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Assessing Options to Provide Renal Replacement Therapy

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CLUSTER: HEALTH

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SAVINGS@WORK
GOVERNMENT SPENDING REVIEWS

Summary

"End stage kidney disease is a major public health problem globally and its management is associated with an economic burden that is particularly onerous on low- and middle-income countries"

White SL, Chadban SJ, Jan S, Chapman JR, Cass A
Bull World Health Organ. 2008 Mar; 86(3):229-37

Renal dialysis for the treatment of patients with end-stage kidney failure (ESKF) is one of the truly amazing therapeutic discoveries of modern medicine whose success has undoubtedly surpassed the wildest expectations of its early believers. Dialysis can keep patients alive and well for many years (even decades) - patients who are otherwise doomed to die. The success of dialysis has led to unprecedented demand for treatment, but is very expensive. Is the use of enormous resources for the benefit of a relatively small number of ESKF patients in the face of other pressing health demands justified? Is it the best way to use scarce health resources?

The above is a reality for many in the Northern Cape and the country at large living with kidney disease. The service needs as per the Renal Society studies indicates that 100 per million people need access to treatment, this however is even worse in South Africa. Reports in 2015 indicated that 18,000 people in the country require renal replacement therapy which changes the equation drastically.

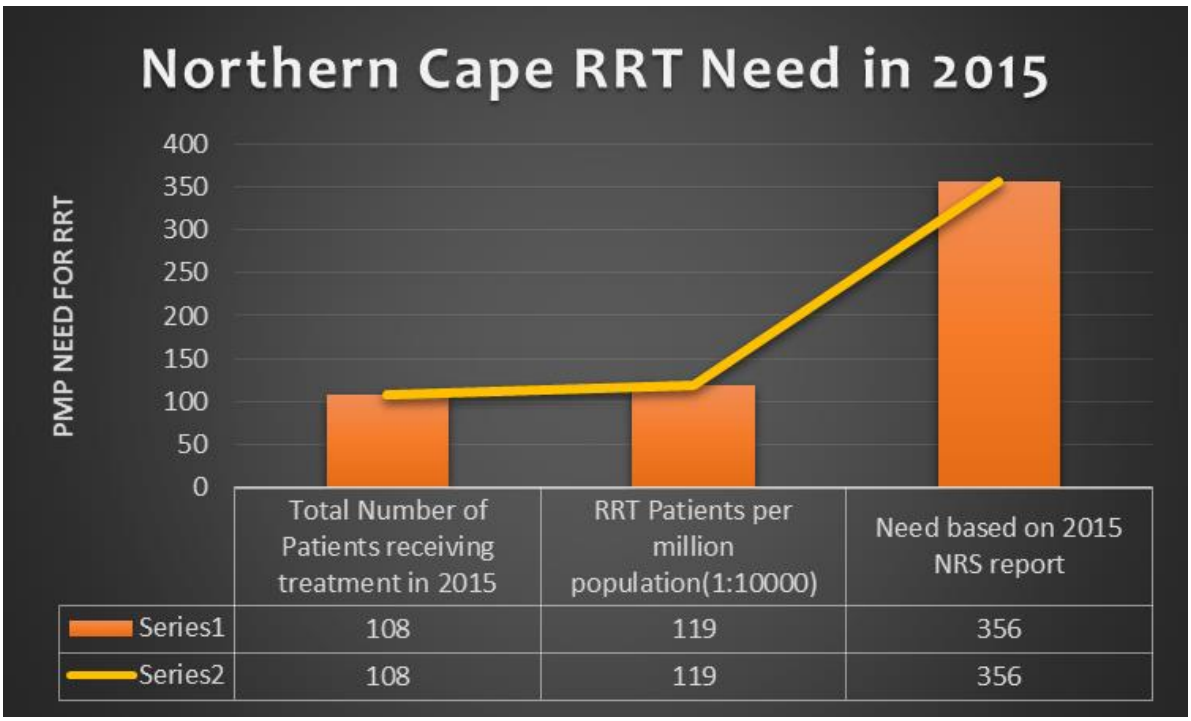

Figure 1: Renal Replacement Therapy access based on 2015 Stats

Access to RRT based on population demographics						
Province	Total Population in 2015/16	Total Number of Patients receiving treatment in 2015	RRT Patients per million population(1:10000)	Need based on 2015 NRS report	% difference against (PMP)	% difference against (2015: NRS Report)
			0.0001	*0.0003*		
Northern Cape	**1185600**	**108**	**119**	**356**	**91%**	**30%**

