Nepal Health Sector Support Programme III

(NHSSP – III)

Rukum Primary Hospital

Joint Hospital Assessment Report – Karnali Province

Final Draft

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Disclaimer: -

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Table of Contents

2 Introduction

2.1 Background

The Nepal Health Sector Support Programme 3 (NHSSP) is a four-year programme designed to support the Government of Nepal (GoN) in implementing the Nepal Health Sector Strategy (2015-2020). The NHSSP is funded by UK Aid / UK Department for International Development (DFID) and aims to enhance the capacity of the Ministry of Health and Population (MoHP) and Department of Urban Development and Building Construction (DUDBC) to build a resilient health system providing quality health services for all.

The health systems component of NHSSP provides support to the MoHP to improve health policy-making and planning, procurement and financial management, health services, and the use of evidence for planning and management. The NHSSP's infrastructure component focuses on strengthening the capacity of government to develop resilient health infrastructure able to withstand natural disasters and climate change-induced hazard. The NHSSP Health Infrastructure team comprises architects, engineers, and Geographical Information System (GIS) experts, operating in the following work areas:

- development/improvement of national and provincial health infrastructure policy
- promoting the use of a planned integrated approach to health infrastructure development
- development of appropriate standards and codes, including the national standards for health infrastructure, and codes for seismic retrofitting of health infrastructure
- building the capacity of MoHP in evidence-based health infrastructure policy-making and managing an integrated, resilient health service
- building the capacity of the DUDBC to develop, manage and maintain health infrastructure works more effectively and efficiently, and to build technical skills in specialist aspects of health infrastructure development including utility services, healthcare waste management, seismic retrofitting and procurement procedures
- providing technical support for the seismic and functional retrofitting of two major hospitals at Bhaktapur and Pokhara

In the context of the Nepal federal administrative structure, the NHSSP Health Infrastructure team is providing technical assistance to sub-national governments. It is assisting municipalities to develop short-, medium- and long-term interventions to improve health facilities.

Currently, the NHSSP health infrastructure team working with five Provincial Ministries of Social Development, primarily providing technical, design and planning support for improving health facilities. In Karnali Province, the team is working jointly with USAID's Strengthening Systems for Better Health and Saving Newborn Lives (SSBHSNL). The SSBHSNL programme is supporting the assessment of human resources and service delivery in selected hospitals across the province, the NHSSP team is carrying out assessments on health infrastructure, connectivity and utilities.

2.2 Assessment Methodology and Process

The NHSSP team is guided by the following key principles in making assessments and recommendations for the development of health infrastructure:

- Promoting integrated and efficient use of health infrastructure to provide better services to users
- Maximizing the use of existing facilities, and extending their operational life span where feasible and economic
- Improving operational efficiency and connectivity within the health facilities network, and promoting referrals to relevant facilities
- Promoting the use of and compliance with the Nepal Health Infrastructure Development standards 2017 (NHIDS) and the Standard Guidelines for the Development of Health Infrastructure 2017

A technical team from the Nepal Health Sector Support Programme 3 (NHSSP) carried out a field assessment at Rukum District Hospital on 9-11 July 2019, at the request of the Ministry of Health and Population (MoHP).

The general methodology can be summarised as:

2.2.1 Collection of data and information: Collection of secondary data on the hospital from sources including DoHS, Department of Urban Development & Building Construction (DUDBC) records, Provincial Ministry of Social Development (MoSD) – Divisional Offices and Provincial Project Implementation Units, hospital records, reports from previous project consultants.

2.2.2 Field assessment tools: The NHSSP team used its standard checklist and needs an assessment tool to gather information on buildings on the site.

2.2.3 Field assessment exercise: The NHSSP technical experts carried out a field assessment, on 9-11 July 2019, facilitated by the hospital management.

2.2.4 Consultation meetings: The NHSSP team have engaged closely with the Provincial Minister, representatives of the MoSD, hospital management, staff, the local authority and other relevant stakeholders to secure information on proposed developments, operational requirements, catchment areas, road networks, and future plans.

2.2.5 Analysis of data and information: The NHSSP team analysed the primary and secondary data against a range of factors, including Health Infrastructure Information System (HIIS) data, Geographical Information System (GIS) maps, existing drawings, health facility standards and categories drawn from Nepal Health Infrastructure Development Standards (NHIDS). This analysis identified infrastructure and service delivery gaps, problems and key issues.

