No	4.3.2			There are no ppg bays	Paraplegic bays to be located at the closest point to entrance of ramps. Existing bays in this area to be re-measured and re-marked with appropriate signage. (See traffic management plan)
2.2 - Accessible bays clearly sign-posted from the school's car park entrance? Is there signage to the front of the bays?	No	4.3.3		General Safety Regulations (Regulation 2B - Display of substituted notices and signs)	n/a	
2.3 - Are bays marked out appropiately and easily identified? Can car doors be fully opened to allow disabled drivers and passengers to transfer to a wheel chair parked alongside?	No	4.3.2			n/a	
2.4 - Close enough to facilities the car park serves?	No	4.3.2			n/a	
2.5 - Routes from parking area to school entrance accessible,...	Yes	4.4.1.1.			The school entrance point is easy to identify and access. There is a ramp system with handrails to manouvre the different levels.	Routes to be clearly demarcated with clear signage. Vehicular/ pedestrian seperation and painted pathways with handrails where appropriate will assist with wayfinding and safety factors. (See traffic management plan)
...with dropped kerbs and appropriate tactile warnings?	No	4.4.3.7; 3.5	3,5		There are multiple curbs and some are higher than others. There are no tactile warnings.	Change in textures at path intersections, raised curbs, handrails with braille, signage and directional cues. (See traffic management plan)
Car park surface smooth, even and free from loose stones?	Yes	4.5.1	1,1			Car park is well maintained and clear of obstructions.
2.6 - For larger car parks, are safety marked out walking routes provided to guard slow moving persons or people with hearing impairments?	No	BEST PRACTICE		General Safety Regulations (Regulation 2B - Display of substituted notices and signs)	There is no marking showing pedestrian pathways and vehicular/pedestrian seperation.	See routes: 2.5 above






Checklist 3 - External Ramps						
3.1 - Wide enough and suitably graded? Is there colour contrast to the surface of the ramp?	Yes	4.8.2	3,4		6 degree slope, 2m wide. Suitable surface.	Mainteneance of surfaces to be ongoing.
3.2 - Suitable handrails on each side?	50%	4,1	3,7		There are handrails, however, the design of the handrail is unsuitable.	The handrail is not continuous along the top rail. The posts interrupt the movement of a hand along the handrail, thereby disturbing the flow and could cause confusion. The handrails have the potential to provide a no of objectives (see handrail design guidelines) (Comment of colour of green?)
3.3 - Surface slip-resistant, firmly fixed and easy to maintain?	Yes	4.8.2	3,4		Fixed firmly and painted.	Maintenance plan
3.4 - Edges protected to prevent accidents?	Yes	4.8.2	3,4		Curbs/ handrails prevent accidents.	There are areas with breaks in the handrail. A proper indicator should be used to alert a student with a visual impairement that the handrail ends. The pc below shows a dangerous area where a wheelchair can roll over the edge into the stormwater channel.





Checklist 4 - External Steps						
4.1 - Visual and tactile warnings at the top and bottom of steps?	No	4.2.1.		OHS Act Section 8	Continuous texture, continuous colour.	Maintenance to prevent chipping of plaster. With maintenance plan, change colours to assist with differentiating between steps. Add signage.
4.2 - Suitable handrails on each side? Are handrails suitably colour contrasted to aid people with impaired vision?	50%	4,1	3,7	OHS Act Section 8		
4.3 - Lighting adequate and well positioned? Are steps appropiately illuminated during darker hours?	Yes	4.16.2		Environmental Regulations for Workplaces. Regulation 3 - Lighting	Lighting present in the main entrance area.	Provide electrical plan. (Assumed for after hour usage of the prmises)
4.4 - Treads long enough and all of the same length?	Yes	4.9.1		OHS Act Section 8	Only one set of steps at the stage area	
4.5 - Risers shallow enough, all of the same height, and unlikely to trip users?	Yes	4.9.1		OHS Act Section 8		
_ Are there closed risers?	Yes	4.9.1		OHS Act Section 8	n/a	n/a
4.6 - Nosings readily identifiable? If nosings are painted, is the paint still durable with no wear and tear?	No	4.9.2		OHS Act Section 8	Current surface to be made good. Colour to be implemented in maintenance plan.	Maintenance plan



Checklist 5 - Entrances						
5.1 - Main school entrances easy to find? Is the entrance clearly distinguishable from facade?	No	4,1			The entrance is not well marked and not ideally positioned.	Ideally, all students should enter through the main school reception. Therefore, students needing assitance can be quickly assisted. Use of existing doors could be considered. Traffic flow and existing approach to the main entrance could be redesigned to fulfill UD principals.
5.2 - Door opening wide enough for all users? Enough space alongside leading edge for a wheel chair user to open the door while clear of the door swing?	Yes	4.6.1			670 wide - double door. Therefore both doors need to be opened. Therefore it is not an independant use of the door when one leaf is open.	To be considered in the access control policy and procedure. The double doors could both be opened and manned at peak hours and kept closed and access controlled between those times. Access control design to comply with UD principals.
5.3 - Level or flush threshold?	No	4.5.4			Door frame is not recessed.	Door frame should be recessed to create smooth transition.
5.4 - If there are steps at the main entrance, is there signage indicating where the accessible entrance is located?	N/A	4.3.3	2,1		Ramps throughout	School is designed with a conplete ramp system. There is a need to provide stairs and ramps because some students with mobility disabilities find it easier to navigate steps than ramps. Provides stairs where possible.
5.5 - Can people each side of the door, either standing or seated, see each other and be seen?	No	4.2.3			Glass - reflective from outside, no visual link from the reception. Can see out from inside the reception.	Suggested inclusion of more glass in the waiting area and to open the waiting area into the entrance. (See Architectural plans for Proposed changes
If the entrance is solid, is this due to security concerns?	Yes				There are security gates at each entrance point.	Security within the current climate is essential. Suggested review of securirty plan and compile a maintenance plan for security)
5.6 - Door control at a suitable height for both standing and seated users? Are door handles clearly located, easy to use and grip?	Yes	4.6.2			1100 height which is acceptable. Style of handle is not easy to grip.	Door handle to be replaced with a more usable style. (See guideline)
5.7 - Door closer of appropriate type? Can the door be easily opened single handedly?	No	4.6.2			No door closer, easily opened single handedly.	Door closer should be added. (See guideline)
5.8 - Entry phones and intercoms detailed to allow use by people with sensory or mobility impairments? Is there an LED display to accommodate people with hearing impairments?	No				Communication: Telephones, intecoms, LED displays and Braille paln to be drawn up.	Proposed systems to be quntified and costed.
5.9 - Glazed entrance door: markings for safety and visibility? If manifestations are provided, are these suitably colour contrasted against their background?	N/A	4.2.3				
5.10 - Weather mat of firm texture and flush with floor?	No	C.2.2			Loose mat.	Mat shouild be recessed or very low pile.







Checklist 6 - Reception Areas and Lobbies						
6.1 - Clear view in from outside? Can receptionists see visitors and provide assistance if necessary?	No	4.2.3			No direct line of site from reception to entrance door.	Suggested inclusion of more glass in the waiting area and to open the waiting area into the entrance. (See Architectural plans for Proposed changes
6.2 - Transitional lighting? Is the entrance lobby and reception area well illuminated?	50%	4.16.1	Environmental Regulations for Workplaces. Regulation 3 - Lighting		Seems ok but should measure.	Maintenance plan to check and replace all lighting bulbs. Electrical plan to be assessed.
6.3 - Reception/desk/counter/ checkout suitable for approach and use from both sides by people either standing and seated?	Yes	4.14.1			850mm top of counter. Edge sticks out, should be flush.	The reception desk brickwork should be plastered and painted. Nib to be edxtended to enclose a new reception desktop (timber) to create space for wheelchair user.

6.4 - Surfaces suitable? Is there colour contrast to the flooring in front of the reception desk and are edges highlighted?	No	4.16.2			Colours are very blended.	Plaster and paint to be used to create colour contrasts for easier orientation of users.
6.5 - Induction loop fitted? Is there signage indicating the availability of the facility? Are front line staff aware of the facility and its purpose?	No	C.4.2			No facilities available	Induction loop to be costed and added to the 'Universal design plan'. Staff training to be given.




7.1 - Corridor wide enough for a wheel chair user to manoeuvre and for other people to pass? Turning space for wheel chair users?	Yes	4.4.2			Sizes are adequate. (What width?) Handrails throughout.	n/a
7.2 - Free from obstruction to wheel chair users and from hazards to people with impaired sight? Are there any internal columns that have a lack of colour contrast?	No	4.4.3			There were bins, open doors and gas bottles stored in the walkway. Colour contrast was not adequate.	Maintenance plan to keep walkways nd corridors free of all obstructions. Maintenance plan to change colour contrasts on site. Gas bottles to be relocated.
7.3 - Are all key facilities within the school accessible for all users? Eg Sport Hall, Main Hall, Music Room, Changing Room etc. Where there are facilities not available can these be 'swopped' with a standard classroom?	Yes	4.4.1.1			To be assessed again and plotted onto school plan.	
7.4 - Floor surfaces suitable for passage of wheelchairs? Junctions between floor surfaces correctly detailed?	Yes	4.5.1			Smooth transitions on site.	Ongoimg Maintenance
7.5 - Colours, tones and textures varied to help people distinguish between surfaces and fixtures and fittings? Do the floors suitably colour contrast against the walls (this can also be achieved by having well contrasted skirting boards)	No	4.16.2			There is very little contrast in colours.	Colour plan to be compiled for use of colour to assist with wayfinding and orientation.
7.6 - Floor surfaces slip-resistant? Bright, boldly patterned floors avoided? Busy or distracting wall coverings avoided?	Yes	C.2.4		Environmental Regulations for Workplaces. Regulation 3 - Lighting	Slip resistant floors, no bold or busy finishes except the facebrick finish which covers most of the external spaces.	A proposal introducing plaster panels will assst to break the busy facebrick with an oportunity to add interest and excitement to the spaces.