Table 1: Renal Replacement Therapy access based on 2015 Stats

How is the service being offered and how can the unmet need be catered for? This is a key question that needs answering. A total of R 62 million is being spent on a constant number of treatments which does not ensure equitable access to this much needed service. The service is rather expensive based on the NRS report which estimates at R 120 000 per patient per year in 2015. Should the costs per patient be escalated, the present value could amount to ±R 144 000. The current situation considering the delivery options and contracting parameters do not show any value being derived. The external service providers do not also have presence in all the districts and I was informed by the unit head that the contracts have been stopped due to high prices being charge per patient per year. It is rather better that the province revives the process for a decentralised model through Public Private Partnership (PPP), with an incremental pragmatic approach that is within budgets. This would also breach the capacity gap that exists because RRT is a specialised service. The province will derive better value for money and discharge their mandate by ensuring that the vulnerable are efficiently serviced.

Contents

1. Introduction

This PER examines the Northern Cape Department of Health's Renal Replacement Therapy policy and the effective rollout thereof. Interesting because of the Province's geographical spread and the challenges. RRT is a Tertiary Health care services prescribed to Tertiary and higher classified hospitals in the Country. With that considered and the nature of how renal replacement therapy needs to be administered, I can only imagine that some level of innovation is required when dealing with such programmes.

Decision makers within the Province need to take an informed decision on how RRT can be provided. What is important is not to compromise the eligibility of being on the National Transplant list and ultimately prolong the lives of people living with this disease. The outcomes of the PER, will impact people faced with renal failure. Furthermore catalyse the Province's viewpoint on the delivery of key medical interventions as well as assisting in reducing the mortality rates in the province.

People within the province are being under serviced. The department is not putting in place strategies that are responsive or innovative. Inertia has really set in and the same ways of doing things are practiced with the hope that they will yield better health outcomes. The Health department in the Northern Cape has been met with serious institutional instability which creates even further problems with how key decisions are being made. This had a serious impact on the core service delivery objectives. The financial implication which can be ascribed to the increase in medico legal cases that the department is faced with. The status quo on RRT continued, even after the department had initiated a PPP investigation in 2013/14. Investigations indicated that the public sector delivery mechanism cannot deal with the amount of people presenting with renal failure and the current system is not yielding positive results, it is overburdened. The department stopped the process of introducing PPP arrangements for RRT, because of institutional changes which then led to things remaining the same.

There are also not enough nurses and specialists required to render the service considering the prevalence of renal failure. The province has with the mid-year estimates for 2018/19 according to Stats SA have a population of approximately 1.26 million people. When applying the ratios from the international norm of 100:1000000 it would translate to **126 people**. I however would lean towards the NRC report of approximately 300:1000000 which means about **378 people** would require this service. The unmet need would be approximately **252 people** within the province.

I scrutinized the BAS data to check what is being spent for the RRT with the current delivery model. I also checked the feasibility study done in 2013. Astonishingly the expenditure remained high but the delivery of the service has not improved. I encountered challenges with the compensation of employees for the service from **2016/17 to 2018/19**, the cost centres were moved from Renal Unit sub programme to the main programme Internal Medicine. I interviewed some of the people who work at the unit and found minor movements on staff, and those were on interns. I assumed the costs on CoE would have escalated with the cost of living adjustments, which I found on the DPSA site for the periods not captured within the programme. In terms of the PPP feasibility I looked at the cost benefit analysis which estimates for the decentralised model for both Capital Expenditure and Operational expenditure. A 15-year projection was provided with potential revenue streams for the department cited.

