WFP Sudan

Special Operation: Emergency road repair and mine clearance of key transport routes in Sudan in support of EMOP 10048.2

SO 10368.0

Country	Sudan
Type of project:	Special Operation
Title:	Emergency road repair and mine clearance of key transport routes in Sudan in support of EMOP 10048.2 (Food Assistance to Populations Affected by War and Drought)
Total cost US$:	US$ 32,018,073.-
Period:	12 months: 1 August 2004 – 31 July 2005

Abstract

Special Operation 10368.0 is for "Emergency road repairs and mine clearance of key transport routes in Sudan, in support of EMOP 10048.2 (Food Assistance to Population Affected by War and Drought)." The SO, to be implemented under the overall responsibility of WFP Sudan within a period of twelve months starting 01 August 2004, calls for a total of US$ 32,018,073.-

The primary objective of the SO is to conduct emergency road repairs of key transport routes, in order to improve road transport as a reliable alternative to air transport; reduce the cost of access to food and food production, thus providing an immediate peace dividend; enable the efficient movement of relief and recovery assistance; facilitate the return and reintegration of IDPs and returnees; and to promote trade and self sufficiency of war affected people in the new context of peace.

Time is of the essence. Actual works can only take place during the dry season, which runs from October 2004 through June 2005. Every month of delay will translate into approx. one stretch (200-300 km.) not being cleared, repaired and accessed. The bringing of immediate and visible impact of peace to the population, is furthermore of crucial importance for the consolidation of peace. The coming dry season should therefore be fully utilised.

The project has two components:

1 Emergency road repairs of key trunk- and feeder transport routes in Southern Sudan, for a total of approx 1,621 km. (worst sections), both East and West of the River Nile. These key stretches will improve access within Southern Sudan and link the South to the North and neighbouring countries.

2 Mine Clearance of routes selected for emergency repairs, for a total of some 1500 km., based on a corridor of 35-40 m. wide. Three teams with mechanic

and manual capacity will be fielded simultaneously in advance of the road repair teams, to make optimal use of the dry season.

The proposed activities are considered the second phase to the currently ongoing road repairs (outlined in Table 1), budgeted under EMOP 10048.2 for approx. 21 million as an emergency measure to allow for a quick start of the works. This first phase, which started late January 2004, is nearing completion both in terms of time and contractual obligations. The second phase, given its potential magnitude and following donor consultation, deserves a project in its own right in the form of a Special Operation.

The activities under this SO will be implemented in close coordination with agencies who may intervene in logistics infrastructure, such as UNHCR, Norwegian People's Aid, DPKO, FAO (feeder roads – not expected before Oct. 2005) USAID Development Programme (not expected before Oct. 2005), UNMAS and the National Mine Action Office, etc. Due to the ongoing emergency road repair programme and continued large presence on the ground, WFP is perceived as the lead agency in surface transport and road access by donors, UN agencies, NGOs, and S. Sudanese authorities alike. Consequently WFP is often consulted for information, and is well aware of other agencies' plans and time frames. Furthermore, the United Nations Joint Logistics Centre (UNJLC) for Sudan regularly assembles and disseminates information on road repair progress, plans and initiatives.

This project is separate from road activities outlined in EMOP 10048.2 "Food assistance to populations affected by war and drought" and any directed contributions to EMOP 10048.2 for road repairs in northern Sudan will be removed from the outstanding balance of the required funding for the ODOC line of the EMOP 10048.2, which will be revised through a Budget Revision.

I. Project Description and Background

01. Sudan has abundant natural resources and a broad diversity of ecology and climate, giving it the potential to be a net exporter of food. Yet Sudan has experienced 3 famines and several near-famines, which have killed hundreds of thousands of people over the past 20 years, largely due to civil war and low-level conflict. The continuous war and drought have led to the isolation, displacement and economic fragility of communities, which as a result frequently face food shortages beyond normal seasonal changes and beyond the limits of traditional coping mechanisms. WFP has assisted war- and drought affected communities with food aid since the start of Operation Lifeline Sudan in 1989. The current emergency operation (EMOP 10048.2) lasts until 30 June 2005.