8.1 - Distinguishable from surroundings?	Yes	4.6.1			Frame colour contrasted to walls	Maintenance plan to ensure continuity
8.2 - Glass door: clearly visible when closed? Are manifestations suitably colour contrasted against the background?	N/A	4.2.3			n/a	n/a
8.3 - Can people each side of the door, either standing or seated, see each other and be seen? Are vision panels kept clear of temporary notices? (for an example classroom entrances)	No	4.2.3			No vision panel - solid doors	Longer term planning - to replace the doors with new doors with vision panels/ assess the viability of cutting vision panels into the existing doors?
8.4 - Clear opening width sufficient for a wheel chair user? Adequate space available alongside leading edge for a wheel chair user to open the door while clear of the door swing?	Yes	4.6.1			Size (on plans)	
8.5 - Door control at a height suitable for both standing and seated users? Easily gripped and operated? Control clearly distinguishable from the door itself?	Yes	4.6.2			1100mm above floor level.	Handles to be changed as noted in 5.6 above.
8.6 - Door light enough to open easily? Door closers of an appropriate type and with minimum necessary opening pressure?	Yes	4.6.1.7.			No door closers. Doors are light enough to manouvre.	Door closers to be costed and added to the 'Universal design plan'




Checklist 9 - Internal Ramps						
9.1 - Ramp available for short rise within single storey?	n/a	4.8				
Checklist 10 - Internal Stairs						
10. Stairs available for rise within a double storey building?	n/a	4.9				
Checklist 11 - Lifts						
11.1 - Passenger lift available for vertical circulation within a building of more than one storey?	n/a					
Checklist 12 - WC Provision & Changing Areas						
12.1 - Lobby door light enough to open easily? Lobby of sufficient size for easy access?	Yes	4.12.2			Main door was left open. Sufficient size for acess.	Screen walls to assist with privacy without needing doors
12.2 - Slip-resistant floors throughout?		4.12.4		Environmental Regulations for Workplaces. Regulation 3 - Lighting		
12.3 - Fittings all easily distinguishable from background? Are hand dryers and sanitary ware easily seen against their surroundings?	No	4.16.2			Blended shades. No implementation of wayifnding principles.	Fittings and fixtures to be clearly distinguished. See guideline
12.4 - Compartment door controls all easily gripped and operated? Are cubicle doors suitably colour contrasted against the panels?	No	4.12.2				
12.5 - Are urinals well contrasted and do they have grab rails to assist people with ambulant disabilities?		4.12.2				
12.6 - Are lever style taps provided within the WCs to aid people with dexterity impairments?		4.12.2				
12.7 - When there is no accessible WC available, is there a facility provided for people with ambulant disabilities?	n/a	4.12.2			n/a	n/a
12.8 - Where there are shower facilities, is a grab rail provided? Is there a level access shower for disabled people?	No	4.12.3			There is no Shower facility.	There should be one shower/ bath facility on the premises. See proposal.

Checklist 13 - WCs: Wheelchair Users						
13.1 - Compartment large enough to allow manoeuvring into position for frontal, lateral, angled and backward transfer unassisted and with assistance?		4.12.2				
13.2 - Travel distance to a suitable WC no greater than that for able-bodied people?	Yes	4.12.1			ppg toilet based inside the ablution block.	Number of paraplegic toilets is low. The toilet was locked and we could not access.
13.3 - Sufficient space available outside toilet compartment for manoeuvre? Is the entrance wide enough and does it open outwards?	Yes	4.12.2			780 Door opening size	Door could be bigger.
13.4 - Hand washing and dry facilities within easy reach of someone seated on WC? Is the hand basin suitably positioned in accordance to BS8300?		4.12.2				
13.5 - Door controls, lock and light switch easily reached and operated? Is there a grab rail to the inner face of the entrance?		4.14				
13.6 - Tap appropriate for use by a person with limited dexterity, grip of strength?		4.12.2				
13.7 - Suitably designed grab rails fitted in all positions necessary to assist manoeuvring? Are grab rails suitably colour contrasted to aid people with impaired vision?		4.12.2				
13.8 - Is there a back rest provided to the toilet pan?		D.2				
13.9 - Is the flush of a suitable spatula type and is it appropiately located on the transfer side of the toilet pan?		D.2				
13.10 - Is the transfer side of the toilet pan kept clear of any obstacles that may deny wheelchair users all of the transferring techniques in which an accessible WC is designed to provide?		BEST PRACTICE				
13.11 - Is there a cord alarm? Is this coloured red with two triangular bangles and easy to reach from floor level?		C.4.5				
Checklist 14 - Facilities						
14.1 - Are seats provided at intervals along long internal routes or where waiting likely? Seats stable, with armrests and provided in a range of heights? Space for wheelchair user to pull up alongside a seated companion?	No	4.4.1.7			No seatng and no pause areas currently.	See 2.5 above about routes and ramps.
14.2 - Are chairs with armrests provided within the Staff Room and other key locations such as meeting areas?	No	BEST PRACTICE			No armrests on chairs in staff room	Replace the chairs (with about 50%) with armrests.
14.3 - Are a number of chairs with armrests available within each classroom?						
14.4 - Do dining room counters have provision on both sides for wheelchair users?	No	C.8.4			One side only	Dining room counter height and finish to be assessed and a new proposal to be compiled.
Do these counters have an induction loop to accommodate hearing aid users?	No	C.4.5			No facilities available	See 6.5 above
14.5 - Do vending machines have all operating parts at less than 1200mm off the floor level and are they suitably colour contrasted?	n/a	4.14				
14.6 - Does the dining room have appropriate seating rather than fixed seating which can be inaccessible for a range of users?	Yes	BEST PRACTICE			Free-standing chairs and tables allow for flexibility.	
14.7 - Is there a dropped counter and an induction loop available for the Library counter?	No	C.4.5			No facilities available	See 6.5 above
14.8 - Where there are IT facilities i.e. within classrooms and the Library (if applicable) are height adjustable computer desks available?		C.8.4				
14.9 - In the Main Hall, is the stage raised? If so what is the current procedure for wheelchair users? For an example when receiving awards on Speech Day?	Yes	C.10.5; 4.8			There are ramps and stairs leading to the stage which is located outdoors .	Mintenance plan
Checklist 15 - Way Finding						
15.1 - Overall layout of school reasonably clear and logical?	No	C.2.3		Environmental Regulations for Workplaces. Regulation 3 - Lighting	Overall planning is logical however signage and landmarkers are not implemented efficiently.	Signage, graphics and directional symbols can be used to create clear movement patterns and ease of orientation.
Is there signage available in Braille and tactile?	No	C.2.4; 4.2			There are no braille or tactile surfaces applied to the design.	Proposed wayfinding approach to be costed and added to the 'Universal design plan'.
15.2 - On entering the reception area, are signs designed and located to convey information to visitors with sight impairments and wheel chair users with lower eye levels?	No	4.2		Environmental Regulations for Workplaces. Regulation 3 - Lighting	Many posters reception is hidden, entrance lobby is busy, with colours that blend together.	Reception to be rationalised in terms of interiors and finishes.
15.3 - Are standard toilet facilities suitably signed? On approach and on the actual entrances?	No	4.2			No sign leading up to the door	Add signage pointing towards toilets for all.
Are the locations of the accessible WC facilities suitably identified and located? Does signage have the International Symbol of Access? (Wheelchair symbol)	Yes	4.2.2			They are situated within the ablutuon blocks.	number of paraplegic toilets is low. The toilet was loccked and we could not access.
15.4 - Within stairwells are each of the levels clearly identifiable by tactile and visual information?		SANS 10400-T				
15.5 - Are the location of the lifts clearly signed at key locations throughout the school? Is there lift signage near the reception area and on entry to key stairwells?						
Checklist 16 - Lighting & Acoustics						
16.1 - Lighting designed to meet a wide range of users needs? Level of lighting sufficient for intended use? Lights positioned where they do not cause glare, reflection, confusing shadows or pools of light and dark?		4.16.2		Environmental Regulations for Workplaces. Regulation 3 - Lighting	Lighting is acceptable.	
16.2 - Can occupiers control lighting? Are light switch plates suitably colour contrasted and appropiately positioned for a wheelchair user?	No	4.14				
16.3 - Are classrooms appropriately illuminated and are blinds available to control the natural day lighting? Is glare avoided which can hinder attempts by people with hearing impairments to lip-read?	No	4.16		Environmental Regulations for Workplaces. Regulation 3 - Lighting		
16.4 - Quiet and noisy areas separated by a buffer zone? Environment free from unnecessary obtrusive noise (e.g. heating units)?	No	BEST PRACTICE			Noise levels are too high	Acoustic dampers to be introduced in the classroom.
16.5 - Good balance of hard and soft surfaces?	No	BEST PRACTICE			Mostly hard.	Acoustic dampers to be introduced in the classroom.
16.6 - Are induction loops fitted within the key areas i.e.- Main Hall, Sports Hall, key study areas e.g. Music Room.	No	C.4.5			No facilities available	See 6.5 above
Checklist 17 - Means of Escape						
17.1 - Audible alarm system supplemented by visual system?		SANS 10400-T		General Safety Regulations (Regulation 2B - Display of substituted notices and signs) Environmental Regulations for Workplaces. Regulation 9 - Fire precautions and means of egress		
17.2 - Ground floor exit routes accessible to all, including wheel chair users, as entrance routes?	Yes	SANS 10400-T		General Safety Regulations (Regulation 2B - Display of substituted notices and signs) Environmental Regulations for Workplaces. Regulation 9 - Fire precautions and means of		
17.3 - Once outside, can a wheelchair user get to a place of safety? Are pathways provided and are these wide enough?	Yes	SANS 10400-T		General Safety Regulations (Regulation 2B - Display of substituted notices and signs) Environmental Regulations for Workplaces.	See Fire escape plan	
17.3 - Vertical escape from upper to lower floors possible using a fire-protected lift with an independent power supply?	n/a	SANS 10400-T		General Safety Regulations (Regulation 2B - Display of substituted notices and signs) Environmental Regulations for Workplaces. Regulation 9 - Fire precautions and means of egress	n/a	n/a
17.4 - If disabled people are unable to leave the building, is there a suitable refuge area? Is there an intercom provided within the refuge area and does this have accessible features such as an LED display?	No	SANS 10400-T		General Safety Regulations (Regulation 2B - Display of substituted notices and signs) Environmental Regulations for Workplaces. Regulation 9 - Fire precautions and means of egress	No facilities available	Refuge area to be investigated and designed.