A sad reality is that the status quo remains which does not cater for all presenting with renal failure and some patients still have to travel from Springbok and other towns in Namakwa to Upington and the rest from Pixley ka Seme and JTG to Kimberley for this service. Now when travel durations and kilometres are factored in, the following is what reality is:

Start Point of Travel	Point of Service	Time spent on road round trip	Distance for round trip
Springbok	Upington	6-8 hours	720 km
Calvinia	Upington	8-9 hours	800 km
Kuruman	Kimberley	4-5 hours	490 km
De Aar	Kimberley	5-7 hours	600 km
Port Nolloth	Upington	10-12 hours	1040 km

Figure 2: Travel data

The most important questions that need to be answered in my PER are the following:

1. What is the current cost for the delivery of the RRT service verses the cost projections of a decentralised model through a PPP?
2. What policy constraints or opportunities exist for a Province specific solution that can be applied to other specialised services like RRT?
3. What is the impact with the status quo of the delivery setup and what impact could be realised with the decentralised model?
4. Do the existing contractual arrangements with external contracted parties yield Value for Money and effective Delivery of RRT?

2. Policy and Institutional Information

The policy landscape for the provisioning of Renal Replacement Therapy (RRT) stems from the Constitution which pronounces access to adequate health care provisioning. The National Department of Health affirms it through the Health Act, which determines health institutions service classifications which are responsive to the National Core Standards (NCS). The National Renal Society (NRS) are contributors to the national policy framework and collaborate with the National Department of Health to ensure all aspects are adhered to. The regulatory and statutory requirements in terms of transplant eligibility is also set out in the National Policy and guidelines. Provincial Departments of Health need to develop a policy and standard operation procedures for the delivery of RRT within the prescribed minimum benefits. The Health Act and NCS also indicates the referral path ways which is clearly indicated on Annexure 1 and 2 (Institutional Analysis Infographic) and (Logical Framework). The current situation is not ideal, but it is what the department is able to deliver given the fiscal constraints and competing demands within the health space. The need to determine which critical services can be delivered within the current policy landscape requires a review with a global view on actual delivery. The public and private combination needs to be fostered and I believe that this could be achieved through the implementation of the National Health Insurance (NHI) which will serve as the equaliser. The decentralised model for the management of renal failure will take the following shape in terms of referral pathway:

- A patient presents with acute renal failure at a district facility. The district facility may, depending on the patient's condition either:
    - Initiate acute dialysis, stabilize the patient and refer to the Kimberley Unit for assessment; or
    - Refer the patient to the Kimberley Unit for assessment
- The Kimberley Hospital Unit will do the full diagnostic work-up of the patient and decide if the patient is eligible for the chronic Renal Replacement Therapy Program;
- If the patient is admitted to the chronic T programme, permanent access will be created, for example PD catheters or Permcaths or fistulae for HD;
- The patient will then be referred back to the district facility for chronic dialysis;
- Patients developing complications will be discussed with or referred to the Kimberley Unit;
- Routine follow up of HD patients will be done by the doctors in the Kimberley Unit. This may happen either in Kimberley or an outreach basis to the decentralized facilities.
- Routine PD follow up can be done at the decentralized facilities

3. Programme Chain of Delivery

The Tertiary facility in the Province has classification in terms of the service packages it must be provide. Renal Replacement Therapy is one of the many Tertiary level services identified as an indicator from the NCS. The Northern Cape has only one tertiary hospital and they are responsible for the service. The institution needs to have a resourced unit that will ensure that patients living with renal failure are treated within the Prescribed Minimum Benefits (PMB). The state and even private health providers are required to provide PMB regardless of prevailing conditions from a budget perspective. It is therefore the choice of the province to determine whether they effectively discharge their mandate and realise maximum coverage with the resources available.

The process intends to institutionalise the delivery of health services in an equitable manner and through the NCS specifically RRT. The province has to determine and develop a policy framework that responds to the dynamics of its jurisdiction and RRT prevalence. This must enable it to deliver the service effectively and efficiently, as well as determine how other benefits can be realised while servicing the underserviced and unmet need. The ultimate outcome of the programme is to get people on the transplant list and keep them eligible through the effective delivery of RRT in line with the minimum requirements for transplant eligibility.

What is important now in terms of the institution programme designers:

- The effectiveness of the current centralised delivery model for RRT in the Northern Cape, which is done at the Robert Mangaliso Sobukwe Tertiary Hospital with high indirect costs; or
- Decentralised delivery model that was contemplated within the PPP model feasibility, which translates to maximum coverage and minimal indirect costs.