02. Food insecurity and isolation is exacerbated by lack of infrastructure. When fighting began in 1983 there was only a minimal physical infrastructure in place. Southern Sudan is about 650,000 square kilometres, the size of Kenya, Uganda, Rwanda and Burundi together. Yet the total road network consists of only approx. 5,500 km. of main roads and 7,500 km of important feeder roads[1], and apart from a few km. in Juba town, there is no tarmac road in Southern Sudan. After more than 20 years of fighting, destruction and neglect, little is left of the physical and

[1] Excluding dry season tracks or "rural roads," foot paths etc. Deducted from existing road maps.

institutional infrastructure. The roads are too poor to support any substantial economic activities or humanitarian assistance, and have resulted in deterring high road transport costs (4-5 times higher than rates in neighbouring Uganda) high transportation risks, and the resorting to extremely expensive air transport by aid agencies.

03. In addition, many of the road sections are contaminated with mines or unexploded ordnances, effectively cutting off access for entire communities from each other, other regions, agricultural production, markets and major towns. It is estimated that S. Sudan is contaminated by between 0.5-2 million landmines, and WFP estimates that some 2 million peoples' food security is negatively affected by the presence of landmines in Sudan[2]. The negative impact of unexploded ordnances (UXOs) in S. Sudan may be even higher than that of mines.

04. For over 15 years, humanitarian aid has had to be largely delivered by air at huge cost due to the poor road infrastructure, lack of road maintenance and insecurity caused by civil war. The delivery of food aid in Sudan is one of the most costly WFP operations world wide, with between US$ 45-55 million[3] spent annually on transport cost (38-43% of total annual project costs), or almost double the value of the commodities moved. Of this delivery cost, approx. US$ 30-39 million or 65% is air transport cost.

05. The advent of peace and the cessation of hostilities have created new opportunities for the opening up of road access and surface transport. At the same time, the road network faces a drastic jump in demand for services. This increase in demand results from the implementation of the peace agreement, leading to the movement of hundreds of thousands of IDPs and returnees many of whom will require food assistance; demobilisation of thousands of troops; new agencies and peace keeping operations entering Sudan; and increased operations by existing agencies. The current road network cannot meet these demands. The opening up and repair of key road corridors is therefore essential to meet the important new needs in the fragile period following the signing of the peace agreement.

06. In response to immediate needs, WFP Sudan embarked on six emergency repair activities in January 2004. These consisted of surveys for road repair and mine clearance needs; FFW for feeder road repairs; repair of the road linking Kenya to Juba; repair of the road linking Uganda to Rumbek; the upgrading of Rumbek airstrip; and the control of flooding combined with emergency road repairs in the Bor counties (see also Table 1). Because donor interest started only mid October 2003 and the first funds arrived only by end November 2003 i.e. well into the dry season, the activities were brought under EMOP 10048.2 to allow for a quick start.

II. Project Justification

07. Sudan faces many challenges to consolidate the peace and start the recovery process. One immediate challenge is the poor state of the road network in S.

[2] Landmine Monitor, 2001/2.

[3] Taken over the period 2000-2003, includes Port costs, overland transport, inland transport – LTSH for both North and South. Excludes external transport, transshipment, distribution and Other LTSH costs.

Sudan, and the mine contamination. The poor condition of the roads directly affects WFP operations, and is an obstacle to reducing the need for food aid. Moreover, the improvement of the roads will affect the implementation of the peace agreement, the return and reintegration of IDPs and returnees, the development of all sectors and economic recovery.

08. Investment in emergency road repairs has been very low compared to the demands made on the roads. WFP, as the largest humanitarian user of the roads, has spent approx. US$ 8 million on road repairs from 1998-2003[4], for corridors over 1500 km in length. This investment represents less than 3% of WFP's total transport cost over the same period, and (apart from some low-cost and FFW efforts) is practically the only investment in the roads for the past 7-8 years, if not longer. With demands on the road network only increasing in the new context of peace, considerable investment in emergency road repair and mine clearance is required, failing which the roads will continue to deteriorate and the annual time window for road transport will decrease rather than increase.

09. Mine clearance capacity in Southern Sudan is extremely limited compared to immediate needs. Road clearance requires mechanical capacity, as manual clearance is very slow (100 men can clear 100-400 m. per day). The only mechanical clearance capacity currently in S. Sudan is that of Mechem, operating on one stretch (Narus-Juba) and managed by the United Nations Mine Action Services (UNMAS). UNMAS is responsible for mine action policy and coordination, but currently lacks capacity to identify and clear the millions of UXOs and the 0.5-2 million mines thought to be in Sudan. Two national NGOs, OSIL and SIMAS (recently merged as OSIL), form the only national capacity and are limited to manual clearance. Most OSIL teams are occupied either with the Norwegian Peoples' Aid (NPA) training project or with Mechem on the Narus-Juba road. Two groups, RONCO and Danish Church Aid, are operating in the Nuba mountains, with mainly manual and dog team capacity. WFP Sudan through its global standby partner for mine clearance, the Fondation Suisse de Deminage (FSD), is currently engaged in level I surveys to identify dangerous areas to the road network and to undertake limited explosive ordnance disposal.