4 Infrastructure

4.1 Site, buildings and existing situation

4.1.1 Location

Rukum Hospital is located in Musikot, the headquarters for Rukum Paschim District, which lies around 280 km west of Kathmandu (see Figure 1). The sub-region is considered remote, although road access is gradually improving with the connection to the Rapti Highway.

The hospital is located near the small airport at Salle and connected by blacktop road. Flights from Rukum Salle airport to Nepalganj take 15-20 minutes, which allows complicated cases to be referred by air transfer to the Tertiary-level hospital in Nepalganj.

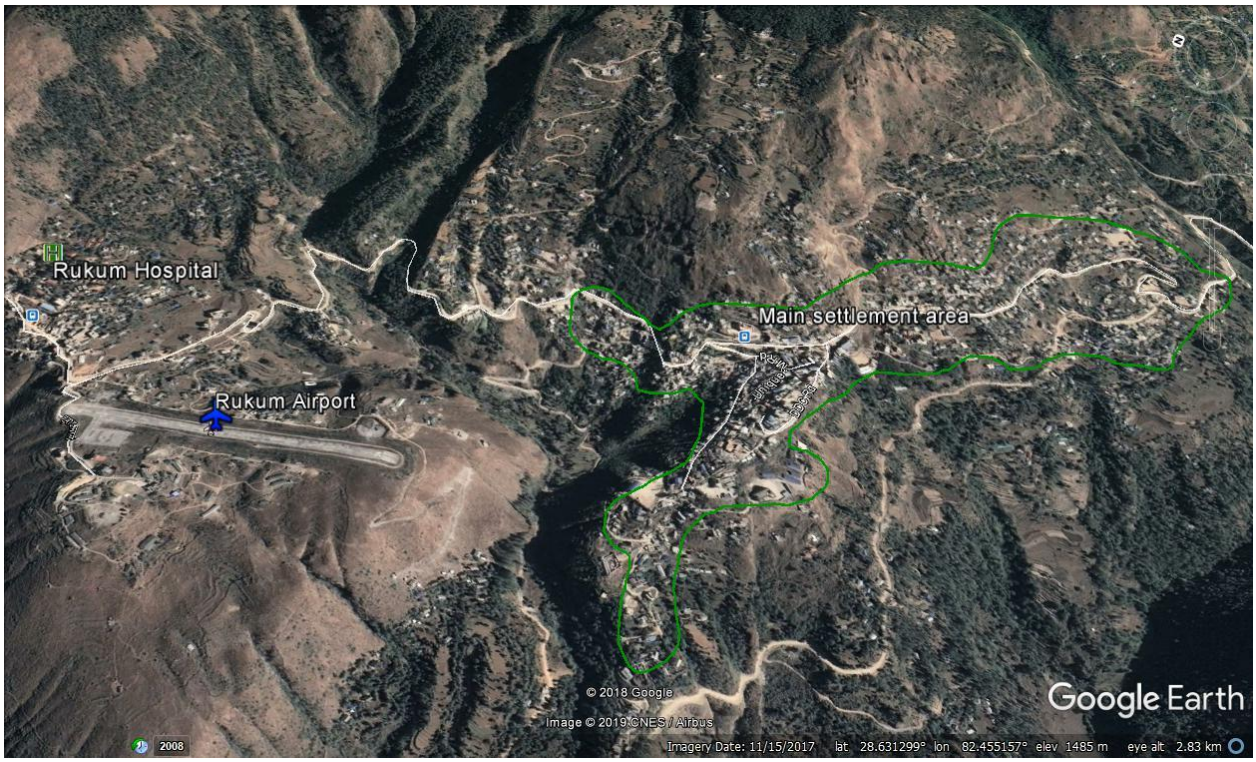

Figure 1: Location of Rukum Hospital

4.1.2 Catchment

Rukum Hospital has been categorized as Primary Hospital Type A3 in line with the Nepal Health Infrastructure Development Standards 2017 (NHIDS). According to the Health Infrastructure Information System, the immediate catchment population of Rukum Hospital within a 7km radius is 38,001.