The status quo in 2015 in terms of the service the following is the number of slots that were available. This however is not the status as all patients are being serviced in Kimberley at RMSH. The total number of slots for chronic HD in the Northern Cape is 43:

- RMSH Hospital: 26 slots
- BBraun Kimberley: 10 slots (Private provider)
- BBraun Upington: 7 slots (Private provider)

The contracts with BBraun have not been renewed because they proved to be exorbitant. This all needs to be covered with the allocation for Renal Replacement Therapy from the National

Tertiary Service Grant and portions of the Equitable Share. The logical framework provides some clarity on the ideal situation should the service be done internally and externally. This gives an indication on the due processes in a structured manner.

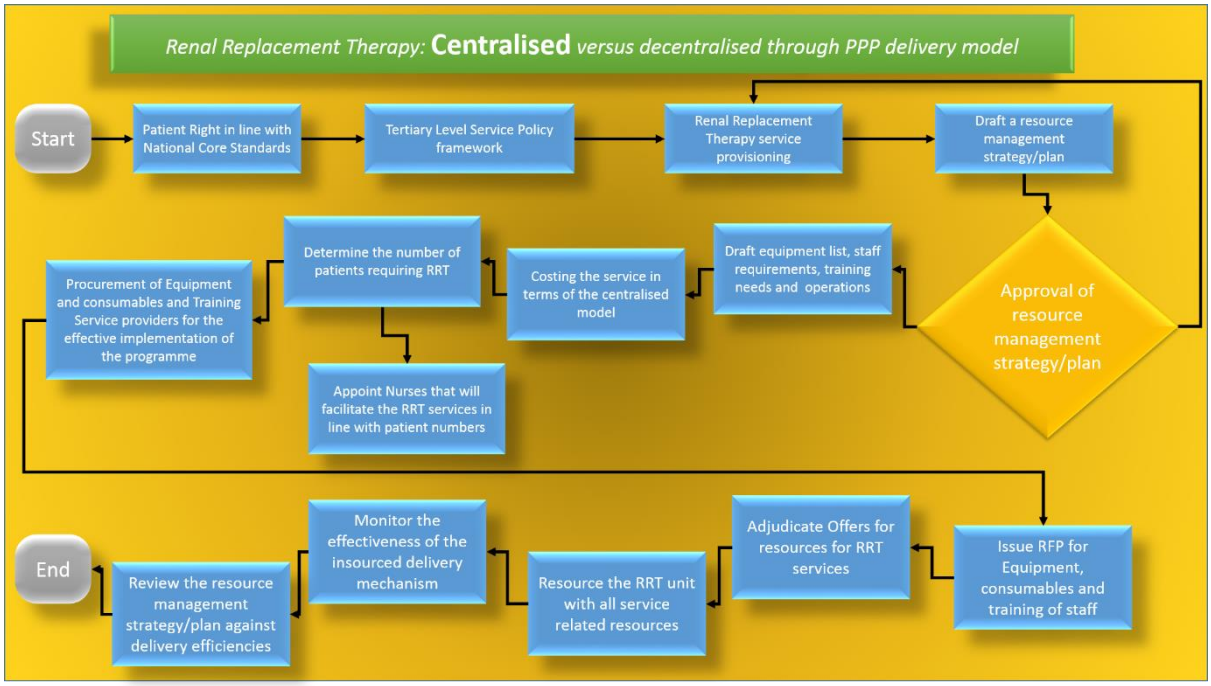

Figure 4: PPP Procurement Process Flow

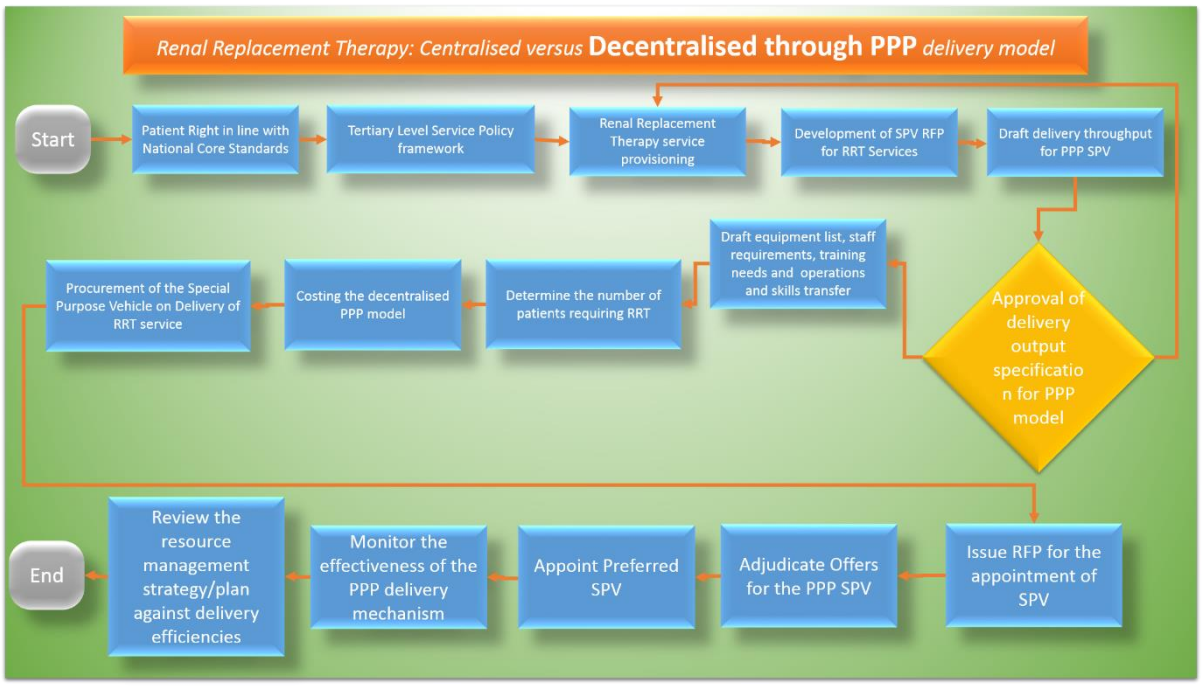

Figure 3: Traditional Delivery Process Flow

4. Expenditure Observations

The Renal Replacement Therapy unit expenditure over the period 2015/16 to 2018/19 was R64.5 million, with assumptions on salaries and wages effected. The service has continued with the same staff compliment since the PPP investigation in 2013. The actual figures could not be found as the cost centre within the Central Hospital Programme was changed from 2016/17 onwards. The three main cost drivers for the programme are actual direct cost for the delivery of service i.e. Human Resources, Medical Inventory and External Contractors that assist with the already burdened RMSH unit. These take up the following proportion of the expenditure in terms of the share analysis over the period in review:

Expenditure Buckets	Total Expenditure (4 year period)	% GTS Cost (4 year period)
Salaries and Wages	R 29 216 691.79	45.2%
Inventory	R 22 138 584.25	34.3%
Contractors	R 10 242 939.49	15.9%

Table 2: Expenditure cost drivers for RRT service over 4 years

