

# **Project Proposal**

**Mariakani Education Complex Centre Classrooms Building Project**

# Contents

<b>Abbreviations</b>		<b>3</b>
<b>1. Introduction</b>		<b>4</b>
1.1	Purpose of this Document	4
1.2	Project Objectives	4
<b>2. Project Context</b>		<b>4</b>
2.1	Coast Region of Kenya	4
2.2	Education in Kenya	5
2.2.1	Overview	5
2.2.2	Education Infrastructure	6
2.3	MECC Complex Centre	7
2.3.1	School Population Increase	7
2.3.2	Existing School Sites	8
2.3.3	Existing School Facilities	8
2.3.4	Environmental Considerations	9
2.4	Local Construction Industry	10
2.4.1	Technical Design and Documentation	10
2.5	Current Construction Costs	11
2.6	Local Contributions	12
<b>3. Project Design</b>		<b>13</b>
3.1	Design	13
3.2	Siting and Layout	13
3.3	Environmental Impact Assessment	14
3.4	Disaster Risk Reduction	14
3.5	Cross-Cutting Issues	14
3.5.1	Environmentally Sustainable Design	14
3.5.2	Disability Inclusive Infrastructure	15
3.5.3	Gender Inclusive Infrastructure	15
3.6	Materials, Fit out and Services	16
3.6.1	Proposed design	16
3.6.2	Water Supply & Sanitation	16
3.6.3	Electrical Services	17
<b>4. Project Benefits</b>		<b>17</b>
4.1	Physical benefits	17
4.2	Economic benefits	17
4.3	Social benefits	17
4.4	Environmental benefits	18
<b>5. Project Impacts</b>		<b>18</b>
5.1	Physical effects	18
5.2	Economic effects	18
5.3	Social effects	18
5.4	Environmental effects	18
<b>6. Project Management and Organization</b>		<b>19</b>
<b>7. Project Implementation and Costs</b>		<b>20</b>
OPTION A:		21
OPTION B:		22
OPTION C:		23
OPTION D:		24
OPTION E:		25
<b>8. Recommendations</b>		<b>26</b>
<b>9. Additional Information / Annexes</b>		<b>26</b>



## Figures

Figure 1 - Map of Kenya

5

Figure 2 - Map showing location of existing school site

8

## Abbreviations

BoQ	Bill of Quantities
CPU	Contract Procurement Unit
GSC	Geosite Systems Consultant
DP	Development Partner
BOD	Board of Directors
ICB	International Competitive Bidding
IPMC	International Project Management Consultant
MKD1	Mariakani 1- Kenya Development Plan
MDG	Millennium Development Goals
MECC	Mariakani Education Complex Centre
MNREE	Ministry of Natural Resources, Energy and Environment
MWCT	Ministry of Works, Communications and Transport
PWD	Public Works Department
PwD	Persons with Disabilities
TOR	Terms of Reference

## 1. Introduction

### 1.1 Purpose of this Document

The purpose of this document is to provide information relating to the application for development assistance from the Global Giving for the Mariakani Education Complex Centre Classroom Building Project at the Mariakani County, Coastal region Kenya.

### 1.2 Project Objectives:

The objective of the project is to increase access to primary education in response to population growth on Mariakani Education Complex Centre, due in large part to population drift from the outer Kilifi County.

## 2. Project Context

### 2.1 Coast Region of Kenya

The Coast region consists of the six County governments and is inhabited by Mijikenda, Swahili and Arab peoples, representing a population of roughly 4.5 million. The coastal region came under the rule of Omani Arabs based in Zanzibar after they expelled Portuguese colonists in the late 18th century following 200 years of rule. The Sultan of Zanzibar agreed to lease the coastal region of modern Kenya (then known as “al-Zanj”) to the Imperial British East Africa Company in 1888. An 1895 treaty between Britain and the Sultan brought the region under formal British protection, with the residents remaining subjects of the Sultan rather than subjects of the British crown, as in the Kenya colony. It is this point that is the principal basis for the MRC’s legal challenges to its incorporation into post-independence Kenya. [1]

Some MRC members also claim that Jomo Kenyatta, the first prime minister of Kenya, had signed a separate 50-year lease agreement for the Coast strip with Zanzibar that will expire next year, when the Coast region will become independent. However, the movement cannot produce documentation of this claim and there is no reference to it in the existing agreements on which the Kenyan state was founded (Institute for Security Studies [Nairobi], June 27).

A 1908 British ordinance usurped most of the traditional claims to land-ownership on the Coast by declaring all land not under cultivation to be “crown land,” thus transferring title to most of the Coast to the state, a system inherited by modern Kenya, which has used the distribution of such lands to up-country Kenyans as a means of patronage or as the basis of resettlement schemes and industrial projects that do little for Coast residents. Little of the wealth created in the region by its busy ports and flourishing tourist industry makes its way into the hands of locals, who face wide-scale unemployment and land loss through various land reforms favoring landholders from the interior. In this economically depressed environment many young men are turning to heroin use while impoverished young women are often absorbed into Mombasa’s sex trade.