It is a federal government commitment that all municipalities should have a primary level hospital. Meeting this target is a major logistical and financial challenge, requiring massive commitments of financial, human and material resources. In this context, the Karnali provincial government is focusing on building an efficient hierarchy of facilities by upgrading all existing District Hospitals as the main provider of Primary Health care services for each District. Referrals will be made to the Secondary Level Hospital located in Surkhet (which now is being upgraded to Provincial Level Academic Hospital) and the Tertiary Level facility in Jumla (which is a Federal level Academic Hospital).

In this scenario, the dependent catchment population served by Rukum Hospital will be 244,381 (see Table 1 and Figure 2).

Hospital	Dependent Population	Catchment Population (within 7kms radius)	Categorised Status
Rukum District Hospital	244,381	38,001	Primary Hospital A3

Table 1: Population served by Rukum Hospital

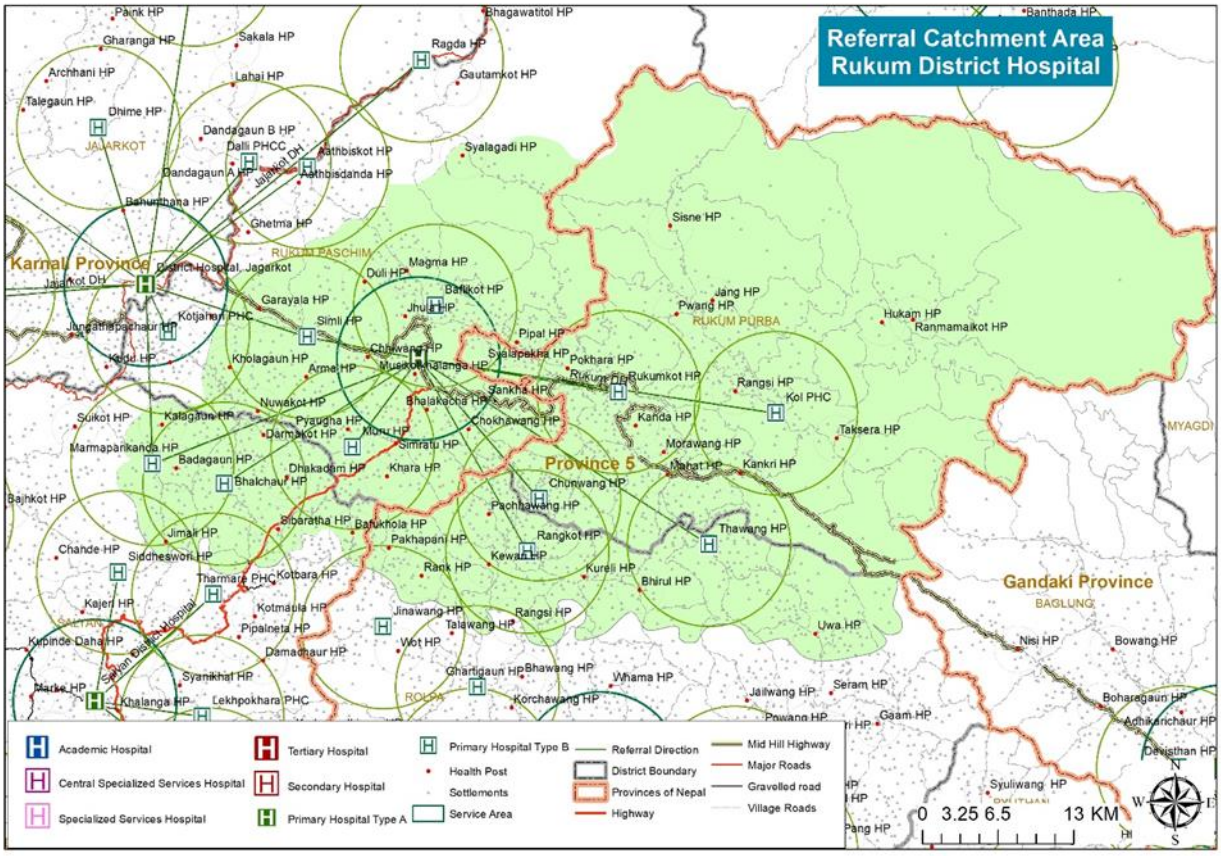

Figure 2: Rukum Hospital Dependent Population and Catchment Areas

There are 46 health facilities in the District-wide network served by Rukum Hospital as the Primary level hospital (see Table 2).