The map in Annex II shows the dangerous areas to the key sections of the road network in Southern Sudan, identified to date with the help of FSD.

10. The success of surface transport in Sudan as a reliable, significant and cost effective alternative to air transport depends on a combination of emergency repair and mine clearance activities on both trunk- and feeder roads. This approach should allow WFP and other humanitarian agencies to double the total beneficiaries reached by road in the South. It would also link Sudan to Uganda, Kenya and Ethiopia, reducing transportation costs for the Sudanese and facilitating the movement of people and goods, gradually leading to increased self-sufficiency.

11. The envisioned role of WFP is one of rapid implementation of basic roads upgrading and essential mine clearance, to enable it to perform its operations in a cost effective manner utilising the new opportunities generated by the peace scenario while awaiting the more conventional institutions such as the World Bank, European Union, USAID Development and other Programmes to address the durable, large scale infrastructure rehabilitation and construction needs. In the face of complete lack of Sudanese capacity, and in the absence on the ground of

[4] This excludes the ongoing road repairs (see Table 1) under EMOP 10048.2, which started in 2004 for a total cost of $ 21 million.

the institutions mentioned above, WFP is the only agency capable of undertaking emergency road repairs at short notice (2004/5) and of significant scale.

12. Recognising the immediate need for opening up the road network in view of new demands and its own operations, WFP started six emergency repair activities in late 2003. These are summarized in Table 1 below.

Table 1. Ongoing WFP emergency road/dyke repairs

Ref.	Activity	Key Output as at mid June 2004	Total Value US$
1	Mine Survey Teams Road Survey Teams	7,731,968 m2 of dangerous area of concern to road network identified; 41,586 unexploded ordnances (UXO) destroyed, 29,804 UXO removed. 5,850 km. of trunk and feeder roads surveyed; cost estimates for emergency and durable repairs generated; GPS based mapping of road network	462,549.-
2	FFW for Roads	Total of 39 projects approved, for labour intensive spot repair of 1,182 km of feeder roads in food insecure areas, for 913 MT of food and 8,258 direct participants	50,000 (tools) + 735,588.- food, transport, support
3	Kaya – Rumbek	Approx 373 km of total stretch of 580 km, repaired.	4,355,532.-
4	Narus- Juba	Plant and equipment worth $ 2.96 million purchased, to be handed over to Sudanese authorities at end of project for first Maintenance Unit. Repair of 62 km out of 260 km, following mine clearance by UNMAS	6,563,017.-
5	Bor dyke/roads	Road repairs for 37 km, fill for 3 km. Dyke contact zone prepared for 9 km., dyke fill for 6 km. Padak airstrip relocated and upgraded.	8,616,720.-
6	Rumbek airstrip	Survey completed, mine clearance to start end June, Contractor on site July.	480,955.-
	TOTAL		21,264,361

13. The initial impact of the ongoing road repairs is already visible:

- WFP convoy times have halved from two weeks to 7 days on the stretch from Kaya to Rumbek, and transport risks have reduced (less trucks stuck, Yeri section repaired). WFP transport rates have already reduced by US$ 30.-/MT on this stretch as a result of road repairs, while works are yet to be completed.

- On the Western corridor linking Uganda to Sudan (Kaya-Rumbek), daily bus services have started to Yei and weekly minibus/pickup services have started to Maridi, where none existed before. More types of vehicles are able to use the road, commercial transport rates are reducing and trade and border movement is increasing. According to local traders in Maridi, petrol and diesel rates are reducing, as are the prices of sugar, maize, cement, soap, jerry cans and bicycles.

- On the Eastern Corridor in Narus, the first town in Sudan to have a mine cleared and repaired section of the road linking Kenya to Juba, business is booming and inhabitants say that the roads are an incentive for peace. Private bus companies are also being set up to take people offering their labour, to the border.

- The contrast between towns near the Uganda border linked to accessible roads, and the isolated towns in the Bor counties, is striking. Where markets are thriving in the former, trade is minimal in the latter, but starting to pick up as a result of the road and dyke activities.