In the lead-up to Kenya’s independence in 1963, Coast residents tended to join either the *mwambao* (Swahili, lit. “coastline”; in this context meaning “self-governing”) or *majimbo* (Swahili, lit. “Regions,” i.e. federalist) camps. The *mwambao* movement began in the years prior to independence as Coastal Arabs and Swahili feared being taken over by local Africans and migrants from the “upcountry” regions of Kenya. Unfortunately, many Coast residents believed Kenyan independence would mean the restoration of their lands, not their transfer to a new authority. [2] The *majimbo* current ultimately prevailed, but many of its proponents on the Coast later changed their mind when various protections and guarantees granted to the Coast were pushed aside by the post-independence government. The new nation of Kenya was, in part, an assembly of unwilling elements under the dominance of the tribes of the highland region, with many in the coastal region and the north-eastern ethnic Somali region having serious reservations about union with Kenya.

### Environmental vulnerability:

The low lying nature of the coral atolls and Kilifi County of Kenya, along with its location with respect to major environmental impacts such as floods events make this one of the most vulnerable countries in the

Indian region. Recent high seas and wind caused by Tropical Cyclone have caused significant beach erosion, building and property damage, as well as inundation on some of the outer Kilifi County resulting in destruction of crops and contamination of the water table. The long term impacts have yet to be assessed, but the short term needs for emergency shelter and safe gathering places has already been tested.

## **2.2 Education in Kenya**

### **2.2.1 Overview:**

The publication *Kenya MGD Acceleration Framework – Improving Quality of Education* by the Ministry of Education and Sports, Ministry of Finance and Economic Development and the United Nations System in the Indian Kilifi County, highlights that Kenya has a significantly young population, with 33 percent of the total under 15 years old. The youth population (15-24 years old) comprises 19 percent of the total population. The government provides free primary education for all. By law, it is compulsory for everyone between the ages of six and 15 to attend school. All tuition, books and

5

Stationery along with infrastructure development and provision of teachers are being funded by the government and with the support of development partners. These features and Kenya's small geographic composition make primary education easy to access for all. Primary education consists of eight years of schooling (Classes 1 to 6, and Forms 1 and 2). There are nine government primary schools, one on each island, and a Seventh Day Adventist Complex Centre in Mariakani Orphan Children Education Centre. In 2010, there were 1,918 pupils enrolled in schools who were taught by 109 teachers (98 certified and 11 uncertified). A technical and vocational education and training (TVET) stream has been added to the Complex Centre curriculum that offers an alternative programme to pupils who may not excel academically.

The teacher-pupil ratio for primary schools is around 1:18 for all schools with the exception of MECC Primary School. MECC, the largest school located on the capital island Mariakani Education Complex Centre, comprises 45 percent of the total Complex Centre enrolment and has a teacher-pupil ratio of 1:27. Secondary education consists of four years of schooling, Forms 3 through 6. Education continues to be compulsory until the end of the year the child turns 15, generally two years after primary school. Consequently, children who fail the National Year Eight Examination (NYEE) at Year 8 are required to repeat Form 2 and re-sit the examination until they pass or are no longer required to attend school at the age of 15. This additional student load in the final year of Complex Centre puts pressure on the facilities and teaching staff with the negative impact of affecting the preparation of new students for the examination.

With the commencement of the TVET stream incorporated into senior Complex Centre education, there is now an alternative course offering for those who leave school after Year 8. Mariakani Children Education Complex Centre has experienced a large population increase of around 37% over the last 10 years, largely due to urban drift from the outer Kilifi County. Coupled with a large proportion of people under 15 attending school, the result has been a significant increase in the number of students at the MECC Complex Centre over the last 5 - 7 years since the second stage of the classroom building project was completed.

### **2.2.2 Education Infrastructure :**

Five of the outer Kilifi County of Kenya have had new two storey classrooms built under the Constituency Development Fund (CDF) in the past 10 years. Primary schools is proposed to be constructed and completed on three years: The remaining two outer island primary schools on Nanumea and Nukufutau were not included in the CDF program due to funding shortfalls. However, planning is already well advanced for the upgrade of these schools to the same standard as the other five Kilifi County by the end of 2015, with funding by the Government of Kenya (Board of Directors) and construction by the Public Works Department.

**2.3 MECC Primary School:** MECC is the larger of two primary schools on Mariakani Orphan Children Education Centre Atoll and is located adjacent to the Kenya Hospital on the islet of Fongafale which has the main concentration of population in Kenya.

#### **Existing facilities:**

MECC Complex Centre had two double storey classroom buildings provided with French assistance in two stages during the 1990s (named La Parouse Phase 1&2). A total of 15 classrooms were provided. A third stage for a further 10 classrooms was planned but never completed.

The school currently has 20 classrooms and a small TVET training room as follows:

- 8 classrooms (8m x 6m) + admin office in La Arouse buildings,
- 1 library
- 2 Dormitories (boys & girls) complete with Sanitary facilities (25m x 13m)
- 1 Dinning Hall complete with Kitchen and store (25m x 10m)
- 1 Administration block single storey building (17m x 6m)
- 8 toilets each for girls and boys

There are 8 toilets each for girls and boys on the Centre in very poor condition. A further 4 classrooms are located off Centre in re-purposed government housing buildings in the adjacent residential areas. The toilets, wash and drinking facilities in these remote classrooms are sub-standard, and pupils are isolated from the main social and play activities of the school.