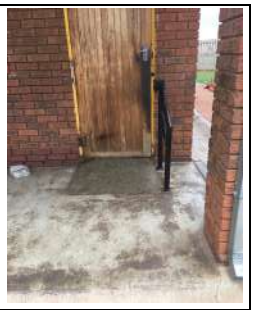
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Haripersadh, N. 2019. The role of Architecture when integrating children with physical disabilities into Full-Service Schools: submitted towards a Master of Architecture Degree. University of the Witwatersrand, Johannesburg.

School Access Audit Data

SCHOOL B

QUESTION	YES/ NO	SANS 10400-S	OHS	DEFECTS BASED ON VISUAL ASSESSMENT	SPECIFICATION OF REMEDIAL WORKS
Question	Yes / No	SANS 10400-S	SANS 10400-S	OHS	Recommendations
Checklist 1 - Approach Routes & Street Furniture					
1.1 - Is the school within convenient walking distance of:-					
_ Public Highway and Pathways?	No	4.4.1.2	2,1		All roads related issues to be addressed with JRA. Motivation to be issued for Universal Design principles to be applied.
_ Public Transport e.g. Bus Stops?	Yes	4.4.1.2	2,1		
_ Car parking? (For car parking refer to Checklist 2)		4.3.2			
1.2 - Route free of kerbs?	No	4.4.3.7	3,5		
_ Do crossings on approach have tactile paving?	No	4.4.3.7	3,5		
_ If there are pedestrian crossings, do these have turn cones to aid people who are Deaf / Blind?	No	BEST PRACTICE			
1.3 - Wide enough? If a route or pathway is narrow, is there a suitable passing place for wheelchair users?	Yes	4.3.2	2,1		
_ Is plantation trimmed back and are low branches avoided?	Yes	4.4.3.1	1,6		
1.4 - Surfaces even and slip resistant? Is paving flush with no cracks or gaps that could trap the wheels of a wheelchair?	No	4.5.1			
1.5 - Is the location of the school clearly identified from the street? Visual clues and sufficient landmarks to aid orientation?	No	4,1	Part T (b)		
1.6 - Free from hazards such as bollards, litter bins? Are planting features kept to a minimum and are they colour contrasted?	No	4.4.3.1	1,6		
1.7 - Free from hazardous building features such as outward-opening doors, windows or overhangs? Do columns or structural posts have markings at two heights?	Yes	4.4.2.2; 4.4.3.1.			
1.8 - Adequate seating provided along routes? Is there seating where parents wait to pick up / drop off their children?	No	4.4.1.7			
  					
Checklist 2 - Car Parking					
2.1 - Are accessible bays provided for badge holders?	No	4.3.2			Site plan to be drawn up and re-organised to allow for seperation of vehicular/ pedestrian &wheelchair movement. Signage is essential and the size, layout, colours, font and infographics for kids must be planned in accordance with minimum standards.
2.2 - Accessible bays clearly sign-posted from the school's car park entrance? Is there signage to the front of the bays?	No	4.3.3		General Safety Regulations (Regulation 2B - Display of substituted notices and signs)	
2.3 - Are bays marked out appropiately and easily identified? Can car doors be fully opened to allow disabled drivers and passengers to transfer to a wheel chair parked alongside?	No	4.3.2			
2.4 - Close enough to facilities the car park serves?	N/a	4.3.2			
2.5 - Routes from parking area to school entrance accessible,…	Yes	4.4.1.1.			
…with dropped kerbs and appropriate tactile warnings?	Yes	4.4.3.7; 3.5	3,5		
Car park surface smooth, even and free from loose stones?	No	4.5.1	1,1		
2.6 - For larger car parks, are safety marked out walking routes provided to guard slow moving persons or people with hearing impairments?	No	BEST PRACTICE		General Safety Regulations (Regulation 2B - Display of substituted notices and signs)	
Checklist 3 - External Ramps					
3.1 - Wide enough and suitably graded? Is there colour contrast to the surface of the ramp?	No	4.8.2	3,4		All non-compliant ramps are to be demolished and re-built to Architects specifications.
3.2 - Suitable handrails on each side?	No	4,1	3,7		
3.3 - Surface slip-resistant, firmly fixed and easy to maintain?	No	4.8.2	3,4		
3.4 - Edges protected to prevent accidents?	No	4.8.2	3,4		

 		  			
Checklist 4 - External Steps					
4.1 - Visual and tactile warnings at the top and bottom of steps?	No	4.2.1.		OHS Act Section 8	All non-compliant stairs are to be demolished and re-built to Architects specifications.
4.2 - Suitable handrails on each side? Are handrails suitably colour contrasted to aid people with impaired vision?	No	4,1	3,7	OHS Act Section 8	
4.3 - Lighting adequate and well positioned? Are steps appropiately illuminated during darker hours?	No	4.16.2		Environmental Regulations for Workplaces. Regulation 3 - Lighting	
4.4 - Treads long enough and all of the same length?	No	4.9.1		OHS Act Section 8	
4.5 - Risers shallow enough, all of the same height, and unlikely to trip users?	No	4.9.1		OHS Act Section 8	
_ Are there closed risers?	Yes	4.9.1		OHS Act Section 8	
4.6 - Nosings readily identifiable? If nosings are painted, is the paint still durable with no wear and tear?	No	4.9.2		OHS Act Section 8	
Checklist 5 - Entrances					
5.1 - Main school entrances easy to find? Is the entrance clearly distinguishable from facade?	No	4,1			Space-planning to take into account the fittings, fixtures and layout of wall hung elements. Doorways to be redesigned and fixed to suite safe and accessible entry and exit. Fire compliance is critical.
5.2 - Door opening wide enough for all users? Enough space alongside leading edge for a wheel chair user to open the door while clear of the door swing?	No	4.6.1			
5.3 - Level or flush threshold?	No	4.5.4			
5.4 - If there are steps at the main entrance, is there signage indicating where the accessible entrance is located?	No	4.3.3	2,1		
5.5 - Can people each side of the door, either standing or seated, see each other and be seen?	No	4.2.3			
If the entrance is solid, is this due to security concerns?	No				
5.6 - Door control at a suitable height for both standing and seated users? Are door handles clearly located, easy to use and grip?	No	4.6.2			
5.7 - Door closer of appropriate type? Can the door be easily opened single handedly?	No	4.6.2			
5.8 - Entry phones and intercoms detailed to allow use by people with sensory or mobility impairments? Is there an LED display to accommodate people with hearing impairments?	No				
5.9 - Glazed entrance door: markings for safety and visibility? If manifestations are provided, are these suitably colour contrasted against their background?	N/A	4.2.3			
5.10 - Weather mat of firm texture and flush with floor?	No	C.2.2			
Checklist 6 - Reception Areas and Lobbies					
6.1 - Clear view in from outside? Can receptionists see visitors and provide assistance if necessary?	No	4.2.3			Reception areas to be redesigned to allow the receptionist to view the entrance door. The reception counter should accommodate people in wheelchairs on both sides. Universal design principles to be applied.
6.2 - Transitional lighting? Is the entrance lobby and reception area well illuminated?	Yes	4.16.1	Environmental Regulations for Workplaces. Regulation 3 - Lighting		
6.3 - Reception/desk/counter/ checkout suitable for approach and use from both sides by people either standing and seated?	No	4.14.1			
6.4 - Surfaces suitable? Is there colour contrast to the flooring in front of the reception desk and are edges highlighted?	No	4.16.2			
6.5 - Induction loop fitted? Is there signage indicating the availability of the facility? Are front line staff aware of the facility and its purpose?	No	C.4.2			
 		 			
Checklist 7 - Corridors and Internal Surfaces					
7.1 - Corridor wide enough for a wheel chair user to manoeuvre and for other people to pass? Turning space for wheel chair users?	No	4.4.2			