Peripheral facilities depending on the Rukum Primary Hospital	Number
Total number of Health Posts (HPs)	44
Total number of HPs required to be upgraded to Primary Hospital level in line with NHIDS	9
Total number of Primary Health Care Centres (PHCC) required to be upgraded to Primary Hospital level in line with NHIDS	1
Hospital	1

Table 2: Population served by Rukum Hospital

4.1.3 Site and Buildings

Site

Rukum hospital was designed as a 15-bed hospital but is operating with 18 beds in the In-patient Department. The hospital precinct comprises 39 building blocks, including the waste management area (see Table 1 below for building block details). The hospital has a total land area of 42 ropani (21,375 Sq. meters). All the blocks are linked to each by pathways constructed using plain cement concrete. The pathways also have sidebars on both sides.

An open space is located in the middle of the site, which acts as an interaction space or sun-basking area for patients, attendants and visiting family members. This open space has one octagonal-shaped shed in it, which is used as a waiting area; there is a similar structure near the emergency area. A temporary canteen built using corrugated galvanized iron (CGI) sheets is located next to the newly renovated Emergency Block. The site plan with details on the location of the buildings is shown on the site plan below. The Hospital land is gradually sloping from the south side to the north side with some raised mounds at the end of the north side, as shown in the site plan (see Figure 3). The land also slopes from the centre of the site to both east and west sides.

