Kapuri and Luri Bridges on Juba–Mundri Road

Date(s): 27 April 2012
Location(s): Kapuri, Luri
Participant(s): WFP Roads Project Manager; Logistics Cluster GIS Officer
Security: Level 2

1.0 MISSION OBJECTIVES
1. Assess two damaged bridges (Kapuri and Luri), and evaluate the possibilities for repair.

2.0 BRIEF
WFP Roads Unit and the Logistics Cluster inspected two bridges, located on the Juba-Mundri-Rumbek road, which is one of two main road corridors in this area. Currently vehicles travelling from Juba to Rumbek and beyond must use the Terekeka road, as a result of the damaged condition of the Kapuri and Luri bridges. However, the Terekeka road is also in danger of closure this wet season; currently the Bahr Al Naam Bridge is closed, but culverts and a crossing have been placed to make it passable. If the wet season results in above average rainfall it is expected that this culvert crossing will be washed away.

If both of these roads close, travel from Juba to Rumbek and Wau will only be accessible via the Yei - Yambio - Mundri - Rumbek road. The Yei - Yambio - Mundri - Rumbek road is also in need of repair, several sections of road are in poor condition and will likely take several days or more to travel during the wet season. Additionally, if heavy rainfall is experienced some sections of this route may temporarily close.

3.0 SUMMARY OF FINDINGS/RECOMMENDATIONS/OBSERVATIONS
Kapuri Bridge (GPS Coord. E 31.492487; N 4.866350 - 10km from Juba)

- ABMC Road Construction Company is currently working on expanding the road from Juba to Luri Bridge (including works on Kapuri Bridge). The project is on-going from Juba outbound to the 10km mark with a road width of 12m wide.
- Kapuri Bridge, located approximately 10km from Juba on the Juba - Rokon - Mundri road, is partially damaged (see Photo A). Kapuri Bridge is a 20m long by 4m wide; the steel deck is damaged, with minor damage to the steel beams.
- ABMC Road Construction Company is working on the Juba - Kapuri Bridge - Lur Bridge road section. A new bridge at Kapuri, is planned to be constructed in alignment with the new road section and should take approximately two months to complete once funding for the project is secured.
- ABMC Road Construction Company is also currently building a temporary crossing 40m upstream (North), this should be completed in the next three days. However, it is doubtful that this crossing will be operational for more than one to two months, as the culvert size is small and the river is prone to flash floods (see Photo B). ABMC has also planned to build a new main (permanent) bridge at the Kapuri site, however it may be many months before completion.
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ASSESSMENT

Recommendations:
It is recommended to repair the steel deck of the bridge by:

- Removing 7 steel deck plates and replace them with 8 new pieces of steel deck plates (10mm thick)
- Repairing 4 pieces of existing deck plate
- Repairing 1 support beam that has been damaged
- Repairing the bolt holes in the deck
- It is likely that these repairs will require the bridge to be closed for up to a full day, therefore it is recommended that these repairs not take place until the new culvert is in place and the upstream crossing is operational.
- Based on previous experience, this bridge repair will cost approximately USD 20,000-25,000.

Luri Bridge (GPS Coord. E 31.417331; N 4.865810 - 20 km from Juba)

- Luri Bridge is located 20 km outbound from Juba on Juba - Rokon - Mundri road. The span of the bridge is approximately 60m long and 7m wide. (see Photo C)
- On the Juba side one abutment has been undermined by flood water and this has caused a partial abutment collapse with the deck on the first span dropping to one side.
- The river water level can reach approximately 2-3m high during flooding, but at present it is less than 1m (see Photo F).
- Due to the damage the Luri Bridge is unstable, dangerous to access, and is currently closed for all traffic.
- There is no other crossing site; the bridge has been built at the only suitable location in the area, where rock is available to anchor the base (on the far side abutment – on the Juba side.)

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Recommendations:
Option 1
- Demolish the first span, abutments etc., and replace it with a new section of bridge including (ACROW / Bailey) new abutments, built further back from the river than the original.
- The final span for the new section would be approximately 20m. To enable heavy traffic to cross, the bridge would need to be a double-double Bailey (or similar).
- Based on costs of the past emergency repair, this option would require from USD 500,000 to 600,000.

Option 2
- Build a vented drift to the left (East) of the current bridge; this will be challenging during the wet season, but not impossible. The total length of the vented drift would be around 40 to 50m, with approximately 250m of gravel road on the eastern side leading to Juba.
- Based on costs from past emergency road repairs, this option will require between USD 400,000 and 500,000.

Cost estimates for both options are very rough and additional work will be required over the coming days to calculate a more accurate budget.

4.0 FOLLOW-UP
- The Logistics Cluster will contact the Ministry of Roads and Bridges to see what, if any, plans they may have concerning these two bridges, and will convene meetings with main actors in the area (WFP, UNOPS and UNMISS) to (1) identify funds that can be mobilised for these projects and (2) identify actors in the area who have the resources necessary to carry out the work.

Contacts:
Website: http://www.logcluster.org/ops/ssd11a
Alastair Cook Logistics Cluster Officer Alastair.cook@wfp.org
Jeppe Anderson Logistics Cluster Officer Jeppe.Andersen@wfp.org
Venkat Dheeravath GIS Officer venkat.Dheeravath@wfp.org
Katherine Ely Information Management Officer Katherine.ely@wfp.org
Andrew Jackson Logistics Cluster Officer Andrew.jackson@wfp.org