

AIC Kijabe Hospital



Engineering and Facilities Division Update

Issue: May 2012

What's new?



The last quarter has been a busy one. Highlights include:

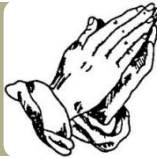
- Delivering existing capital projects
- Strategic and Operational Planning
- Responding to emergencies (water shortages and sanitation problems)
- Revising the 10 Year Master Plan
- Approval of the new BKKH

A word from Collins...



Hello everyone, and welcome to this first edition of the E&F Update. With so many capital projects underway in parallel with normal operations and maintenance at our busy hospital, we thought it might be helpful to put out a regular update in relation to what's going on! We hope you enjoy this first edition and please provide us with feedback as to how we can improve it.

What is God saying?



In a word? Pray.

As we embark on delivery of the projects in the 10 Year Master Plan, we are learning that nothing worthwhile happens without prayer. With so many projects and limited resources with which to deliver them, the Lord has been calling us to a place of prayer and deeper reliance on Him as our provider.

Emergency Power Systems Upgrade

More details on page 4 and 6.



Construction!

Currently, 7 projects approved in the *10 Year Master Plan* for delivery are either in the Development Phase (design, fundraising, procurement) or Delivery Phase (construction, commissioning). Due to failing infrastructure and urgent Hospital needs, they are being delivered simultaneously. *Ni poa.* That sounds like a lot of projects! It is. Over the next five years, AIC Kijabe Hospital will construct more buildings and infrastructure than it has in the last fifty years. That's a lot of construction!

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Your friendly E&F Division

Heads of Department, Consultants and Project Managers



Engineering HODs & Consultants

Seated from right: Shammah (Capital Projects) J Kimani- (Maintenance), Andy (Consultant), Francis (Electrical).

Standing from Left: Harun (Biomed), Simiyu (Security), Mburu (Maintenance), Jim (Consultant) and Steve (Electrical)

Not Pictured - Jullie, Kuriah, and Collins.

Why are there open excavations (holes) around the Hospital grounds?

In preparation for construction to commence on the new BKKH Pediatric Wing, a number of preparatory works are underway including digging holes in order to sample soil and water to confirm engineering calculations and make plans.

I have noticed smelly black water flowing downhill, or oozing from manholes. What is this?

Kijabe Hospital's sanitation system is undersized for our existing buildings and requires replacement, especially as we commission the new buildings underway. Broken and blocked septic lines are the cause of these overflows. If you notice what appears to be black smelly water/sewage anywhere, please notify John Kimani, Maintenance Manager, on 0720 829 352.



(Construction! Continued).....

So what projects are currently under construction? Which ones are about to commence?

Completed Projects: @ Naivasha; Installation of an X-Ray Machine in and Automated Power back Up, other renovations. @Kijabe Hospital; Installation of a vacuum plant and a new incinerator, Power Upgrade

Under Construction: Palliative building, new MCH building (including a room for the new CT scanner), Final Phase of the power upgrade

About to commence: Water upgrade, Sanitation upgrade, Energy Audit implementation, Master Plan Implementation, BKKH pediatrics wing.

So, have you guys completed any of your projects? Or are they perpetual projects?

Fair question! We are proud to note that in addition to the significant amount of ongoing work (capital projects and normal operations/maintenance), in the last 6 months, the E&F team has completed the Electrical upgrade 95%, addition of a new auto-start switch to the Middle Station generator, and installation of a new incinerator, a vacuum plant and much more!

So what does all this construction mean for me?

1. Take care when walking anywhere inside and outside the Hospital.
2. Be mindful of colorful "hatari" tape indicating a no-go construction area.
3. Never enter a construction area or building under construction without an escort from the E&F Division.
4. PPE (Personal Protective Equipment) must be worn at all times within a construction area. What's this? Hardhat, glasses, and steel-toed boots.

What's this "Ten Year Master Plan" you keep going on about?

Have a look at the last page of this newsletter. We anticipated your question!

How can we help?

The Hospital needs your help to deliver some urgent projects; in particular the Water and Sanitation Projects. We are in the process of applying for grants from numerous donors, but need YOU to think creatively about opportunities to mobilize resources and donors/partners to fund these critical projects. Do you know of a donor/partner or agency to whom we might apply for funding? Please contact Andrew Steere at andy.steere@sim.org with your thoughts. As we pray for the Lord's provision and guidance, partnering with donors and other organisations in order to deliver these projects is at the top of our agenda.