Figure 3: Rukum Hospital Site Plan

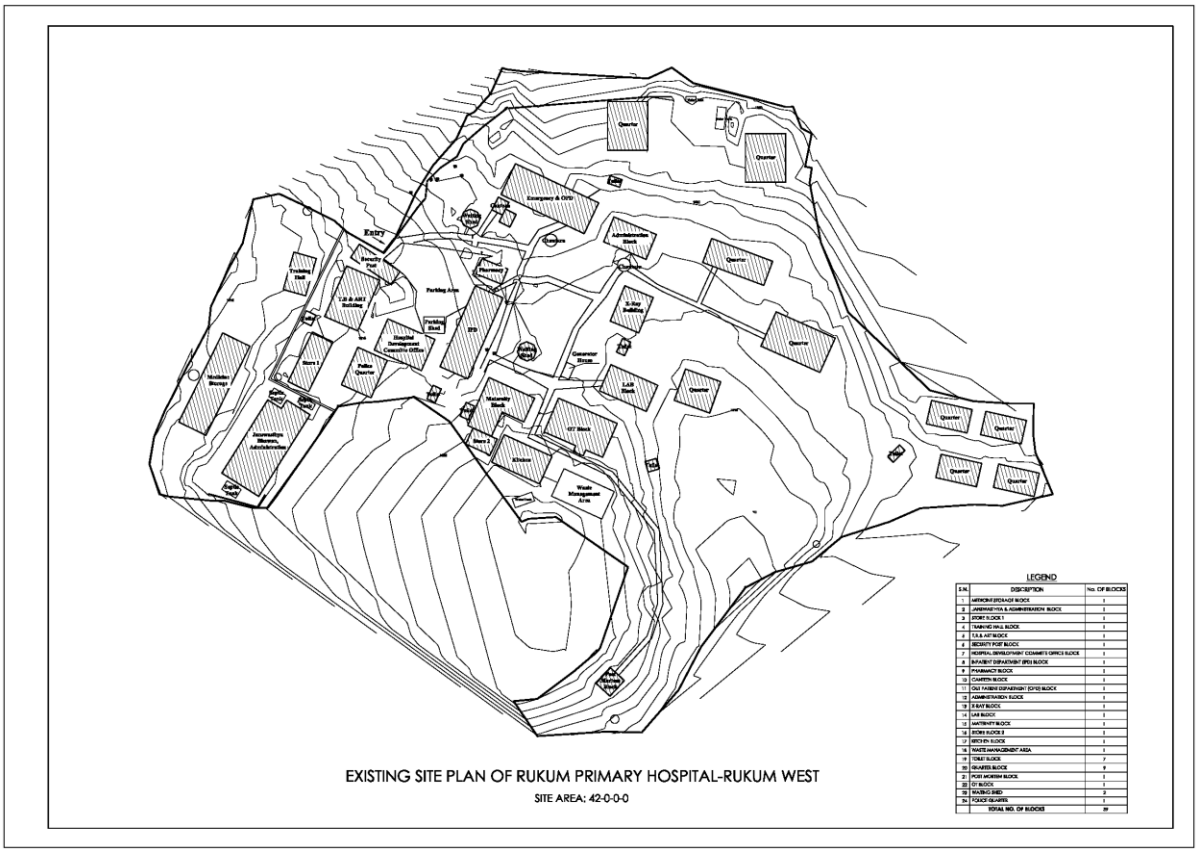

Table 1: Rukum Hospital Building Blocks

4.1.4 Building Blocks Description

The majority of building blocks on site were constructed in 2045 B.S (1988). The typical construction is stone masonry set in mud mortar, with a CGI roof. The masonry has cement

SN	Building Name	Building Type	Year Built	Ground Coverage Sq. ft.	Unit
1	Administration office	SM in Mud Mortar with CGI Roof	2045	922	1
2	Kitchen	SM in Mud Mortar with CGI Roof	2045	1515	1
3	Maternity / CEOC	SM in Cement Mortar with RCC Slab	2063	1200	1
4	Tests and Investigations (X-ray)	SM in Mud Mortar with CGI Roof	2045	922	1
5	Toilet Block	SM in Mud Mortar with CGI Roof	2045	128	7
6	Pharmacy	SM in Mud Mortar with CGI Roof	2063	745	1
7	Inpatient Building	SM in Mud Mortar with CGI Roof	2045	2275	1
8	Emergency and Out-patient Department Building	SM in Mud Mortar with CGI Roof	2045	2908	1
9	Operation Theatre	SM in Mud Mortar with CGI Roof	2045	1811	1
10	2 Family Staff quarters	SM in Cement Mortar with RCC slab	2067	1007	1
11	4 Family Staff quarters	SM in Cement Mortar with RCC slab	2068	2042	1
12	Staff quarters	SM in Mud Mortar with CGI Roof	2045	1007	6
13	Quarters for police personnel deployed in the Hospital	SM in Mud Mortar with CGI Roof	2045	922	1
14	Security post	SM in Mud Mortar with CGI Roof	unknown	500	1
15	Canteen	SM in Mud Mortar with CGI Roof	unknown	200	1
16	Laboratory building	SM in Mud Mortar with CGI Roof	2045	1130	1
17	Hospital Development Committee Block	SM in Mud Mortar with CGI Roof	2045	920	1
19	Anti-Retroviral Therapy (ART) / Tuberculosis (TB)	SM in Mud Mortar with CGI Roof	2045	140	1
20	Store	SM in Mud Mortar with CGI Roof	2045	900	1
21	Waiting Shed	Wooden Structure with CGI Roof	unknown	200	1
22	Waste management	-	-	1200	1

Notes:
CGI Corrugated Galvanized Iron
SM Stone Masonry

plaster on the inside walls while the outside wall surface is painted. The CGI roof sheets on most of the buildings were replaced recently. In addition, the cement flooring punning (skim coating) has been replaced by vitrified tiles in all service blocks apart from the Hospital Administration building (see Figure 4).

Figure 4: Renovations and floor improvements

The hospital pharmacy was built in 2063 B.S. (2007), with construction in stone masonry, mud mortar and cement plaster on both sides. The maternity unit was constructed in 2063 B.S.(2007) in stone masonry in cement mortar with a Reinforced Cement Concrete (RCC) roof slab.

None of these building blocks has seismic elements built into the construction. All these buildings are single-storied buildings

The two-storied two-family residential block was built in fiscal year 2067/68 B.S. (2010/11). A year later, a two-storied four-family residential block was added to the site. Both blocks are built from stone masonry in cement mortar in compliance with the building codes, and the Department of Urban Development and Building Construction (DUDBC) were the implementing agents for the projects. There are 7 single storied residential quarters (stone masonry in mud mortar) also constructed in 2045 BS (1988) including accommodation for Police personnel deployed to the Hospital. The precinct also includes a store and health facility management office.