#### **2.3.1 School Population Increase**

With the **current school enrolment of 300 Children this year (2019)**, the pupil / classroom ratio of 32:1 means that two classes are often sharing classrooms concurrently, which is severely impacting on education outcomes. In addition, the Department of Education is moving to include the first 2 years of high school education into the senior primary school. In the case of MECC, this will result in another 100 students using the existing inadequate facilities in 2020 and a further 100 students in 2021 when the transition is complete. By the end of 2023, the student/class ratio will be around 40:1 if additional classrooms are not provided, which in the context of Kenya is unsustainable

#### **2.3.3 Existing School Facilities**

##### **Existing buildings :**

The existing school buildings are a mixture of concrete block work, timber and concrete framed structures. One building is low rise with concrete floor at ground level, and the others are two storey with the lower floors raised above the ground level.

##### **Condition of facilities :**

All the existing buildings now require major upgrade works as part of the refurbishment cycle with the newest buildings on the Centre now being approximately 20 years old. Lack of maintenance over the years and the harsh marine environment of the location have contributed to the overall deterioration of the facilities.

The list of major work includes sunshades and cladding falling off the buildings, handrail deterioration, roof leaks, and major electrical faults including shorts and light fittings falling down on students due to rusted fixings. These last 2 faults have resulted in the power being cut off from 8 classrooms for the last 4 weeks and won't be restored until the problems are rectified. Most of the problems are due to corrosion of fittings, fixtures and fixings which will need to be replaced progressively throughout all the buildings.

In addition, an old single storey building with 2 classrooms now floods regularly due to either subsidence or increase in the level of the adjacent ground, is generally in poor condition and near the end of its economic life. The existing substandard toilets require replacement due to severe cracking in the block work walls to ensure safe hygienic facilities for pupils.

The PWD is in the process of assessing the maintenance requirements for the buildings at MECC and will prepare a report on the extent of funding required to complete the works to make the buildings habitable again. Renovation / maintenance will be undertaken by the Board of Directors so funding for existing building upgrade is not sought in this proposal

### **2.3.4 Environmental Considerations**

#### **Erosion of the south west corner of the Centre:**

The south west corner of the site is suffering erosion along the lagoon shore. Two existing buildings are affected, and during recent bad weather the waves were breaking against the TVET classroom and adjacent building. One of the existing toilet blocks could be threatened in the same way if the erosion continues:

#### **Cyclone and storm surge:**

According to the publication listed below, on average Mariakani Children Education Complex Centre experiences eight tropical cyclones per decade. Many of the existing buildings on the Centre have stood through previous major cyclone events, which indicates that the site is relatively protected from cyclones and storm surge, and makes the area a good refuge for people in times of major weather events.

The proposed buildings should be constructed above the projected maximum storm surge levels and built to withstand Cat 5 cyclones so they can be used for shelter in the worst projected weather events.

#### **Tsunami impacts:**

Mariakani Children Education Complex Centre is exposed to tsunami impacts. The last major warning occurred in 2010 when an earthquake around Samoa triggered a tsunami. On that occasion, the disturbance was low but in the future there may be worse outcomes with the people requiring safe shelter. The classroom building should be concrete frame or block work construction on the lower level to withstand tsunami impacts which would allow people to shelter on the upper level with safety

#### **Seismic impacts:**

The publication *Kenya Catastrophe Risk Financing Initiative COUNTRY RISK PROFILE - KENYA* available from the World Bank website cites that the only noticeable historic earthquake is one that occurred in 1907 and had a magnitude equal to 7.0. The risk of earthquake appears relatively low with an earthquake of magnitude 7 or greater expected to hit within 200km from Mariakani Education Complex Centre , on average, once every 2 years.

#### **Climate change effects:**

According to the publication by the Australian Bureau of Meteorology and CSIRO, 2011. *Climate Change in the Kenya: Scientific Assessment and New Research. Volume 1: Regional Overview.*

Volume 2:Country Reports, (available from [www.Kenyaclimatechangescience.org](http://www.Kenyaclimatechangescience.org)) the main projected environmental impact from climate change in Kenya will be sea level rise. The measured rise since 1993 has been 5 mm per year and the projections are for a sea level rise of between approximately 5–15 cm by 2030, with increases of 20–60 cm indicated by 2090. The new classroom building and toilets must be designed to allow for the projected sea level rise to ensure the buildings remain habitable for the next 50 years.

#### **Water lens :**

Mariakani Children Education Complex Centre does not have a centralised sewage collection system and local absorption trenches are used for black water waste disposal. Study of the impact on the water lens through contamination from the proposed toilets needs to be considered in the project brief document.

#### **Asbestos cement sheeting:**

A full assessment of the extent of asbestos cement cladding in existing buildings to be demolished will be required as part of the project briefing. Any asbestos products must be removed and disposed of in the required manner as part of the demolition.

## **2.4 Local Construction Industry:**

**2.4.1 Technical Design and Documentation** The PWD is generally responsible for the technical design and documentation, tendering and construction contract management of all permanent public infrastructure (new, refurbished or repaired). The past few years has seen a significant increase in the demand for technical design, documentation and construction supervision services from the PWD. Given the implementation timeframe of these projects and the current staff numbers and skill sets available within the PWD, this situation is not likely to change for some time.