The expenditure reveals that when compared to the actual performance information, there is no correlation with actual slots hours provided and number of patients being treated. This will be further elaborated on in the performance information section. The expenditure also indicates that the Province is not planning and inertia has set in with an inefficient service that does not provide the intended therapeutic benefit. When considering the growth projections it also highlights the actual cost estimations for the delivery of RRT. Considering R120 000 per patient per annum from 2015 NRS estimates, the service will only cater for some and not the unmet need of **252 people** in terms of 2018 estimates.

RRT population estimates 2018 NRC (patients)	RMSH RRT Patients	Estimated cost per patient per year (2018)	Unfunded RRT service for unmet need
378	119	R 140 000.00	R 36 260 000.00

Table 3: Unmet need with cost estimates deficit

In terms of the compounded annual growth I can see that the programme is reducing the use of external contractors, and this was also confirmed when engaging with the unit. This will put immense pressure on delivery because contracted service were predominately intended to alleviate the already burdened service at RMSH. The expenditure growth is not indicating a massive spike and this just means that the programme is underfunded to deal with the growth in prevalence of the disease burden. See attached Expenditure analysis “Annexure 4”.

5. Performance

Renal replacement therapy (RRT) in the form of either haemodialysis (HD) or peritoneal dialysis (PD) is life-sustaining therapy for patients with chronic renal failure. It is a life-long disease and only curable through a renal transplant. The diseases that most often create a need for kidney transplantation in South Africa are:

- Hypertension (black population),
- Diabetes (White and Indian population),
- HIV and Tenofovir induced renal failure,
- Inflammation of the kidneys and
- Inherited kidney diseases

Haemodialysis is when blood is circulated through a machine which “washes” the toxins the bloodstream. The patient is “hooked-up” to the machine for four (4) hours, three times (3) every week for the rest of his/her life.