4.2 Assessment Findings

4.2.1 Accessibility

The Hospital has good road connections. The Emergency unit is accessible to the ambulance with a concrete road laid inside the precinct. The porch above the ambulance parking area (to protect patient transfers in bad weather) is missing. All other blocks housing hospital services are connected by pathways and natural sloping ramps making it accessible for disabled people and trolleys. The pathways have metal bars on both sides which fence off the pathways from the open space – these can act as handrails but actually are too thin to serve as grab bars to support elderly people and people with disabilities (see Figure 5).

Figure 5: Pathways and accessibility

4.2.2 Landscaping

The pathways linking the services are not covered throughout making it difficult to walk around during rainy seasons to both the service providers and hospital users. Mud is washed onto the paths from adjacent open areas making them slippy and unsafe. The NHSSP team was informed that a limited budget was available to cover some pathways, using CGI sheets on the truss frame.

Also, the open earthen space in the middle of the precinct is used by the visitor as a waiting and interaction space. In wet seasons mud from this area is tracked onto pathways and floors in the hospital service areas (see Figure 6)

The toilets and mortuary are also served by unpaved paths.

Currently, signage is inadequate and pathfinders are missing.

Grass and vegetation around the Hospital compound are not properly managed and constitutes a challenge for the management committee given the amount of land occupied by the Hospital.

Figure 6: Public open space and muddy ground

4.2.3 Roofing

All the service building blocks, including the administration building, have recently been re-roofed. Although roofing sheets have been replaced, the wooden false ceiling below the overhang of the roofs remains in situ. The roofs have no rain gutters or downpipes. In some buildings, natural light has been improved through the use of skylights and transparent sheets (see Figure 7). This refurbishment has been a good initiative by the Hospital authorities.

Figure 7: Roof refurbishment

4.2.4 Door and Windows

The NHSSP team observed that in some cases the original wooden doors and window shutters were being replaced by low-quality aluminium windows and door shutters. This is not proving successful. The wooden doors, windows and shutters were well-seasoned and close-fitting, acting as insulation to the wards and other areas during cold winters. The workmanship on the replacement aluminium fittings was very poor. In many places, there are big gaps between the frame and wall surface, open to drafts, dust, pest and insects. Some of the aluminium shutters were already broken, while many had been installed poorly and did not operate. The original windows and door shutters were stored outside in the open, vulnerable to theft, damage and weather (see Figure 8 and 9). Many of the mosquito screens in the windows have been damaged and need to be replaced.

Figure 8: Poor quality window installation and loose storage of original windows

Figure 9: In-operable shutters and poor workmanship

4.2.5 Waste Management

The waste management area was properly cordoned and appeared to be well-managed. However, without investment in plant for waste treatment, the facility may take strain when the Hospital expands its capacity (see Figure 10). There is a placenta pit for the safe disposal of the placenta.

Figure 10: Cordoned waste management area

4.2.6 Water supply

Water supply is one of the major issues in the Hospital. There is one small water tank of about 5,000 litres dating from 2045 B.S.(1988), and this capacity is wholly insufficient to serve the Hospital m(see Figure 11) The supply from the water source (spring water) is also irregular, which exacerbates the problem of inadequate storage. There is no provision for drinking water in the service areas for hospital visitors. There are some isolated PVC water tanks at different locations to store water. Overhead water tanks are also present on the roofs of the two-storied residential quarters.

Figure 11: Water storage and distribution at the hospital

4.2.7 Electricity and backup system

There is an electrical supply from the city grid to the Hospital, but no dedicated transformer to ensuring a regular and consistent electrical supply. Consequently, voltage fluctuates which can have a negative impact on medical and electrical equipment and its performance. There is a Kirloskar brand generator with 15 KVA power capacity as a backup supply. There are three more generators (2 x 5.7 KVA, 1 x 2.1 KVA) outside the OT building, all are inoperable and awaiting repair (see Figure 12). There is no Uninterrupted Power Supply (UPS) in the OT in case of outage to cover the transfer time from the mains to the generator. Lights for the pathways and compounds are not sufficient and it needs to be installed in appropriate locations.

Figure 12: Generators at the hospital

4.2.8 Compound Wall and Fence

Except for a few meters near the entrance point, there is no compound wall in the hospital facility. Some areas are fenced with barbed wire, but this is patchy and falling apart.

Consequently, cattle frequently trespass into the precinct, and there is a security problem with frequent thefts from buildings (see Figure 13).