## **Suppliers and Contractors:**

For the past 30 to 40 years the PWD has been the major construction 'contractor' for public infrastructure in Mariakani Children Education Complex Centre and on the Outer Kilifi County. This 'monopoly' has limited the development and capacity of Kenya's non-government construction industry. The recent increase in the demand for PWD services has also affected their construction management capacity and as a result of their heavy workload, more construction responsibility is being allocated to local contractors and tradesmen reducing the pool of competent locals available to work on any new infrastructure projects – such as the Mariakani Children Education Complex Centre Classrooms project.

From experience in Kiribati and other Kenya Island nations, most non-government contractors and tradesmen are capable of providing reasonable outcomes on small and non-technical infrastructure projects; however their capacity to service larger more complex projects is limited by undeveloped construction management skills including; tendering, calculating quantities, procuring materials and shipping, programming, financial / cash flow management, quality assurance, etc. In addition there is very little support to the local industry from local insurers, bankers, and creditors etc. to enable the local contractors to manage their responsibilities and the associated risks.

The poor quality and intermittent availability of building materials in Kenya adds to the problems faced by the local construction industry in meeting the quality and performance requirements expected on donor funded public infrastructure projects. The lack of consistent demand has resulted in only a small stock of a limited range of standard building materials being kept in country and most building programs experience delays as shortfalls often occur.

## **Construction Supervision:**

There are few Kenya based professionals with experience in supervising large and/or complex construction projects or with the capacity to satisfactorily manage International Contractors. Those with the capacity are currently busy with the PWD or actively engaged on other important donor funded infrastructure projects. These factors combine to make a difficult operating environment to achieve quality results in Kenya, and until Board of Directors regulations, local contractor skills, and materials availability improves all buildings requiring a high level of finish and fit out will require both materials and specialist labour to be imported :

## **2.5 Current Construction Costs:**

The strategy adopted to determine costings for Kenya is the application of generic construction rates to the new works in the region. The generic rates have been determined by examining costs across a range of recent construction projects in Kiribati, Niue and Kenya which are similar in scale to the works proposed for the Classroom Construction project. A Building Price Index (BPI) adjustment is applied to these rates to factor in cost escalation for the period until the project commences. This is a well-established and common method used to prepare preliminary budgets within the construction industry, however it is recognised that in Kenya this strategy is limited by the capacity of the local construction industry

## **2.6 Local Contributions:**

Local contributions to the project by the Board of Directors will include the demolition of existing buildings and site clearing, storage and security of materials, and installation of the drainage for the proposed new toilets.

# **3. Project Design**

## **3.1 Design:**

Targeting the Coastal region of Kenya average class size of around 30 students per class, MECC Complex Centre with 300 students currently requires 8 classrooms. The introduction of classes for Form 1 in 2022 will raise the student population to over 350 which will require at least 12 classrooms for the targeted average class size. The aim of this proposal is to secure development partner assistance to provide additional classrooms at MECC Complex Centre to bring the number of classrooms on Centre to 30, and to provide new toilet facilities for the increased pupil numbers. These new facilities are required to meet the immediate needs of the school due to population growth, curriculum changes, and deteriorated existing facilities as follows:

- replacement of the existing 2 classrooms that flood,
- provide replacement facilities for the TVET program,
- provide new classrooms on Centre to accommodate the students who currently use the facilities off Centre,

- provide new classrooms for the Form 3 and 4 students being transferred from the high school system
- provide additional classrooms to cater for the large increase in student numbers since the last stage of building was completed.
- provide new toilet facilities with disability access to replace the existing dilapidated buildings
- provide a new building that can be safely used by the community for emergency accommodation during times of natural disaster

The proposal includes the construction of a total of 8 new classrooms and 8 new toilet blocks of 10 toilets including disability access toilets (10 toilet pans total), each with 5 toilets for boys and girls.

#### **Project Duration:**

The desired duration of the project is 18 months from approval of funding to completion of the works

#### **Expected Implementation Date:**

The desired implementation date would be June 2021 for approval of the funding, followed by setting up the Taskforce by Board of Directors for formulating the Terms of Reference for the project in consultation with the MECC.

### **3.2 Sitting and Layout:**

The proposed new classroom building will occupy the site of an existing single storey teaching building and toilets on the existing MECC Complex Centre. The existing buildings have reached the end of their economic life and one classroom floods regularly in periods of heavy rain because the floor level is below the surrounding ground. The toilet buildings are affected by spalling of concrete block work with many cracks now evident, and the roof sheeting is rusted through in many places. Demolition of the buildings would free up the site for the proposed new building.

The proposed two storey classroom building would be arranged along the west side of the Centre between the lagoon and the playground and will link at both levels via walkways to the adjacent buildings to provide continuous on-grade undercover disability inclusive access around to all the buildings on the Centre.

The new toilet buildings would be sited at each end of the school to minimise the distance to the facilities for pupils and to avoid concentrating absorption / transpiration trenches in one location. One toilet would be located adjacent to the new classrooms on the south, and the other between the existing classrooms to the north

### **3.3 Environmental Impact Assessment:**

Considering the fragile nature of the atoll environment, an Environmental Impact Assessment will be required as part of the project documentation in accordance with the Board of Directors Environment Protection Regulations. The statement will address the environmental considerations highlighted above as well as any other impacts described in the Regulations.