7.2 - Free from obstruction to wheel chair users and from hazards to people with impaired sight? Are there any internal columns that have a lack of colour contrast?	No	4.4.3			Corridors to be kept clear of obstructions and obstacles. Fire compliance to be maintained at all times. Floor surfaces to be slip resistant and in good condition to avoid causing tripping hazards. Colours to be chosen according to good wayfinding principles.
7.3 - Are all key facilities within the school accessible for all users? Eg Sport Hall, Main Hall, Music Room, Changing Room etc. Where there are facilities not available can these be 'swopped' with a standard classroom?	Yes	4.4.1.1			
7.4 - Floor surfaces suitable for passage of wheelchairs? Junctions between floor surfaces correctly detailed?	No	4.5.1			
7.5 - Colours, tones and textures varied to help people distinguish between surfaces and fixtures and fittings? Do the floors suitably colour contrast against the walls (this can also be achieved by having well contrasted skirting boards)	No	4.16.2			
7.6 - Floor surfaces slip-resistant? Bright, boldly patterned floors avoided? Busy or distracting wall coverings avoided?	Yes	C.2.4		Environmental Regulations for Workplaces. Regulation 3 - Lighting	
Checklist 8 - Internal Doors					
8.1 - Distinguishable from surroundings?	No	4.6.1			Doors are a critical element of buildings and a door schedule is to be drawn up by a professional architect to take into consideration all factors affecting good door design such as: choice and positioning of ironmongery, type and size of door etc.
8.2 - Glass door: clearly visible when closed? Are manifestations suitably colour contrasted against the background?	No	4.2.3			
8.3 - Can people each side of the door, either standing or seated, see each other and be seen? Are vision panels kept clear of temporary notices? (for an example classroom entrances)	No	4.2.3			
8.4 - Clear opening width sufficient for a wheel chair user? Adequate space available alongside leading edge for a wheel chair user to open the door while clear of the door swing?	No	4.6.1			
8.5 - Door control at a height suitable for both standing and seated users? Easily gripped and operated? Control clearly distinguishable from the door itself?	No	4.6.2			
8.6 - Door light enough to open easily? Door closers of an appropriate type and with minimum necessary opening pressure?	No	4.6.1.7.			
Checklist 9 - Internal Ramps					
9.1 - Ramp available for short rise within single storey?	n/a				
Checklist 10 - Internal Stairs					
10. Stairs available for rise within a double storey building?	n/a				
Checklist 11 - Lifts					
11.1 - Passenger lift available for vertical circulation within a building of more than one storey?	n/a				
Checklist 12 - WC Provision & Changing Areas					
12.1 - Lobby door light enough to open easily? Lobby of sufficient size for easy access?	Yes	4.12.2			All toilet facilities to be in accordance with minimum standards in terms of SANS 10400 and relavant school guidelines. Sanitaryware, layout and finishes should be in good condition to ensure good hygiene practices.
12.2 - Slip-resistant floors throughout?	No	4.12.4		Environmental Regulations for Workplaces. Regulation 3 - Lighting	
12.3 - Fittings all easily distinguishable from background? Are hand dryers and sanitary ware easily seen against their surroundings?	No	4.16.2			
12.4 - Compartment door controls all easily gripped and operated? Are cubicle doors suitably colour contrasted against the panels?	50%	4.12.2			
12.5 - Are urinals well contrasted and do they have grab rails to assist people with ambulant disabilities?	No	4.12.2			
12.6 - Are lever style taps provided within the WCs to aid people with dexterity impairments?	No	4.12.2			
12.7 - When there is no accessible WC available, is there a facility provided for people with ambulant disabilities?	Yes	4.12.2			
12.8 - Where there are shower facilities, is a grab rail provided? Is there a level access shower for disabled people?	n/a	4.12.3			
Checklist 13 - WCs: Wheelchair Users					
13.1 - Compartment large enough to allow manoeuvring into position for frontal, lateral, angled and backward transfer unassisted and with assistance?	50%	4.12.2			Accessible toilets are very technical and have specific finishes and details that ensure ease of use. These facilities should be designed by a professional to ensure compliance with minimum standards.
13.2 - Travel distance to a suitable WC no greater than that for able-bodied people?	Yes	4.12.1			
13.3 - Sufficient space available outside toilet compartment for manoeuvre? Is the entrance wide enough and does it open outwards?	No	4.12.2			
13.4 - Hand washing and dry facilities within easy reach of someone seated on WC? Is the hand basin suitably positioned in accordance to BS8300?	50%	4.12.2			
13.5 - Door controls, lock and light switch easily reached and operated? Is there a grab rail to the inner face of the entrance?	No	4.14			
13.6 - Tap appropriate for use by a person with limited dexterity, grip of strength?	No	4.12.2			
13.7 - Suitably designed grab rails fitted in all positions necessary to assist manoeuvring? Are grab rails suitably colour contrasted to aid people with impaired vision?	No	4.12.2			
13.8 - Is there a back rest provided to the toilet pan?	No	D.2			
13.9 - Is the flush of a suitable spatula type and is it appropiately located on the transfer side of the toilet pan?	No	D.2			

13.10 - Is the transfer side of the toilet pan kept clear of any obstacles that may deny wheelchair users all of the transferring techniques in which an accessible WC is designed to provide?	No	BEST PRACTICE			
13.11 - Is there a cord alarm? Is this coloured red with two triangular bangles and easy to reach from floor level?	No	C.4.5			
 		  			
Checklist 14 - Facilities					
14.1 - Are seats provided at intervals along long internal routes or where waiting likely? Seats stable, with armrests and provided in a range of heights? Space for wheelchair user to pull up alongside a seated companion?	No	4.4.1.7			Provide a range of seating for children
14.2 - Are chairs with armrests provided within the Staff Room and other key locations such as meeting areas?	Yes	BEST PRACTICE			Provide a range of seating in staff rooms
14.3 - Are a number of chairs with armrests available within each classroom?	No				Provide a range of seating for children
14.4 - Do dining room counters have provision on both sides for wheelchair users?	No	C.8.4			Provide accessible height counter and table tops
Do these counters have an induction loop to accommodate hearing aid users?	No	C.4.5			Provide assistive device technologies for children and adults with hearing disabilities.
14.5 - Do vending machines have all operating parts at less than 1200mm off the floor level and are they suitably colour contrasted?		4.14			n/a
14.6 - Does the dining room have appropriate seating rather than fixed seating which can be inaccessible for a range of users?	Yes	BEST PRACTICE			Provide a range of seating for children and adults in dining facilities.
14.7 - Is there a dropped counter and an induction loop available for the Library counter?	50%	C.4.5			Provide accessible height counter and table tops
14.8 - Where there are IT facilities i.e. within classrooms and the Library (if applicable) are height adjustable computer desks available?	Yes	C.8.4			Provide accessible height counter and table tops
14.9 - In the Main Hall, is the stage raised? If so what is the current procedure for wheelchair users? For an example when receiving awards on Speech Day?	Yes	C.10.5; 4.8			Provide accessible route to the stage areas.
Checklist 15 - Way Finding					
15.1 - Overall layout of school reasonably clear and logical?	No	C.2.3		Environmental Regulations for Workplaces. Regulation 3 - Lighting	Wayfinding principles are critical. The school as-built drawings must be produced and a clear and simple wayfinding plan to be implemented including position of signage, type of signage, using colours to differentiate between spaces etc.
Is there signage available in Braille and tactile?	No	C.2.4; 4.2			
15.2 - On entering the reception area, are signs designed and located to convey information to visitors with sight impairments and wheel chair users with lower eye levels?	No	4.2		Environmental Regulations for Workplaces. Regulation 3 - Lighting	
15.3 - Are standard toilet facilities suitably signed? On approach and on the actual entrances?	Yes	4.2			
Are the locations of the accessible WC facilities suitably identified and located? Does signage have the International Symbol of Access? (Wheelchair symbol)	Yes	4.2.2			
Checklist 16 - Lighting & Acoustics					
16.1 - Lighting designed to meet a wide range of users needs? Level of lighting sufficient for intended use? Lights positioned where they do not cause glare, reflection, confusing shadows or pools of light and dark?	No	4.16.2		Environmental Regulations for Workplaces. Regulation 3 - Lighting	Lighting is to be addressed by proposing measures to increase the use of natural lighting. Glare to be considered when taking this approach. Acoustic design will include the application of specific finishes in specific positions in the classroom to allow for
16.2 - Can occupiers control lighting? Are light switch plates suitably colour contrasted and appropiately positioned for a wheelchair user?	No	4.14			
16.3 - Are classrooms appropriately illuminated and are blinds available to control the natural day lighting? Is glare avoided which can hinder attempts by people with hearing impairments to lip-read?	50%	4.16		Environmental Regulations for Workplaces. Regulation 3 - Lighting	
16.4 - Quiet and noisy areas separated by a buffer zone? Environment free from unnecessary obtrusive noise (e.g. heating units)?	No	BEST PRACTICE			
16.5 - Good balance of hard and soft surfaces?	No	BEST PRACTICE			
16.6 - Are induction loops fitted within the key areas i.e.- Main Hall, Sports Hall, key study areas e.g. Music Room.	No	C.4.5			
Checklist 17 - Means of Escape					
17.1 - Audible alarm system supplemented by visual system?	No	SANS 10400-T		General Safety Regulations (Regulation 2B - Display of substituted notices and signs) Environmental Regulations for Workplaces. Regulation 9 - Fire precautions and means of egress	