Figure 13: Inadequate boundary wall and fence

4.2.9 Building Condition

Although the building blocks were recently renovated, there are numerous wall cracks and crack to corner joints. The buildings do not have seismic elements, such as cills or lintels, which makes them vulnerable to seismic shocks. The walls are thick (450 mm) in most cases, and so are well insulated against extreme temperatures.

The partition in the X-ray room could be a risk during seismic movements, given the extra walls and beams added later to support the X-ray machine. The Store block and Health Facility Management block and Police residential quarters need installation of false ceilings and also some renovation. The Store block will also need some insulation against extreme temperatures from the roof.

The aprons around the buildings are damaged and there are no drainage channels (see Figure 14 and 15. Buildings also lack gutters and drainpipes. Mostly the buildings are surrounded by grass growing around them. The wards do not have heating systems for winter.

Figure 14: Defective aprons and corner cracks

Figure 15: Defective brickwork

4.2.10 Functional issues

Operation theatre

In the OT area, the sanitary and electrical fittings are not appropriate, including the lighting fixtures. There is no proper scrub area. Lighting levels in the OT are not appropriate and the internal ceiling (false ceiling) is not suitable for OT. The ceilings have joints and openings vulnerable to dust accumulation and insects (see Figure 16 and 17). The wall paints are also not appropriate for OT.

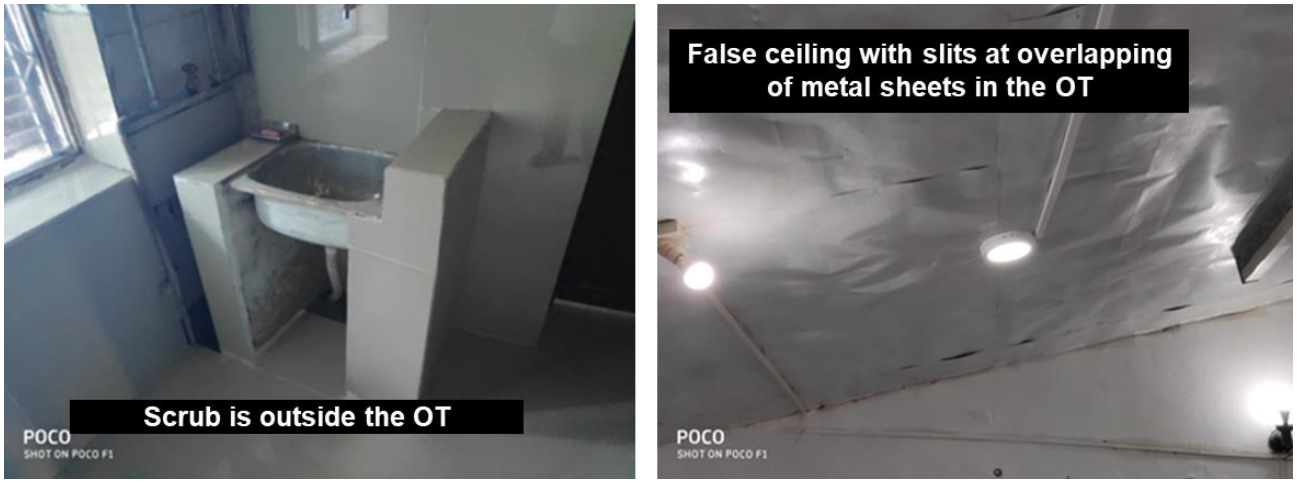

Figure 16: OT scrub and ceilings

Figure 17: OT lighting and wiring

4.2.11 Maternity Unit

It seems that either the Maternity unit was not properly commissioned after its construction and its use has not been optimum, or the design was not appropriate. The intended service flow seemed to be disrupted and used for different purposes rather than those intended during the design. There is no heating system for the rooms in maternity units. There is no toilet next to the active delivery room. The air conditioning unit (AC) in the labour room needs to be replaced or repaired.

4.2.12 Toilet blocks

Most of the toilet blocks are in very poor condition and some are inoperable. They are scattered across the precinct, which makes it difficult to maintain and operate (see Figure 18).

Figure 18: Toilet blocks

4.2.13 Mortuary

The existing Mortuary is absolutely sub-standard and probably dangerous. It is totally inadequate for carrying out postmortems or storing dead bodies (see Figure 19). On the field visit the NHSSP team were faced with the strong smell of a decaying cadaver.