### **3.4 Disaster Risk Reduction:**

Schools are the centre of a community and often become refuges and meeting places when disaster occurs. Climate change is contributing to increases in the frequency and/or intensity of extreme weather events, directly impacting on communities exposed to climate-related and natural hazards such as tsunamis, cyclones and storm surges.

As the MECC Complex Centre is located near the hospital and main concentration of the population, people would naturally gravitate to the Centre and the classrooms could be used as evacuation shelters. The structural design of the school buildings should support these uses. Similarly, with good natural light, ventilation, disabled access, water and sanitation facilities, the school may play an important role in providing for vulnerable groups and groups directly impacted by a disaster (eg. homeless). Under the proposed project, the TVET building and existing toilets would be demolished, and the new buildings moved further from the lagoon to provide a buffer against further erosion of the lagoon shore. The Disaster Risk Reduction study will address the risk of erosion in the design phase of the project.

### **3.5 Cross-Cutting Issues:**

The following cross cutting issues will be addressed in the design of the new facilities:-

### 3.5.1 Environmentally Sustainable Design:

Incorporating environmentally sustainable development principles is an integral part of the building design process which improves the quality of life, thermal comfort and health and safety of the building occupants as well as minimising the ecological impact of the building on the site. The design would be guided by the constraints associated with implementing infrastructure projects and building in Kenya:-occupying and operating

The building would be orientated with the long axis north / south on the site to minimise exposure to cyclones and to capture prevailing east to north-east cooling breezes. All external windows would comprise solid timber operable louvre blades to provide cyclone protection without the need to store and install plywood cyclone shutters. Heat gain and glare from morning and afternoon sun would be minimised by deep verandas, large eave overhangs and shading devices. Planting would be developed along the west boundary of the site to protect buildings from afternoon sun;

The building design incorporates simple plan and roof forms that are practical, simple to construct, cost effective to operate and low maintenance; Buildings would incorporate passive means to control the internal environment such as large eave overhangs, narrow building forms and operable louvre windows which allow internal areas to maximise cross ventilation and natural day lighting.

**3.5.2 Disability Inclusive Infrastructure:** Universal Design Guidelines have been developed as a companion to the Development for All: Towards a disability-inclusive Australian aid program 2009-2014 strategy. The purpose of the Guidelines is to ensure that all of the Australian aid program's activities relating to the physical environment are designed as far as practicable to be accessible to persons with disabilities, and that the barriers to participation they may encounter in social and economic life are minimised. The Centre is well located for sharing of transport, services and support programs for teachers, students and visitors with disabilities. The site is near-level, providing good access from the front of the site to buildings and from buildings to playground. In support of DFAT's Universal Design Guidelines, the project briefing document would incorporate the following:-

- Ramps will be provided for persons with disabilities (PwD) up to buildings at the front of the school and down to the main body of the playground and for access for prams, delivery trolleys etc.
- The building will be double storey throughout, so all specialised spaces such as library, craft, administration etc would be located on the lower level as well as a range of typical classrooms to allow scheduling of activities that for classes that included PwD. All lower level areas will be accessible via complying ramps. All areas are close together to reduce travel distances and all links covered for protection during inclement weather. Level transitions and thresholds will be provided throughout.
- Disabled bathrooms (2) are provided in toilet blocks - accessible to teachers and students with disabilities.
- Natural lighting in classrooms is supplemented by overhead fluorescent lamps to assist student learning and in particular - students with vision impairment.
- As Mariakani Children Education Complex Centre experiences heavy tropical downpours, roofs will have continuous insulation blanket installed directly under and in full contact with metal roofing to reduce rain noise and expansion / contraction sounds associated with metal roofing. Classroom ceilings and dividing walls will be fully insulated to reduce sound transmission.

**3.5.3 Gender Inclusive Infrastructure:** The current school population comprises roughly equal number of boys and girls. Separate male / female bathrooms are located close to classrooms to minimise travel distances and maximise teacher supervision. Female toilet pan numbers will be provided to match applicable design codes. Individual cubicles are provided for students privacy. Unisex disability facilities are provided and these are fully accessible to disabled students and teachers. External access is provided to staff toilets to ensure they are equally accessible to male and female visitors during school functions – thereby reducing the chance of adults accessing student toilets. Sealed sanitary bins will be installed in the female staff bathroom, and disabled bathrooms. These will be managed by staff as there is no commercial disposal service provided in Mariakani Education Complex Centre. Negotiation of the construction contract would explore opportunities for women's economic empowerment during the construction stage.

### Materials, Fit out and Services:

### **3.6.1 Proposed design:**

Ideally, the new classroom building will have a ground floor comprising concrete slab-on-ground with concrete block work walls for strength and durability - plus a timber framed upper storey. The internal walls would be light weight and sound insulated for future flexibility in room size. Alternatively, a full timber kitset building could be provided with raised timber floors which would be more economical but not as durable in the event of tsunami or storm surge inundation.