17.2 - Ground floor exit routes accessible to all, including wheel chair users, as entrance routes?	Yes	SANS 10400-T		General Safety Regulations (Regulation 2B - Display of substituted notices and signs) Environmental Regulations for Workplaces. Regulation 9 - Fire precautions and means of egress	**This is the most urgent item as it deals with the non-compliance with fire regulations. It is imperitive that updated fire evacuation plans are produced and implemented at these schools.**
17.3 - Once outside, can a wheelchair user get to a place of safety? Are pathways provided and are these wide enough?	Yes	SANS 10400-T		General Safety Regulations (Regulation 2B - Display of substituted notices and signs) Environmental Regulations for Workplaces. Regulation 9 - Fire precautions and means of egress	
17.3 - Vertical escape from upper to lower floors possible using a fire-protected lift with an independent power supply?	n/a	SANS 10400-T		General Safety Regulations (Regulation 2B - Display of substituted notices and signs) Environmental Regulations for Workplaces. Regulation 9 - Fire precautions and means of egress	
17.4 - If disabled people are unable to leave the building, is there a suitable refuge area? Is there an intercom provided within the refuge area and does this have accessible features such as an LED display?	No	SANS 10400-T		General Safety Regulations (Regulation 2B - Display of substituted notices and signs) Environmental Regulations for Workplaces. Regulation 9 - Fire precautions and means of egress	
END					

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Information added by Nadira Haripersadh

Haripersadh, N. 2019. The role of Architecture when integrating children with physical disabilities into Full-Service Schools: submitted towards a Master of Architecture Degree. University of the Witwatersrand, Johannesburg.

School Access Audit Data

SCHOOL C

QUESTION	YES/ NO	SANS 10400-S	SANS 10400-S	OHS	RECOMMENDATION
Checklist 1 - Approach Routes & Street Furniture					
1.1 - Is the school within convenient walking distance of:-					
_ Public Highway and Pathways?	No	4.4.1.2	2,1		All roads related issues to be addressed with JRA. Motivation to be issued for Universal Design principles to be applied.
_ Public Transport e.g. Bus Stops?	Yes	4.4.1.2	2,1		
_ Car parking? (For car parking refer to Checklist 2)		4.3.2			
1.2 - Route free of kerbs?	No	4.4.3.7	3,5		
_ Do crossings on approach have tactile paving?	No	4.4.3.7	3,5		
_ If there are pedestrian crossings, do these have turn cones to aid people who are Deaf / Blind?	50%	BEST PRACTICE			
1.3 - Wide enough? If a route or pathway is narrow, is there a suitable passing place for wheelchair users?	Yes	4.3.2	2,1		
_ Is plantation trimmed back and are low branches avoided?	Yes	4.4.3.1	1,6		
1.4 - Surfaces even and slip resistant? Is paving flush with no cracks or gaps that could trap the wheels of a wheelchair?	50%	4.5.1			
1.5 - Is the location of the school clearly identified from the street? Visual clues and sufficient landmarks to aid orientation?	50%	4,1	Part T (b)		
1.6 - Free from hazards such as bollards, litter bins? Are planting features kept to a minimum and are they colour contrasted?	Yes	4.4.3.1	1,6		
1.7 - Free from hazardous building features such as outward-opening doors, windows or overhangs? Do columns or structural posts have markings at two heights?	50%	4.4.2.2; 4.4.3.1.			
1.8 - Adequate seating provided along routes? Is there seating where parents wait to pick up / drop off their children?	No	4.4.1.7			







Checklist 2 - Car Parking					
2.1 - Are accessible bays provided for badge holders?	No	4.3.2			Site plan to be drawn up and re-organised to allow for seperation of vehicular/ pedestrian &wheelchair movement. Signage is essential and the size, layout, colours, font and infographics for kids must be planned in accordance with minimum standards.
2.2 - Accessible bays clearly sign-posted from the school's car park entrance? Is there signage to the front of the bays?	No	4.3.3		General Safety Regulations (Regulation 2B - Display of substituted notices and signs)	
2.3 - Are bays marked out appropiately and easily identified? Can car doors be fully opened to allow disabled drivers and passengers to transfer to a wheel chair parked alongside?	No	4.3.2			
2.4 - Close enough to facilities the car park serves?	No	4.3.2			
2.5 - Routes from parking area to school entrance accessible,...	Yes	4.4.1.1.			
...with dropped kerbs and appropriate tactile warnings?	50%	4.4.3.7; 3.5	3,5		
Car park surface smooth, even and free from loose stones?	Yes	4.5.1	1,1		
2.6 - For larger car parks, are safety marked out walking routes provided to guard slow moving persons or people with hearing impairments?	No	BEST PRACTICE		General Safety Regulations (Regulation 2B - Display of substituted notices and signs)	
Checklist 3 - External Ramps					
3.1 - Wide enough and suitably graded? Is there colour contrast to the surface of the ramp?	50%	4.8.2	3,4		All non-compliant stairs are to be demolished and re-built to Architects specifications.
3.2 - Suitable handrails on each side?	50%	4,1	3,7		
3.3 - Surface slip-resistant, firmly fixed and easy to maintain?	Yes	4.8.2	3,4		
3.4 - Edges protected to prevent accidents?	No	4.8.2	3,4		







Checklist 4 - External Steps					
4.1 - Visual and tactile warnings at the top and bottom of steps?	No	4.2.1.		OHS Act Section 8	All non-compliant stairs are to be demolished and re-built to Architects specifications.
4.2 - Suitable handrails on each side? Are handrails suitably colour contrasted to aid people with impaired vision?	No	4,1	3,7	OHS Act Section 8	
4.3 - Lighting adequate and well positioned? Are steps appropiately illuminated during darker hours?	No	4.16.2		Environmental Regulations for Workplaces. Regulation 3 - Lighting	
4.4 - Treads long enough and all of the same length?	Yes	4.9.1		OHS Act Section 8	
4.5 - Risers shallow enough, all of the same height, and unlikely to trip users?	No	4.9.1		OHS Act Section 8	
_ Are there closed risers?	Yes	4.9.1		OHS Act Section 8	
4.6 - Nosings readily identifiable? If nosings are painted, is the paint still durable with no wear and tear?	No	4.9.2		OHS Act Section 8	
Checklist 5 - Entrances					
5.1 - Main school entrances easy to find? Is the entrance clearly distinguishable from facade?	Yes	4,1			

5.2 - Door opening wide enough for all users? Enough space alongside leading edge for a wheel chair user to open the door while clear of the door swing?	Yes	4.6.1			
5.3 - Level or flush threshold?	Yes	4.5.4			
5.4 - If there are steps at the main entrance, is there signage indicating where the accessible entrance is located?	n/a	4.3.3	2,1		
5.5 - Can people each side of the door, either standing or seated, see each other and be seen?	Yes	4.2.3			Space-planning to take into account the fittings, fixtures and layout of wall hung elements. Doorways to be redesigned and fixed to suite safe and accessible entry and exit. Fire compliance is critical.
If the entrance is solid, is this due to security concerns?	Yes				
5.6 - Door control at a suitable height for both standing and seated users? Are door handles clearly located, easy to use and grip?	Yes	4.6.2			
5.7 - Door closer of appropriate type? Can the door be easily opened single handedly?	Yes	4.6.2			
5.8 - Entry phones and intercoms detailed to allow use by people with sensory or mobility impairments? Is there an LED display to accommodate people with hearing impairments?	No				
5.9 - Glazed entrance door: markings for safety and visibility? If manifestations are provided, are these suitably colour contrasted against their background?	n/a	4.2.3			
5.10 - Weather mat of firm texture and flush with floor?	No	C.2.2			
Checklist 6 - Reception Areas and Lobbies					
6.1 - Clear view in from outside? Can receptionists see visitors and provide assistance if necessary?	50%	4.2.3			
6.2 - Transitional lighting? Is the entrance lobby and reception area well illuminated?	No	4.16.1	Environmental Regulations for		Reception areas to be redesigned to allow the receptionist to view the entrance door. The reception counter should accommodate people in wheelchairs on both sides. Universal design principles to be applied.
6.3 - Reception/desk/counter/ checkout suitable for approach and use from both sides by people either standing and seated?	No	4.14.1			
6.4 - Surfaces suitable? Is there colour contrast to the flooring in front of the reception desk and are edges highlighted?	No	4.16.2			
6.5 - Induction loop fitted? Is there signage indicating the availability of the facility? Are front line staff aware of the facility and its purpose?	No	C.4.2			