Figure 19: Mortuary

4.2.14 Missing functions

There is only one OT in the hospital and all forms of surgery are done from this facility. There is no emergency OT (minor procedures) and separate OTs for CS, orthopaedic and other cases. The Hospital does not have an Intensive Care Unit (ICU) or Neo-natal ICU (NICU).

There is no dedicated Central Sterile Supplies Department (CSSD) and laundry.

There are insufficient waiting spaces for visitors.

4.2.15 Disaster Risk Management

The Hospital does not have any firefighting system, nor is it equipped with proper back-up systems or plans for emergencies.

4.3 Recommendations and Suggested Interventions

4.3.1 Short Term Interventions or immediate (up to 2 years)

Based on the analysis of information from the assessment, the NHSSP propose that there is no immediate need to increase the number of beds at the Hospital. There are some basic requirements that could make the service provider environment more user-friendly both to the service seekers and to the service providers, and ensuring regular and efficient service at the Hospital. In this line following immediate or short term measures are proposed:

- Construction of 100,000-liter underground water tank and 50,0000 litre overhead tank to ensure regular water supply service to the Hospital. This will also include wash facilities in service areas in compliance with the NHIDS, as well as installation of drinking water facilities at appropriate locations.
- Proper fencing of the Hospital facility is very important including the installation of security systems such as CCTV cameras and intercom system.
- Pathways need to be upgraded and expanded to all the service areas. Curbstones should be fitted to prevent soil being washed onto pathways. Suitable bars and handrails should be fixed along the pathways to improve accessibility and mobility for the elderly and disabled. The installation of covers to the pathways should be completed, as well as the installation of lights and pathfinders. A porch roof should be to the Emergency block access. There should be the installation of ramps/removal of obstructions to make all the blocks accessible to wheelchairs and trolleys.

- Improve the landscaping and increase the number and size of waiting areas
- Immediately install a proper canteen with Kitchen for patients, replacing the existing temporary CGI shed.
- Replacement of all the wooden windows recently taken out of the facility.
- Construction of a standard postmortem building with appropriate freezers for cadaver storage.
- Construction of a toilet blocks with provision for people with disabilities, along with bathing and washing areas for patient and their attendants.
- Upgrading of the present Store block in the Hospital
- Change the floors of the administrative areas and also of the open covered spaces outside Lab block and other blocks
- Replace the current OT scrub with a standards-compliant version. Replace the false ceiling and lighting fixtures of the OT, and treat the OT area with anti-bacterial paint.
- Carry out renovations and space adjustment in the Maternity block.
- Conduct a detailed seismic assessment of all the building blocks including geotechnical investigations
- Installation of firefighting equipment
- Repair of generators and provision of a dedicated backup system with UPS to the OT
- Initiate the process for the provision of dedicated transformer with uninterrupted supply to the Hospital
- Assessment of the facility from a multi-hazard resilience perspective, and identification of works to strengthen resilience

4.3.2 Medium Term (2 to 5 years)

The Hospital will be the main service point for the majority of the population in Rukum, with this position consolidated as service improvements take effect. It is possible that the hospital may need increased bed capacity and further services. Second phase interventions will be identified and planned drawing on the outcomes of the seismic assessment and geotechnical investigation, along with the impact of service improvements and increased demand.

Possible interventions will include:

- Needs assessment followed by plan, design and implement the expansion of the wards, operation theatres, emergency unit, OPD services and other areas.
- Addition of ICU, NICU and other important functions.
- Seismic (structural and non-structural) retrofitting
- Works to sustain multi-hazard resilience

Options for providing specialized services will be based on the demand arising and needs assessment. These interventions will be planned considering the expected future demographics of the District.

4.3.3 Long term

The plan and recommendations agreed in the second phase will be implemented and operationalized in the long term, with regular reviews and implementation over the following 25 years.

4.4 Conclusion

Rukum Hospital is a very important facility for this part of the province. There is a strong core of the existing infrastructure, along with plenty of space for future expansion. It is well-located and has the potential for future growth. The short-term interventions have been identified, and provide opportunities for quick wins in improving service delivery at this facility. Assuming provincial government approval and financial support, the refurbishment process could move quickly through a staged design and tender process.