Roof framing would be timber trusses with high durability colour bond finish profile metal sheet roofing with insulation above a durable plywood ceiling. Ceiling heights would be a minimum of 2.7 metres to allow safe installation of ceiling fans for teacher and pupil comfort. New toilet buildings will have concrete floors and block work walls reinforced with imported aggregates to eliminate future 'concrete cancer'. Roofs will have simple truss structure with high durability profiled metal roofing. The roof gables will be open for cross ventilation:

#### **Fixed Furniture & Equipment (FF&E) :**

The fixed furniture and equipment will be supplied by reputable national suppliers in Kenya with warranties that include servicing in Kenya. Whiteboards, pinboards and teaching aids would be high quality and durable, and IT equipment for eLearning will be generic and high quality to allow maximum compatibility and flexibility with emerging online and open source teaching resources.

#### **Loose Furniture & Equipment:**

Loose furniture will be manufactured using imported plywood materials with simple designs that would allow fabrication either in Kenya or overseas.

### **3.6.2 Water Supply & Sanitation: Water Supply:**

Mariakani Children Education Complex does not have a centralised water supply system. The existing school rainwater collection system will be supplemented with new storage tanks connected to the existing rainwater supply system. Well water supplied by a pressure pump from the water lens will be used for toilet flushing to reduce the demand on the rainwater supply.

#### **Wastewater :**

Waste water from the toilet facilities will be directed to new on-site septic tanks before ground disposal via absorption trenches.

### **3.6.3 Electrical Services:**

#### **Fire Services:**

Fire detection will be provided by wired thermal smoke detectors located in each classroom. There is good access to all buildings from the playground which can be used for staging fire pumps in the event of a major fire.

#### **Communications:**

If required, the existing school communications system will be extended to the new building by the Board of Directors.:

#### **Data:**

Data will be connected to one classroom from the existing school infrastructure

## **4. Project Benefits**

The following benefits will be provided by this project:

### **4.1 Physical benefits**

- Better use of the site
- Proposed location of the classroom building will allow the connection of all buildings on the Centre with undercover access at each level
- Distributed toilet facilities at each side of the site provide shorter access distances for students, and better distribution of waste from two septic tanks.
- The off-Centre buildings being used by the school will be returned to the Board of

Directors

and Hospital

#### **4.2 Economic benefits**

- Buildings will be constructed with durable materials to reduce future maintenance expenses and will be easily refurbished in the future
- Use of light weight sound insulated walls between classrooms would provide a flexible interior arrangement to cater for future reconfiguration of classroom sizes if teaching requirements change

#### **4.3 Social benefits**

- Better teaching facilities will provide a positive experience for students during the compulsory period of school attendance and may attract quality people to teaching
- Better teaching outcomes resulting from reduced class sizes
- More classrooms will remove the need for sharing of classrooms by two classes
- Children will all be on one site therefore no crossing roads, and better access to toilet facilities.
- The building will serve as a shelter for the local population in times of disaster.
- New toilets and 50% of the new classrooms will have disabled access for staff, students and visitors via ramps and access ways that will link all buildings on the Centre.

#### **4.4 Environmental benefits:**

- The classrooms will be built with ground floor levels above the inundation levels for the 50 year projections
- Flexible internal layout extends the usable life of the building
- Replacement of the existing septic tanks and correct absorption trench layout will reduce the current negative impacts on the environment and increase health from the reduction of mosquitoes and flies that are breeding in the tanks through cracks in the lids and walls of the tanks.
- Demolition of the buildings on the lagoon edge would allow rehabilitation of the shoreline to reduce further erosion.
- Importing of construction materials means that no sand and gravel will be taken from the local environment.
- Rainwater is harvested from most of the existing buildings on the Centre, and this will be continued with the new buildings

### **5. Project Impacts**

#### **5.1 Physical effects**

No physical impacts outside the school Centre can be foreseen for the project.

#### **5.2 Economic effects:**

A larger proportion of funds would flow into the local Kenya economy if the project is designed and documented by the PWD and constructed by local contractors (Strategy A). An International Contractor would be required to provide a Local Engagement Plan and employ local people in the construction process, so a (smaller) proportion of the funds would still flow to the local economy under this strategy.

#### **5.3 Social effects:**

Relocation of the students from the classrooms offsite and inclusion of the form 3 & 4 classes will increase the number of children using the existing Centre facilities. The site is already small, and the increased pupil numbers could lead to playground issues.

#### **5.4 Environmental effects:**

Proposed sitting of the classroom building could block the breeze to the playground from the west. However, the predominant breezes in Mariakani Children Education Complex Centre are from the north and east. More sewerage to be dealt with on the site due to the increased number of toilets for pupils which may impact on the water lens.

## **8. Recommendations:**

Option E is offered as the preferred implementation strategy. This Option balances the desire for the Board of Directors to maintain an active role in the project implementation, with the Development Partner's requirements for fiscal responsibility and certainty in cost and timeframes through ongoing quality audits throughout the project. Under this strategy, the MECC maintains control as the Employer through the contract with the International PM Consultant acting on their behalf in delivery of the project. The Development Partner maintains quality assurance requirements through periodic external audits of both the IPMC and the International Construction Contractor to ensure that time and cost targets are being achieved. The Local Engagement Strategy will carry a large weighting for the selection of the International Construction Contractor to ensure the best outcome for skills development in the local construction industry in Kenya

## **6. Project Management and Organization:**

The Ministry of Education, Youth and Sports (MECC) will take a leading role in the new classrooms project at MECC Primary School. A Taskforce will be established by the Government of Kenya to manage the planning, and development of the project requirements. The role of the Taskforce would depend on the Implementation Option, and costs for the local input to the Taskforce would be borne by the Board of Directors.