Checklist 7 - Corridors and Internal Surfaces					
7.1 - Corridor wide enough for a wheel chair user to manoeuvre and for other people to pass? Turning space for wheel chair users?	Yes	4.4.2			
7.2 - Free from obstruction to wheel chair users and from hazards to people with impaired sight? Are there any internal columns that have a lack of colour contrast?	Yes	4.4.3			
7.3 - Are all key facilities within the school accessible for all users? Eg Sport Hall, Main Hall, Music Room, Changing Room etc. Where there are facilities not available can these be 'swopped' with a standard classroom?	Yes	4.4.1.1			Corridors to be kept clear of obstructions and obstacles. Fire compliance to be maintained at all times. Floor surfaces to be slip resistant and in good condition to avoid causing tripping hazards. Colours to be chosen according to good wayfinding principles.
7.4 - Floor surfaces suitable for passage of wheelchairs? Junctions between floor surfaces correctly detailed?	50%	4.5.1			
7.5 - Colours, tones and textures varied to help people distinguish between surfaces and fixtures and fittings? Do the floors suitably colour contrast against the walls (this can also be achieved by having well contrasted skirting boards)	No	4.16.2			
7.6 - Floor surfaces slip-resistant? Bright, boldly patterned floors avoided? Busy or distracting wall coverings avoided?	Yes	C.2.4		Environmental Regulations for Workplaces. Regulation 3 - Lighting	
Checklist 8 - Internal Doors					
8.1 - Distinguishable from surroundings?	Yes	4.6.1			
8.2 - Glass door: clearly visible when closed? Are manifestations suitably colour contrasted against the background?	Yes	4.2.3			
8.3 - Can people each side of the door, either standing or seated, see each other and be seen? Are vision panels kept clear of temporary notices? (for an example classroom entrances)	Yes	4.2.3			Doors are a critical element of buildings and a door schedule is to be drawn up by a professional architect to take into consideration all factors affecting good door design such as: choice and positioning of ironmongery, type and size of door etc.
8.4 - Clear opening width sufficient for a wheel chair user? Adequate space available alongside leading edge for a wheel chair user to open the door while clear of the door swing?	Yes	4.6.1			
8.5 - Door control at a height suitable for both standing and seated users? Easily gripped and operated? Control clearly distinguishable from the door itself?	Yes	4.6.2			
8.6 - Door light enough to open easily? Door closers of an appropriate type and with minimum necessary opening pressure?	Yes	4.6.1.7.			
Checklist 9 - Internal Ramps					
9.1 - Ramp available for short rise within single storey?					
Checklist 10 - Internal Stairs					
10. Stairs available for rise within a double storey building?					
Checklist 11 - Lifts					
11.1 - Passenger lift available for vertical circulation within a building of more than one storey?					
Checklist 12 - WC Provision & Changing Areas					
12.1 - Lobby door light enough to open easily? Lobby of sufficient size for easy access?	Yes	4.12.2			
12.2 - Slip-resistant floors throughout?	50%	4.12.4		Environmental Regulations for Workplaces. Regulation 3	
12.3 - Fittings all easily distinguishable from background? Are hand dryers and sanitary ware easily seen against their surroundings?	50%	4.16.2			

12.4 - Compartment door controls all easily gripped and operated? Are cubicle doors suitably colour contrasted against the panels?	n/a	4.12.2			All toilet facilities to be in accordance with minimum standards in terms of SANS 10400 and relavant school guidelines. Sanitaryware, layout and finishes should be in good condition to ensure good hygiene practices.
12.5 - Are urinals well contrasted and do they have grab rails to assist people with ambulant disabilities?	n/a	4.12.2			
12.6 - Are lever style taps provided within the WCs to aid people with dexterity impairments?	No	4.12.2			
12.7 - When there is no accessible WC available, is there a facility provided for people with ambulant disabilities?	50%	4.12.2			
12.8 - Where there are shower facilities, is a grab rail provided? Is there a level access shower for disabled people?	No	4.12.3			






Checklist 13 - WCs: Wheelchair Users					
13.1 - Compartment large enough to allow manoeuvring into position for frontal, lateral, angled and backward transfer unassisted and with assistance?	50%	4.12.2			Accessible toilets are very technical and have specific finishes and details that ensure ease of use. These facilities should be designed by a professional to ensure compliance with minimum standards.
13.2 - Travel distance to a suitable WC no greater than that for able-bodied people?	Yes	4.12.1			
13.3 - Sufficient space available outside toilet compartment for manoeuvre? Is the entrance wide enough and does it open outwards?	No	4.12.2			
13.4 - Hand washing and dry facilities within easy reach of someone seated on WC? Is the hand basin suitably positioned in accordance to BS8300?	No	4.12.2			
13.5 - Door controls, lock and light switch easily reached and operated? Is there a grab rail to the inner face of the entrance?	No	4.14			
13.6 - Tap appropriate for use by a person with limited dexterity, grip of strength?	No	4.12.2			
13.7 - Suitably designed grab rails fitted in all positions necessary to assist manoeuvring? Are grab rails suitably colour contrasted to aid people with impaired vision?	No	4.12.2			
13.8 - Is there a back rest provided to the toilet pan?	No	D.2			
13.9 - Is the flush of a suitable spatula type and is it appropiately located on the transfer side of the toilet pan?	No	D.2			
13.10 - Is the transfer side of the toilet pan kept clear of any obstacles that may deny wheelchair users all of the transferring techniques in which an accessible WC is designed to provide?	Yes	BEST PRACTICE			
13.11 - Is there a cord alarm? Is this coloured red with two triangular bangles and easy to reach from floor level?	No	C.4.5			
Checklist 14 - Facilities					
14.1 - Are seats provided at intervals along long internal routes or where waiting likely? Seats stable, with armrests and provided in a range of heights? Space for wheelchair user to pull up alongside a seated companion?	No	4.4.1.7			Provide a range of seating for children
14.2 - Are chairs with armrests provided within the Staff Room and other key locations such as meeting areas?	No	BEST PRACTICE			Provide a range of seating in staff rooms
14.3 - Are a number of chairs with armrests available within each classroom?	No				Provide a range of seating for children
14.4 - Do dining room counters have provision on both sides for wheelchair users?	No	C.8.4			Provide accessible height counter and table tops
Do these counters have an induction loop to accommodate hearing aid users?	No	C.4.5			Provide assistive device technologies for children and adults with hearing disabilities.
14.6 - Does the dining room have appropriate seating rather than fixed seating which can be inaccessible for a range of users?	Yes	BEST PRACTICE			Provide a range of seating for children and adults in dining facilities.
14.7 - Is there a dropped counter and an induction loop available for the Library counter?	No	C.4.5			Provide accessible height counter and table tops
14.8 - Where there are IT facilities i.e. within classrooms and the Library (if applicable) are height adjustable computer desks available?	50%	C.8.4			Provide accessible height counter and table tops
14.9 - In the Main Hall, is the stage raised? If so what is the current procedure for wheelchair users? For an example when receiving awards on Speech Day?	Yes	C.10.5; 4.8			Provide accessible route to the stage areas.






Checklist 15 - Way Finding					
15.1 - Overall layout of school reasonably clear and logical?	Yes	C.2.3		Environmental Regulations for Workplaces. Regulation 3 - Lighting	Wayfinding principles are critical. The school as-built drawings must be produced and a clear and simple wayfinding plan to be implemented including position of signage, type of signage, using colours to differentiate between spaces etc.
Is there signage available in Braille and tactile?	No	C.2.4; 4.2			
15.2 - On entering the reception area, are signs designed and located to convey information to visitors with sight impairments and wheel chair users with lower eye levels?	No	4.2		Environmental Regulations for Workplaces. Regulation 3 - Lighting	
15.3 - Are standard toilet facilities suitably signed? On approach and on the actual entrances?	Yes	4.2			
Are the locations of the accessible WC facilities suitably identified and located? Does signage have the International Symbol of Access? (Wheelchair symbol)	Yes	4.2.2			
Checklist 16 - Lighting & Acoustics					
16.1 - Lighting designed to meet a wide range of users needs? Level of lighting sufficient for intended use? Lights positioned where they do not cause glare, reflection, confusing shadows or pools of light and dark?	No	4.16.2		Environmental Regulations for Workplaces. Regulation 3 - Lighting	

16.2 - Can occupiers control lighting? Are light switch plates suitably colour contrasted and appropiately positioned for a wheelchair user?	50%	4.14			Lighting is to be addressed by proposing measures to increase the use of natural lighting. Glare to be considered when taking this approach. Acoustic design will include the application of specific finishes in specific positions in the classroom to allow for
16.3 - Are classrooms appropriately illuminated and are blinds available to control the natural day lighting? Is glare avoided which can hinder attempts by people with hearing impairments to lip-read?	No	4.16		Environmental Regulations for Workplaces. Regulation 3 - Lighting	
16.4 - Quiet and noisy areas separated by a buffer zone? Environment free from unnecessary obtrusive noise (e.g. heating units)?	No	BEST PRACTICE			
16.5 - Good balance of hard and soft surfaces?	No	BEST PRACTICE			
16.6 - Are induction loops fitted within the key areas i.e.- Main Hall, Sports Hall, key study areas e.g. Music Room.	No	C.4.5			
Checklist 17 - Means of Escape					
17.1 - Audible alarm system supplemented by visual system?	No	SANS 10400-T		General Safety Regulations (Regulation 2B - Display of substituted notices and signs) Environmental Regulations for Workplaces. Regulation 9 - Fire precautions and means of egress	**This is the most urgent item as it deals with the non-compliance with fire regulations. It is imperitive that updated fire evacuation plans are produced and implemented at these schools.**
17.2 - Ground floor exit routes accessible to all, including wheel chair users, as entrance routes?	Yes	SANS 10400-T		General Safety Regulations (Regulation 2B - Display of substituted notices and signs) Environmental Regulations for Workplaces. Regulation 9 - Fire precautions and means of egress	
17.3 - Once outside, can a wheelchair user get to a place of safety? Are pathways provided and are these wide enough?	Yes	SANS 10400-T		General Safety Regulations (Regulation 2B - Display of substituted notices and signs) Environmental Regulations for Workplaces. Regulation 9 - Fire precautions and means of egress	
17.3 - Vertical escape from upper to lower floors possible using a fire-protected lift with an independent power supply?	n/a	SANS 10400-T		General Safety Regulations (Regulation 2B - Display of substituted notices and signs) Environmental Regulations for Workplaces. Regulation 9 - Fire precautions and means of egress	
17.4 - If disabled people are unable to leave the building, is there a suitable refuge area? Is there an intercom provided within the refuge area and does this have accessible features such as an LED display?	No	SANS 10400-T		General Safety Regulations (Regulation 2B - Display of substituted notices and signs) Environmental Regulations for Workplaces. Regulation 9 - Fire precautions and means of egress	