	Permanent Water Conservation Measures (normal operation)	Level 1 (water shortages)	Level 2 (emergency)
Hand-held hose watering	Any time	1 day/week (Saturday), 6-9am or 5-8pm	None
Buckets/watering cans	Any time	Any time	Between 6-8am or 6-8pm
Car washing	Bucket or hose with trigger nozzle	Bucket or hose with a trigger nozzle	None
Hard surfaces (driveways, sidewalks)	None	None	None

Water Conservation Measures

As you know, we are presently experiencing an emergency water shortage here at the Hospital. This is due to failing supply infrastructure, and lack of available water supply as compared to our increasing water demand. We know this lack of water is inconvenient and frustrating at times, and we are grateful for your forbearance and patience.

As such, the following are effective **immediately** in order to manage in this interim period until the Kijabe Water Project is commissioned:

Implementation of Water Conservation Measures for all water users on the Kijabe Hospital Water System (Hospital staff and missionaries on lower and middle station).

These are not just responses to the water crisis, but are a long-term strategy for the Hospital and staff to move towards being good stewards of our precious water resources.

- See the chart above for details of the Water Conservation Measures.
- At times of extreme water shortages and in emergencies, **Level 2 (Red)** will be implemented. **Level 2 was implemented effective Saturday, February 11**, and all staff will be notified when the current water emergency is over.
- At other times and until completion of the Project, due to the water shortage, the Hospital and staff housing will operate at Level 1 (Orange).
- Following completion of the Kijabe Water Project, we will implement the level of "Permanent Water Conservation Measures" (Green).
- Presentation including Q&A time will be made available to staff at the open forum meetings (or E&F update meeting to be set up), so that everyone has an opportunity to fully understand the what and why these Measures are being implemented.

What is a "water emergency", and when should we report one? When you have:

- Lack of water for greater than 4 continuous hours, in the absence of prior notification of a planned water outage due to maintenance, or notification of an unplanned water outage.
- Burst or leaky pipes
- Discoloration of water or evidence of other health risk in the water.



Hakuna maji?

The good news? Kijabe station water committee has been formed to look into the water issues, not just for Kijabe but for the whole station. In addition, we have completed the Development Phase of the Kijabe Water Project. This will form part of the long term solutions from the Kijabe station water committee. Currently, we are aggressively seeking funding, and hope to commence this project in the next 6-8 months, with completion planned within 18 months.

The bad news? In the meantime, we will continue to experience the same water shortages we are currently having, with unplanned periods of water emergencies, should a piece of infrastructure fail. The Engineering and Facilities team will do our best to constantly give you updates.

To report a water emergency in housing:

Between 8am and 5pm: Call John Mburu, Housing Maintenance Deputy, on **0721 222 600**

Between 5pm and 8am: Call Elisha Nyande, Housing Manager on **0722 935 709**

To report a water emergency in hospital:

Between 8am and 5pm: Call Engineering and Facilities office at extension **437** or pager # **151**

Between 5pm and 8am: Call pager # **151**

We did it! Electrical upgrade 95% completed.

Emergency Power Systems Upgrade for AIC KIJABE HOSPITAL

Critical power back up plays a very vital role in the healthcare industry. In any hospital setting, sensitive equipment can suffer degraded performance or damage compromising emergency and life support systems which should always remain fully operational. Extreme levels of power quality or even worse- a power system failure can lead to serious consequences. With power, outages are often unexpected and unpredictable.

Such was the case in April 2010, when lightning struck within the vicinity of the generator building which had no lightning arrestors. This strike generated a powerful electromagnetic field that created inductive and capacitive coupling, leading to transient overvoltage (a voltage peak with a maximum duration of less than one millisecond) - a nightmare for any electrician. As a result, irreparable damage was caused rendering the hospital powerless for an over an hour. It was eternity as the technical team repressed their panic, kept calm and worked innovatively to manually bypass and revive the generator.

Apart from transient overvoltage, the old power back up has over the years, experienced all sorts of problems including black outs, power surges, unpredictable power variations, phase failures and blow outs. This old power back up consisted of a generator (which never had a major service done on it) coupled with an outdated logic control unit which was not always functional.

These power problems have now become history. Work on the electrical project began in May 2011 and on 17th November 2011, the capability of the electrical team was put to test as the new system they had been working on was successfully tested and commissioned.