### **Terms of Reference for the Taskforce:**

Following are indicative Terms of Reference for the Taskforce assuming Option E will be implemented. The TOR would be similar to those for the current Taskforce to be overseeing the construction of classrooms on two outer Kilifi County, which are to

- Oversee overall financial status of the project.
- Select International PM Consultant
- Review and finalise the project documents.
- Identify relevant approach to execute the project.
- Approve the detailed work schedule
- Select the Project Manager
- Select the Project Engineer
- Oversee progress report prepared by the Project Engineer
- Oversee operational costs report prepared by the Project Manager
- Select a research team to assess the sites
- Select cost effective design of the classrooms
- Select builders for the classrooms
- Monitor the Progress of the Project to ensure it is on schedule
- Provide advice and update the Minister of Education, Youth and Sports on the progress of the project
- Establish and maintain communication with PMU

### **Membership:**

The Taskforce would comprise of representatives from each of the following agencies;

MECC;  
CPU;  
PWD;  
Board of directors;  
Finance/Planning;  
Lands;  
EIA;  
MWCT;  
National PM Consultant  
Project Manager and Project Engineer, Data Officer

**Chairperson:**

The Taskforce would be chaired by the Permanent Secretary of Education, Youth and Sports.

**Meetings:**

There would be at least 1 meeting a month. Special meetings would be called upon request with valid reasons.

**Decision Making:**

The Taskforce would seek a consensus in relation to any decisions.

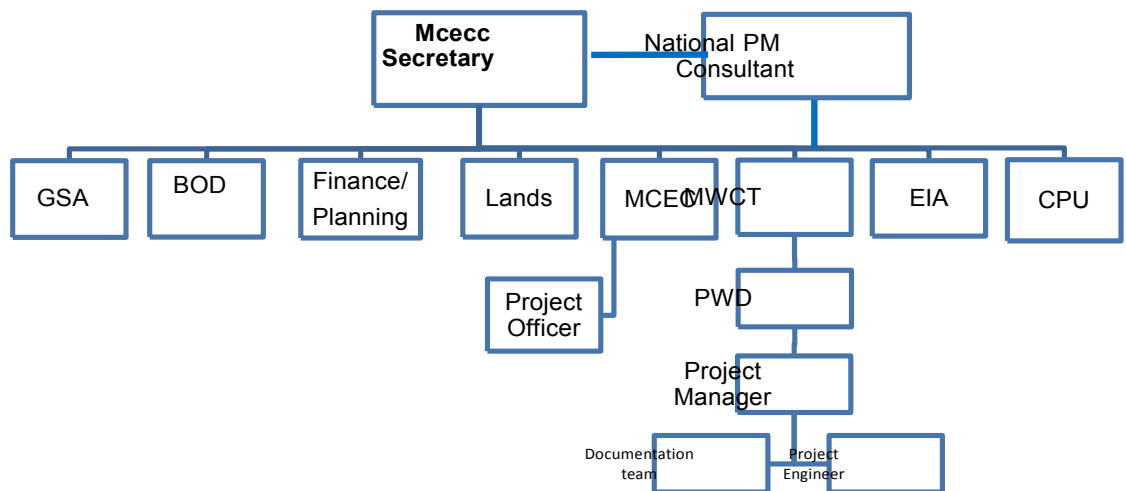
**Advisors :**

The Chair may seek individuals or organizations with relevant expertise to participate in the Taskforce discussions if and when necessary.

**Subcommittees:**

The Taskforce may establish subcommittees to support particular areas of the Taskforce work:

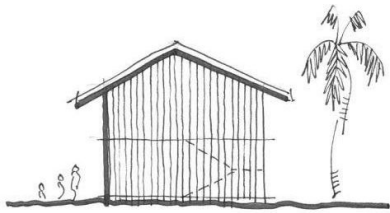
**Taskforce Organization Chart**



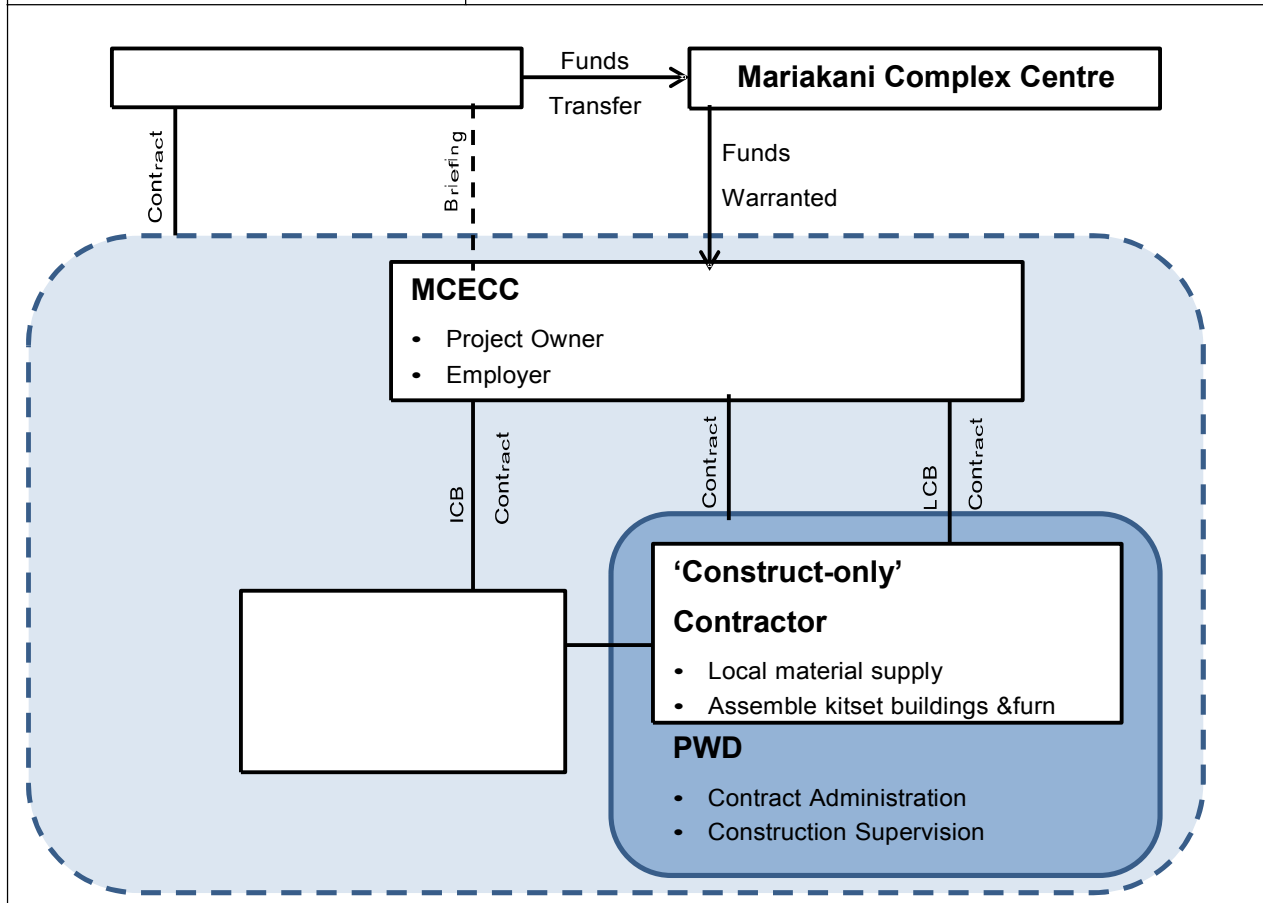
**7. Project Implementation and Costs:**

Following are 6 possible options with associated costs for implementation of the project. Options A, B, and E describe implementation by the Board of Directors with the assistance and support of an International Project Management Consultant Options C and D outline implementation by an National Managing Contractor working closely with the Board of Directors to ensure the project outcomes match the Board of Directors requirements

**A BILL OF QUANTITIES OF THE PROJECT COMPONENTS**



Two storey timber kitset design; donor funds channelled through Kenya Development Fund; design, tendering, contract formation and quality overview by International PM firm; contract admin and construction supervision by local PWD; pre-fabricated building and furniture by International kitset supplier; assembly by local contractor.



Item	Description	Build Up Area Metres Square	Qty	Rate	Amount in Kshs.	Amount in US \$
1.	Classrooms	8m x 6m	12	15,750	-	286,000
2.	Dormitories (boys & girls) complete with Sanitary facilities	25m x 13m	4	15,750	-	410,000
3.	Dinning Hall complete with Kitchen and store	25m x 10m	2	15,750	-	218,000
4.	Administration block single storey building	17m x 6m ground floor 17m x 6m first floor	1 1	18,750 15,650	- -	60,000 50,000
5.	Workshops	14m x 8m	2	15,750	-	111,000
6.	Staff quarters 3 Bed roomed houses	11m x 7m	6	18,750	-	136,000
7.	Medical Care Unit	16m x 19m	1	18,750	-	62,000
8.	Library	Capable of serving 600 people	1	18,750	-	85,000
9.	Waste water and sewage treatment units			Lump Sum	-	110,000
10.	A 30 KVA Generator set,			Lump Sum	-	24,000



	underground cable, generator house, internal wiring of all the buildings.					
11.	Sanitary Units	No	30	25,000	-	24,000
12.	Water supply			Lump sum	-	173,000
<b>Sub-Total</b>					-	<b>1,500,000</b>
Allow for 5% Contingencies					-	<b>100,000</b>
<b>Grand Total</b>					-	<b>1,600,000</b>

## 8. Recommendations:

Option E is offered as the preferred implementation strategy. This Option balances the desire for the Board of Directors to maintain an active role in the project implementation, with the Development Partner's requirements for fiscal responsibility and certainty in cost and timeframes through ongoing quality audits throughout the project. Under this strategy, the MECC maintains control as the Employer through the contract with the International PM Consultant acting on their behalf in delivery of the project. The Development Partner maintains quality assurance requirements through periodic external audits of both the IPMC and the International Construction Contractor to ensure that time and cost targets are being achieved. The Local Engagement Strategy will carry a large weighting for the selection of the International Construction Contractor to ensure the best outcome for skills development in the local construction industry in Kenya.

## 9. Additional Information / Annexes

Attachment A	Project Program
Attachment B	Site Plan and Schematic Layouts
Attachment C	Site photographs