Current Renal replacement services in the Northern Cape

The Kimberley Hospital Renal Unit is the only centralised public RRT service provider in the NC province. The Hospital has a Renal Unit with 10 Reverse Osmosis haemodialysis points and 10 haemodialysis machines. The dialysis machines have been replaced, however only 10 have been procured during the period in review. Patients visit the Unit three times per week for four hour long dialysis sessions. The available dialysis slots can service 26 chronic haemodialysis and 4 acute haemodialysis patients at any given time. Patients with acute renal failure may regain their renal function and dialysis is a temporary supportive measure until the patient’s own kidneys regain function. The table below indicates the actual slots that have been administered. I have calculated that should the norm of 12 hours per week be achieved then only 38 patients per month could have been serviced as an average. This further affirms the fact that the RMSH does not have the requisite capacity and should be exploring alternative delivery mechanisms.

HD Slots for Patients in Kimberley					
MONTHS (APRIL TO MARCH)	2015/2016	2016/2017	2017/2018	2018/2019	Grand Total over 4 years
TOTAL	**5559**	**5370**	**5328**	**5439**	**5424**
AVARAGE NUMBER OF SLOTS PER MONTH	**463**	**448**	**444**	**453**	**452**
SLOT HOURS PER WEEK	12	12	12	12	**12**
AVERAGE NUMBER OF PATIENTS PER MONTH	**39**	**37**	**37**	**38**	**38**
HD and PD Patients Numbers in Kimberley					
No of Patients	**2015/2016**	**2016/2017**	**2017/2018**	**2018/2019**	**Grand Total over 4 years**
Hemodialysis	80	75	76	74	**76**
Peritonial Dialysis	28	32	45	41	**37**
Total Number of Patients	**108**	**107**	**121**	**115**	**113**
Performance Information					
Hemodialysis					
% Patients receiving required HD treatment	**48%**	**50%**	**49%**	**51%**	**49%**
% Patients not receiving required HD treatment	**52%**	**50%**	**51%**	**49%**	**51%**
% Patients should prevelance be adaquatly measured	**80%**	**75%**	**76%**	**37%**	**76%**
Unmet need for HD patients	100	100	100	200	100
Peritonial Dialysis					
% Patients receiving required PD treatment	**100%**	**100%**	**100%**	**100%**	**100%**
% Patients should prevelance be adaquatly measured	**56%**	**64%**	**90%**	**82%**	**73%**
Unmet need for PD patients	50	50	50	50	50

Table 4: HD and PD patient number against RRT delivery outputs over 4 years

Peritoneal dialysis initiation, training and follow up is done in this Unit. In contrast to the recommended norm of 1 Professional Nurse to 25 patients, the PD Nurse cares for 30 plus patients at any one point. To make the situation worse, some patients cannot tolerate PD or develop peritoneal failure and must be changed to Haemodialysis. This can potentially overburden the programme even more. My analysis indicates the actual slots for the period and how many patients would have received the actual required care in line with NRS and NCS requirements for therapeutic benefits. See attached (Non-financial Information "Annexure 5"

6. Options

The prevailing conditions are not assisting with the effective delivery of service. The centralised delivery mechanism for RRT does not respond to the increasing burden of disease within the Province. The only option at this point is to look at revising the PPP outcomes since the conclusion of the feasibility study. It indicated the construction of four additional units in 3 of the five districts. The main centre being Kimberley needs to be bolstered to having at least 30 HD stations to deal with the increasing numbers. Then the De Aar, Namakwa, Upington

and Kuruman Regional Hospital can be reconfigured to accommodate the 5 HD stations at least and an option to increase within 5 to 10 years. All this will be done within the growth projected budgets and the PPP concession period can be 20 to 25 years. The existing PPP verse Public Sector Comparator (PSC) cost model indicates a 15 year horizon. That will need to be adjusted to ensure the full implementation results are clear. See attached PPP Costing Model "Annexure 6". This costing looks at new facilities in the John Taole Gaetsewe, Namakwa Region as well as a ramp up for the Frances Baard facility in Kimberley. The reason for this is because of the type of facilities in the two regions i.e. JTG and Namakwa is because the existing facility does not have a section that can be reconfigured for retro fitment. The new facilities at the time of the study i.e. ZFM and PKS would be retro fitted and can still be should the department consider revisiting the PPP. One key aspect also to be considered is the capacity on personal to render the service effectively. Below is a snapshot of the costs from the feasibility study financial model.