So what comes with this new upgrade? Ask the electrical team and they'll gladly give you an educational tour and tell you that...

The 300 KVA transformer has been replaced with a new 1000 KVA transformer. To protect the 1000KVA transformer is an 11,000KVA breaker with the best protection modern technology can offer against overloading, overheating, short circuiting and death injuries.

Power from the 11,000 volts line goes through the breaker to the transformer where it is stepped down to 415 V. It then goes through the 630 KVA stabilizer (automatic voltage regulator) where all the three 415 V phases are balanced.

[Continue on page 6](#)

Departments under Engineering and Facilities Division

Maintenance, Electrical, Capital Projects, Bio-med, Security, and Transport.

The heads of these departments are committed to better enhance our services. Please help us serve you better by sending your recommendations and comment to engadminassist.kh@kijabe.net

Who is the head of the E&F Division?

Collins Muiruri. He is a registered Mechanical Engineer, has a Masters of Business Administration, and is an avid naturalist and fan of Kenya's National Parks. As a member of the Senior Management Team, it is Collins' job to make sure that the E&F Division is delivering the outcomes required by the Hospital in support of all our internal clients.



I have a project I want to build!

Are you a doctor, nurse, chaplain, or staff with a good idea?

Great! The Hospital relies on organic ideas to improve its services and mission. Here's what you should do:

1. I have already raised some money for my idea, and have some concept of the scope of the project I want to see delivered.

Great! If you are a doctor or nurse, please present your idea to the Medical Director (Dr Letchford) or Nursing Director (Grace Maina). They will help you with your idea including helping you consult with the stakeholders affected by your idea, and then submit it through appropriate channels to the E&F Division so we can help you deliver it! If you are not a doctor or nurse, liaise first instead with your respective SMT head.

2. I have an idea that I think is good, but don't know how to scope out my project or engage with the various stakeholders involved.

No problem! You have to start somewhere. Contact Shammah Kiteme, Capital Projects Manager on projectmgr.kh@kijabe.net for some professional and friendly help in moving your idea forward.

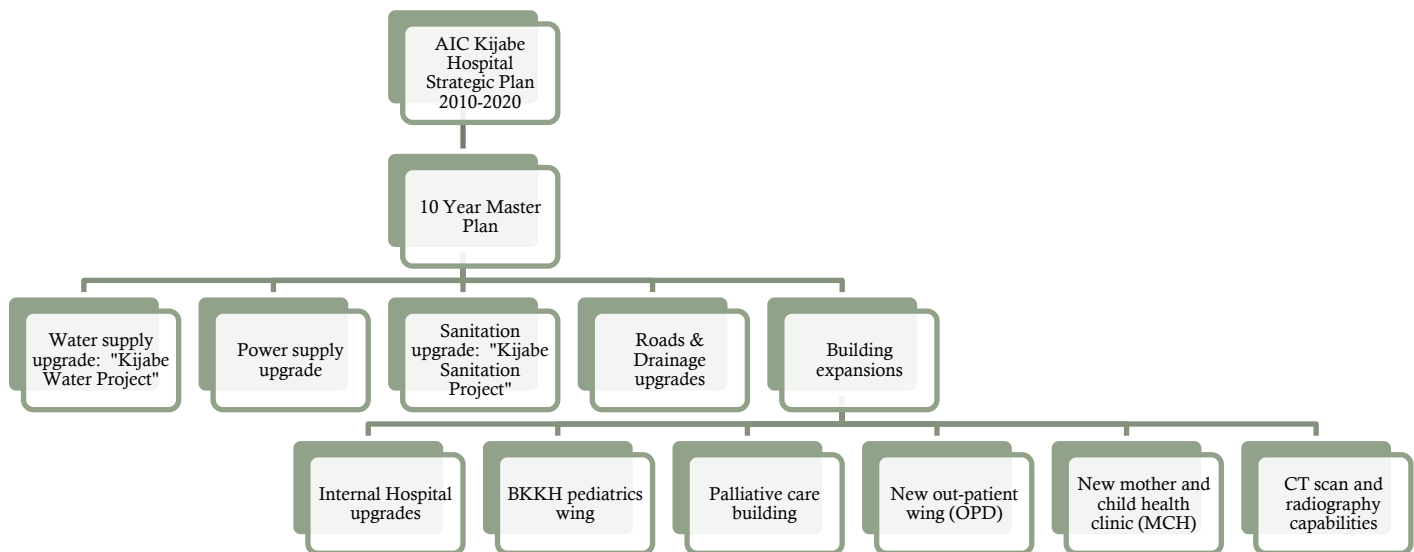
Who is Shammah Kiteme?