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Information added by Nadira Haripersadh

"Haripersadh, N. 2019. The role of Architecture when integrating children with physical disabilities into Full-Service Schools: submitted towards a Master of Architecture Degree. University of the Witwatersrand, Johannesburg. "

School Access Audit Data

SCHOOL D

QUESTION	YES/ NO	SANS 10400-S	SANS 10400-S	OHS	RECOMMENDATION
Checklist 1 - Approach Routes & Street Furniture					
1.1 - Is the school within convenient walking distance of:-					
_ Public Highway and Pathways?	No	4.4.1.2	2,1		All roads related issues to be addressed with JRA. Motivation to be issued for Universal Design principles to be applied.
_ Public Transport e.g. Bus Stops?	Yes	4.4.1.2	2,1		
_ Car parking? (For car parking refer to Checklist 2)	Yes	4.3.2			
1.2 - Route free of kerbs?	50%	4.4.3.7	3,5		
_ Do crossings on approach have tactile paving?	50%	4.4.3.7	3,5		
_ If there are pedestrian crossings, do these have turn cones to aid people who are Deaf / Blind?	No	BEST PRACTICE			
1.3 - Wide enough? If a route or pathway is narrow, is there a suitable passing place for wheelchair users?	Yes	4.3.2	2,1		
_ Is plantation trimmed back and are low branches avoided?	Yes	4.4.3.1	1,6		
1.4 - Surfaces even and slip resistant? Is paving flush with no cracks or gaps that could trap the wheels of a wheelchair?	No	4.5.1			
1.5 - Is the location of the school clearly identified from the street? Visual clues and sufficient landmarks to aid orientation?	50%	4,1	Part T (b)		
1.6 - Free from hazards such as bollards, litter bins? Are planting features kept to a minimum and are they colour contrasted?	50%	4.4.3.1	1,6		
1.7 - Free from hazardous building features such as outward-opening doors, windows or overhangs? Do columns or structural posts have markings at two heights?	No	4.4.2.2; 4.4.3.1.			
1.8 - Adequate seating provided along routes? Is there seating where parents wait to pick up / drop off their children?	No	4.4.1.7			





Checklist 2 - Car Parking					
2.1 - Are accessible bays provided for badge holders?	No	4.3.2			Site plan to be drawn up and re-organised to allow for seperation of vehicular/ pedestrian &wheelchair movement. Signage is essential and the size, layout, colours, font and infographics for kids must be planned in accordance with minimum standards.
2.2 - Accessible bays clearly sign-posted from the school's car park entrance? Is there signage to the front of the bays?	No	4.3.3		General Safety Regulations (Regulation 2B - Display of substituted notices and signs)	
2.3 - Are bays marked out appropiately and easily identified? Can car doors be fully opened to allow disabled drivers and passengers to transfer to a wheel chair parked alongside?	No	4.3.2			
2.4 - Close enough to facilities the car park serves?	Yes	4.3.2			
2.5 - Routes from parking area to school entrance accessible,...	Yes	4.4.1.1.			
...with dropped kerbs and appropriate tactile warnings?	50%	4.4.3.7; 3.5	3,5		
Car park surface smooth, even and free from loose stones?	Yes	4.5.1	1,1		
2.6 - For larger car parks, are safety marked out walking routes provided to guard slow moving persons or people with hearing impairments?		BEST PRACTICE		General Safety Regulations (Regulation 2B - Display of substituted notices and signs)	
Checklist 3 - External Ramps					
3.1 - Wide enough and suitably graded? Is there colour contrast to the surface of the ramp?	Yes	4.8.2	3,4		All non-compliant ramps are to be demolished and re-built to Architects specifications.
3.2 - Suitable handrails on each side?	Yes	4,1	3,7		
3.3 - Surface slip-resistant, firmly fixed and easy to maintain?	Yes	4.8.2	3,4		
3.4 - Edges protected to prevent accidents?	No	4.8.2	3,4		






Checklist 4 - External Steps					
4.1 - Visual and tactile warnings at the top and bottom of steps?	No	4.2.1.		OHS Act Section 8	All non-compliant stairs are to be demolished and re-built to Architects specifications.
4.2 - Suitable handrails on each side? Are handrails suitably colour contrasted to aid people with impaired vision?	No	4,1	3,7	OHS Act Section 8	
4.3 - Lighting adequate and well positioned? Are steps appropiately illuminated during darker hours?	No	4.16.2		Environmental Regulations for Workplaces. Regulation 3 - Lighting	
4.4 - Treads long enough and all of the same length?	Yes	4.9.1		OHS Act Section 8	
4.5 - Risers shallow enough, all of the same height, and unlikely to trip users?	Yes	4.9.1		OHS Act Section 8	
_ Are there closed risers?	Yes	4.9.1		OHS Act Section 8	

4.6 - Nosings readily identifiable? If nosings are painted, is the paint still durable with no wear and tear?	No	4.9.2		OHS Act Section 8	
Checklist 5 - Entrances					
5.1 - Main school entrances easy to find? Is the entrance clearly distinguishable from facade?	No	4,1			
5.2 - Door opening wide enough for all users? Enough space alongside leading edge for a wheel chair user to open the door while clear of the door swing?	Yes	4.6.1			
5.3 - Level or flush threshold?	Yes	4.5.4			
5.4 - If there are steps at the main entrance, is there signage indicating where the accessible entrance is located?	n/a	4.3.3	2,1		
5.5 - Can people each side of the door, either standing or seated, see each other and be seen?	No	4.2.3			Space-planning to take into account the fittings, fixtures and layout of wall hung elements. Doorways to be redesigned and fixed to suite safe and accessible entry and exit. Fire compliance is critical.
If the entrance is solid, is this due to security concerns?	Yes				
5.6 - Door control at a suitable height for both standing and seated users? Are door handles clearly located, easy to use and grip?	Yes	4.6.2			
5.7 - Door closer of appropriate type? Can the door be easily opened single handedly?	Yes	4.6.2			
5.8 - Entry phones and intercoms detailed to allow use by people with sensory or mobility impairments? Is there an LED display to accommodate people with hearing impairments?	No				
5.9 - Glazed entrance door: markings for safety and visibility? If manifestations are provided, are these suitably colour contrasted against their background?	Yes	4.2.3			
5.10 - Weather mat of firm texture and flush with floor?	No	C.2.2			
Checklist 6 - Reception Areas and Lobbies					
6.1 - Clear view in from outside? Can receptionists see visitors and provide assistance if necessary?	No	4.2.3			Reception areas to be redesigned to allow the receptionist to view the entrance door. The reception counter should accommodate people in wheelchairs on both sides. Universal design principles to be applied.
6.2 - Transitional lighting? Is the entrance lobby and reception area well illuminated?	No	4.16.1	Environmental Regulations for Workplaces.		
6.3 - Reception/desk/counter/ checkout suitable for approach and use from both sides by people either standing and seated?	Yes	4.14.1			
6.4 - Surfaces suitable? Is there colour contrast to the flooring in front of the reception desk and are edges highlighted?	No	4.16.2			
6.5 - Induction loop fitted? Is there signage indicating the availability of the facility? Are front line staff aware of the facility and its purpose?	No	C.4.2			
  					
Checklist 7 - Corridors and Internal Surfaces					
7.1 - Corridor wide enough for a wheel chair user to manoeuvre and for other people to pass? Turning space for wheel chair users?	Yes	4.4.2			Corridors to be kept clear of obstructions and obstacles. Fire compliance to be maintained at all times. Floor surfaces to be slip resistant and in good condition to avoid causing tripping hazards. Colours to be chosen according to good wayfinding principles.
7.2 - Free from obstruction to wheel chair users and from hazards to people with impaired sight? Are there any internal columns that have a lack of colour contrast?	Yes	4.4.3			
7.3 - Are all key facilities within the school accessible for all users? Eg Sport Hall, Main Hall, Music Room, Changing Room etc. Where there are facilities not available can these be 'swopped' with a standard classroom?	Yes	4.4.1.1			
7.4 - Floor surfaces suitable for passage of wheelchairs? Junctions between floor surfaces correctly detailed?	Yes	4.5.1			
7.5 - Colours, tones and textures varied to help people distinguish between surfaces and fixtures and fittings? Do the floors suitably colour contrast against the walls (this can also be achieved by having well contrasted skirting boards)	No	4.16.2			
7.6 - Floor surfaces slip-resistant? Bright, boldly patterned floors avoided? Busy or distracting wall coverings avoided?	50%	C.2.4		Environmental Regulations for Workplaces. Regulation 3 - Lighting	
Checklist 8 - Internal Doors					
8.1 - Distinguishable from surroundings?	No	4.6.1			Doors are a critical element of buildings and a door schedule is to be drawn up by a professional architect to take into consideration all factors affecting good door design such as: choice and positioning of ironmongery, type and size of door etc.
8.2 - Glass door: clearly visible when closed? Are manifestations suitably colour contrasted against the background?	n/a	4.2.3			
8.3 - Can people each side of the door, either standing or seated, see each other and be seen? Are vision panels kept clear of temporary notices? (for an example classroom entrances)	yes	4.2.3			
8.4 - Clear opening width sufficient for a wheel chair user? Adequate space available alongside leading edge for a wheel chair user to open the door while clear of the door swing?	yes	4.6.1			
8.5 - Door control at a height suitable for both standing and seated users? Easily gripped and operated? Control clearly distinguishable from the door itself?	yes	4.6.2			
8.6 - Door light enough to open easily? Door closers of an appropriate type and with minimum necessary opening pressure?	yes	4.6.1.7.			