Details	Francis Baard	John Taolo Gaetsewe	Pixley ka Seme	Z F Mcgawu	Namakwa
Construction Costs					
Building	R 7 275 500.00	R 5 940 800.00	-	-	R 5 940 800.00
RO Unit	R 395 335.00	R 395 335.00	-	-	R 395 335.00
Total	R 7 670 835.00	R 6 336 135.00	-	-	R 6 336 135.00
Equipment Costs					
HD Machines	R 7 119 167.00	R 1 256 324.00	R 1 256 324.00	R 1 675 098.00	R 1 256 324.00
HD Station equipment	R 1 048 246.00	R 184 985.00	R 184 985.00	R 246 646.00	R 184 985.00
HD Unit equipment	R 667 974.00	R 420 623.00	R 420 623.00	R 548 645.00	R 420 623.00
Theatre Equipment	R 1 869 709.00				
	R 10 705 096.00	R 1 861 931.00	R 1 861 931.00	R 2 470 389.00	R 1 861 931.00

Table 5: Construction and Equipment cost estimates from 2015 FS

Details	Francis Baard	John Taolo Gaetsewe	Pixley ka Seme	Z F Mcgawu	Namakwa
Staff Costs	R 5 163 508.00	R 1 284 198.00	R 1 284 198.00	R 1 668 380.00	R 1 284 198.00
Operating costs	R 4 989 204.00	R 573 360.00	R 458 688.00	R 688 032.00	R 458 688.00
(incl VAT)					
Total	R 10 152 712.00	R 1 857 558.00	R 1 742 886.00	R 2 356 411.00	R 1 742 886.00

Table 6: Operational Costs inclusive of staff 2015 estimates

These options will ensure that the renal programme within the province is responsive and provides the requisite therapeutic benefits. The 12 hour requirement will then become the service standard for all patients living with renal failure and making sure that the mechanical kidney is indeed released to those that need it. Through the PPP, there are key elements of risk transfer as well as ensuring skills and capacity building. This will furthermore reduce the expenditure on these very expensive training needs. The procurement of HD machines will also be part of the delivery process and the replacements periods will be contained and paid

for as a constant unitary fees that escalates with CPI and perhaps the number of patients receiving treatment. Revenue generation is also possible with this delivery mechanism and this will inherently offset some of the costs associated with the delivery for the public sector patients.

7. Recommendations

The Department should relook at the PPP procurement option and confine the contractual obligations as follows:

- Across the entire Province based on an approved full increase in the RRT budget and perhaps consider a longer period for the concession period to make the project affordable.
- Initially cover the Francis Baard district at the Robert Mangaliso Sobukwe Hospital as a new facility and utilize the existing / new facilities at Upington and De Aar based on an approved within the confines of the budget growth projections.
- Look at innovative building solutions that would be made available by the special purpose vehicle for the other two districts.
- A view of reviewing within 10 years of the concession to have permanent structures with a government contribution from the Hospital Revitalisation Grant and PPP considering the operational expenditure.
- Initially for the Francis Baard district at the Robert Mangaliso Sobukwe Hospital as a new facility under the current budget and later roll out the project as additional funds become available.

The above will ensure that the unmet need is addressed for in the short to long term.

8. Action

Renal Replacement Therapy: PER Action Plan	
ACTIVITY	**TIME FRAME**
Request a Meeting to present the findings of this report to the Head of Department Provincial Treasury and Health	Within the 1st week after submitting the PER
Encourage a dialogue within the Northern Cape's Health Department more especially with the CEO on how to enhance the level of care for the Tertiary Institution – Brief the Premier at the Budget Lekgotla engagements	Within 1 or 2 month (depending on when it is scheduled)
Reinvigorate the recommendations that Minister Hogan echoed within the guideline for inclusive renal replacement therapy delivery chain in terms of PPP exploration, and reignite the process initiated by the department with a pragmatic approach considering budgetary limits	Within the 1 year
Ensure that the PPP process are completed and project is procured for implementation	Within 18 months