Shammah is a registered Civil Engineer and the Capital Projects Manager for the Hospital. He also deputizes for Collins. Say "hi" to him the next time you see him!



What's the 10 Year Master Plan?

To provide for the future direction of the hospital and chart a course for future growth, in 2009 the Hospital developed the *AIC Kijabe Hospital Strategic Plan 2010-2020*. A principal outcome of this Plan was the commissioning of a *10 Year Master Plan*, completed in 2010, to assess existing infrastructure, identify infrastructure improvements required for future expansion, and provide recommendations and concept plans. The priority projects approved in this Plan, which are all currently in various stages of delivery, are illustrated below.



What about other projects not identified in the Master Plan?

Good question. The Master Plan was approved in 2010, and the subsequent 2 years has seen a lot of work including successful completion of the Power Supply Upgrade. Additional projects have been identified for delivery which you will hear more about later! Among these are new Hospital entrance points and improved patient and vehicle access.

Electrical upgrade Continued

From the stabilizer, power goes to the switchboard which is equipped with modern breakers, sensors and digital monitors that analyze the quality of power coming from KPC or the generators.

In this switchboard, there is a power factor correction bank which helps correct lagging and leading currents. This will help the hospital to consume electrical power more efficiently than most institutions in East Africa.

To back up KPC power, there is a 500 KVA generator and a soon to be connected 300 KVA generator. The Switchgear is responsible for switching the hospital to either KPC power or generator power. The primary generator power back up is the new 500 KVA generator which caters for critical and non critical load. This generator has an engine that is fully electronic with advanced engine monitoring, protection and control. However should it fail, the switchgear has been designed to automatically drop the non critical load and turn on the 300 KVA generator to serve only the critical areas of the hospital until normal power resumes.

To sum it up, the power upgrade will provide a practical capability to achieve the following;

- Monitor and evaluate the quality of power from the 11,000 KVA line
- Identify & rectify voltage sags/surges which cause critical damage to equipment thus affecting patient care
- Measuring of various electrical loads
- Using transfer switches to avoid overloads
- Compare power bills to actual power usage thus eliminate discrepancies
- Ensuring safety, reliability and satisfaction
- Serve the hospital and its growth over the next 50 years

Did you know? Electrical department is one among the few in-house departments in the country responsible for managing power lines with a juice of 11,000 KVA.

On behalf of the Engineering and Facilities division we would like to thank the following:-

- The project managers in electrical, maintenance and transport departments and their staff for all the hard work and dedication towards this project.
- Blackwood Hodge, Specialized Power Systems Ltd and Dutron Consultants for working and making it easier for us to accomplish this task.
- The Hospital Administration led by the Executive Director, for their support
- Engineering Ministries International (eMI) for their professional report and input

We are embarking on an ambitious upgrade program on many other projects. We will continue to issue updates on the same. In closing, we would like to mention that Engineering and Facilities department is keen on continuous improvement of its services to the hospital and staff. Indeed, we feel honored to continue serving AIC Kijabe Hospital to God's glory.

Collins Muiruri,
E&F Manager

If you have any administrative and transport issues, this is the guy to address them to.
Call #437 or Visit E&F office for more info.

How long should I wait after placing a maintenance order?

We receive more than 20 maintenance requests per day on average. From these requests we prioritize them then the rest are on first come first served bases.

Putting in to consideration that we have Hospital Maintenance and Housing maintenance, we always give the hospital requests priority. After placing an order, you should make a follow up 5 days after if the work has not been done or if you have not received any communication from our staff. The waiting time can also be affected by availability of materials though this should be communicated immediately after the work has been scheduled. NB. This applies to Hospital work orders only.

For the housing, the same personnel working on the Hospital are the same people working on the housing thus the waiting period for the maintenance work is prolonged but should not exceed 2 weeks depending on the availability of materials. A follow-up call or visit should be made to E&F office for updates or inquiries.

E&F department is committed to serve you better. If you have any idea or comments please send them to engadminassist.kh@kijabe.net and we will appreciate.

John Kuriah.

Who is John Kuriah?

He is E&F Administrative Assist and Transport Coordinator.