Checklist 9 - Internal Ramps					
9.1 - Ramp available for short rise within single storey?		n/a			
Checklist 10 - Internal Stairs					
10. Stairs available for rise within a double storey building?		n/a			
Checklist 11 - Lifts					
11.1 - Passenger lift available for vertical circulation within a building of more than one storey?		n/a			
Checklist 12 - WC Provision & Changing Areas					
12.1 - Lobby door light enough to open easily? Lobby of sufficient size for easy access?	Yes	4.12.2			All toilet facilities to be in accordance with minimum standards in terms of SANS 10400 and relavant school guidelines. Sanitaryware, layout and finishes should be in good condition to ensure good hygiene practices.
12.2 - Slip-resistant floors throughout?	50%	4.12.4		Environmental Regulations for Workplaces. Regulation 3 - Lighting	
12.3 - Fittings all easily distinguishable from background? Are hand dryers and sanitary ware easily seen against their surroundings?	No	4.16.2			
12.4 - Compartment door controls all easily gripped and operated? Are cubicle doors suitably colour contrasted against the panels?	N/a	4.12.2			
12.5 - Are urinals well contrasted and do they have grab rails to assist people with ambulant disabilities?	No	4.12.2			
12.6 - Are lever style taps provided within the WCs to aid people with dexterity impairments?	No	4.12.2			
12.7 - When there is no accessible WC available, is there a facility provided for people with ambulant disabilities?	Yes	4.12.2			
12.8 - Where there are shower facilities, is a grab rail provided? Is there a level access shower for disabled people?	No	4.12.3			
 					
Checklist 13 - WCs: Wheelchair Users					
13.1 - Compartment large enough to allow manoeuvring into position for frontal, lateral, angled and backward transfer unassisted and with assistance?	Yes	4.12.2			Accessible toilets are very technical and have specific finishes and details that ensure ease of use. These facilities should be designed by a professional to ensure compliance with minimum standards.
13.2 - Travel distance to a suitable WC no greater than that for able-bodied people?	Yes	4.12.1			
13.3 - Sufficient space available outside toilet compartment for manoeuvre? Is the entrance wide enough and does it open outwards?	Yes	4.12.2			
13.4 - Hand washing and dry facilities within easy reach of someone seated on WC? Is the hand basin suitably positioned in accordance to BS8300?	No	4.12.2			
13.5 - Door controls, lock and light switch easily reached and operated? Is there a grab rail to the inner face of the entrance?	No	4.14			
13.6 - Tap appropriate for use by a person with limited dexterity, grip of strength?	No	4.12.2			
13.7 - Suitably designed grab rails fitted in all positions necessary to assist manoeuvring? Are grab rails suitably colour contrasted to aid people with impaired vision?	50%	4.12.2			
13.8 - Is there a back rest provided to the toilet pan?	No	D.2			
13.9 - Is the flush of a suitable spatula type and is it appropiately located on the transfer side of the toilet pan?	No	D.2			
13.10 - Is the transfer side of the toilet pan kept clear of any obstacles that may deny wheelchair users all of the transferring techniques in which an accessible WC is designed to provide?	Yes	BEST PRACTICE			
13.11 - Is there a cord alarm? Is this coloured red with two triangular bangles and easy to reach from floor level?	No	C.4.5			
Checklist 14 - Facilities					
14.1 - Are seats provided at intervals along long internal routes or where waiting likely? Seats stable, with armrests and provided in a range of heights? Space for wheelchair user to pull up alongside a seated companion?	No	4.4.1.7			Provide a range of seating for children
14.2 - Are chairs with armrests provided within the Staff Room and other key locations such as meeting areas?	No	BEST PRACTICE			Provide a range of seating in staff rooms
14.3 - Are a number of chairs with armrests available within each classroom?	No				Provide a range of seating for children
14.4 - Do dining room counters have provision on both sides for wheelchair users?	No	C.8.4			Provide accessible height counter and table tops

Do these counters have an induction loop to accommodate hearing aid users?	No	C.4.5			Provide assistive device technologies for children and adults with hearing disabilities.
14.5 - Do vending machines have all operating parts at less than 1200mm off the floor level and are they suitably colour contrasted?		4.14			n/a
14.6 - Does the dining room have appropriate seating rather than fixed seating which can be inaccessible for a range of users?	Yes	BEST PRACTICE			Provide a range of seating for children and adults in dining facilities.
14.7 - Is there a dropped counter and an induction loop available for the Library counter?	No	C.4.5			Provide accessible height counter and table tops
14.8 - Where there are IT facilities i.e. within classrooms and the Library (if applicable) are height adjustable computer desks available?	Yes	C.8.4			Provide accessible height counter and table tops
14.9 - In the Main Hall, is the stage raised? If so what is the current procedure for wheelchair users? For an example when receiving awards on Speech Day?	No	C.10.5; 4.8			Provide accessible route to the stage areas.






Checklist 15 - Way Finding					
15.1 - Overall layout of school reasonably clear and logical?	Yes	C.2.3		Environmental Regulations for Workplaces. Regulation 3 - Lighting	Wayfinding principles are critical. The school as-built drawings must be produced and a clear and simple wayfinding plan to be implemented including position of signage, type of signage, using colours to differentiate between spaces etc.
Is there signage available in Braille and tactile?	No	C.2.4; 4.2			
15.2 - On entering the reception area, are signs designed and located to convey information to visitors with sight impairments and wheel chair users with lower eye levels?	No	4.2		Environmental Regulations for Workplaces. Regulation 3 - Lighting	
15.3 - Are standard toilet facilities suitably signed? On approach and on the actual entrances?	No	4.2			
Are the locations of the accessible WC facilities suitably identified and located? Does signage have the International Symbol of Access? (Wheelchair symbol)	Yes	4.2.2			
15.4 - Within stairwells are each of the levels clearly identifiable by tactile and visual information?		SANS 10400-T			
Checklist 16 - Lighting & Acoustics					
16.1 - Lighting designed to meet a wide range of users needs? Level of lighting sufficient for intended use? Lights positioned where they do not cause glare, reflection, confusing shadows or pools of light and dark?	50%	4.16.2		Environmental Regulations for Workplaces. Regulation 3 - Lighting	Lighting is to be addressed by proposing measures to increase the use of natural lighting. Glare to be considered when taking this approach. Acoustic design will include the application of specific finishes in specific positions in the classroom to allow for
16.2 - Can occupiers control lighting? Are light switch plates suitably colour contrasted and appropiately positioned for a wheelchair user?	Yes	4.14			
16.3 - Are classrooms appropriately illuminated and are blinds available to control the natural day lighting? Is glare avoided which can hinder attempts by people with hearing impairments to lip-read?	50%	4.16		Environmental Regulations for Workplaces. Regulation 3 - Lighting	
16.4 - Quiet and noisy areas separated by a buffer zone? Environment free from unnecessary obtrusive noise (e.g. heating units)?	No	BEST PRACTICE			
16.5 - Good balance of hard and soft surfaces?	No	BEST PRACTICE			
16.6 - Are induction loops fitted within the key areas i.e.- Main Hall, Sports Hall, key study areas e.g. Music Room.	No	C.4.5			
Checklist 17 - Means of Escape					
17.1 - Audible alarm system supplemented by visual system?	No	SANS 10400-T		General Safety Regulations (Regulation 2B - Display of substituted notices and signs) Environmental Regulations for Workplaces. Regulation 9 - Fire precautions and means o egress	**This is the most urgent item as it deals with the non-compliance with fire regulations. It is imperitive that updated fire evacuation plans are produced and implemented at these schools.**
17.2 - Ground floor exit routes accessible to all, including wheel chair users, as entrance routes?	yes	SANS 10400-T		General Safety Regulations (Regulation 2B - Display of substituted notices and signs) Environmental Regulations for Workplaces. Regulation 9 - Fire precautions and means o egress	
17.3 - Once outside, can a wheelchair user get to a place of safety? Are pathways provided and are these wide enough?	Yes	SANS 10400-T		General Safety Regulations (Regulation 2B - Display of substituted notices and signs) Environmental Regulations for Workplaces. Regulation 9 - Fire precautions and means o egress	
17.3 - Vertical escape from upper to lower floors possible using a fire-protected lift with an independent power supply?	Yes	SANS 10400-T		General Safety Regulations (Regulation 2B - Display of substituted notices and signs) Environmental Regulations for Workplaces. Regulation 9 - Fire precautions and means o egress	
17.4 - If disabled people are unable to leave the building, is there a suitable refuge area? Is there an intercom provided within the refuge area and does this have accessible features such as an LED display?	No	SANS 10400-T		General Safety Regulations (Regulation 2B - Display of substituted notices and signs) Environmental Regulations for Workplaces. Regulation 9 - Fire precautions and means o egress	
END					

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