- The projects generate employment for some 244 Sudanese people, from unskilled labour to drivers, mechanics and engineers who are trained on the job.

14. The emergency repair of the ongoing three trunk road sections should be seen as a start or first phase of a more comprehensive approach. Requirements for emergency road repair and mine clearance in Southern Sudan are of such magnitude, that several years will be needed to re-establish key links and allow for a proper transition from air- to road transport. WFP has the interest and the capacity to start this process, and will phase out when others come in. The map in Annex III shows the key trunk and feeder roads. The black lines are the corridors currently in use by WFP. The red lines are corridors currently not in use, either due to mine contamination, the still "crossline" situation or remaining insecurity. The potential impact of emergency repairs and mine clearance on humanitarian operations and economic recovery becomes evident when one imagines all the red roads to become accessible. The road stretches proposed for mine clearance and emergency repair under this Special Operation, are outlined in the section "Proposed Solution."

15. Four types of transport savings are attainable with the proposed approach of a transition towards road transport.

- *Savings in air transport costs*. Additional tonnage delivered by road represents savings in air transport cost. One MT of food can be delivered by road at 42%-52% of the cost of air delivery from Lokichoggio, a current road rates on the W. Corridor. Following repairs, these savings can increase to 61-86% (Annex IV). The prepositioning by road of bulk Jet A1 fuel in Rumbek would generate further savings. Currently Rumbek is supplied either with drummed fuel by road, or by air from Lokichoggio when the road becomes impassable. Upgrading of the road to Rumbek to allow for bulk fuel supply would lead to savings in the order of 65% per litre compared to air delivery, and 25% compared to drummed road delivery. Combined with the planned upgrading of Rumbek airstrip, the supply of bulk fuel would enable food aid aircraft such as C130 and AN12s to operate from Rumbek rather than from Lokichoggio, leading to approx. $ 5 million in savings per aircraft per year, resulting from shorter flying times and increased number of rotations per day.

- *Savings in road transport cost*. After repairs, rates can reduce by up to 75% for transport to Rumbek, and by 25-40% for other corridors.

- *Savings in inter-field team relocation.* The planned repairs would allow WFP to relocate its food distribution teams faster and more frequently by road rather than by Caravan aircraft. Such savings would increase after the upgrading of Rumbek base (ongoing, scheduled to finish in August 2004), which would allow teams to relocate to drop zones from Rumbek rather than from Loki.

- *Savings through the expansion of road network*. With the exception of the recent Narus-Juba road repairs, road repairs to date have only addressed trunk roads already in use by WFP. Mine clearance and repair of main roads not yet

in use as well as feeder roads will allow for significant savings by expanding road access into areas currently accessed by air. Notably N. Bahr El Gazal, Bieh, Upper Nile, Bor, Pibor, Nuba and S. Blue Nile would fall under this category.

16. Total potential savings from these four categories (see Table 2 below) can reach some US$ 22 million per year, or approx. 30% of current EMOP LTSH costs[5]. Should the proposed repairs be complemented by and connected to the planned DPKO mine clearance and road repair activities from Malakal, Kadugli, Damazin, Juba and Wau, supplies through the Northern road corridors can reach the South and potential savings should increase further.

Table 2. Potential transport savings, after emergency road repairs

	Category of Transport Saving	**US$ per year**
1	Saving on air transport (MT by road rather than air), including 1 C130 or 2 AN12s based out of RK and bulk fuel supply by road to Rumbek (current rates)	9,900,000
2	Saving in road transport rates (reduced rates)	5,000,000
3	Saving in interfield relocation, including repositioning from Rumbek	1,000,000
4	Saving through expansion of road network	5,700,000
	TOTAL potential savings per year	21,600,000.-

17. It should be noted that there is a cut-off point in Southern Sudan at which it becomes cheaper to deliver food by air from the North through El Obeid, rather than by road from Kampala or by air from Lokichoggio. The current cut-off point would not allow for most savings in N. Bahr El Gazal to be realized. With the planned road repairs on the Kaya-Rumbek-Tonj stretch, this should change. The cut off point will move northwards through reduced surface transport rates in the South following the repairs, and through increased air operations from within S. Sudan notably from Rumbek.

18. While savings to the WFP operations are important, the context in which the road repairs and mine clearance are taking place is of major importance. The Sudanese authorities have fully recognised the importance of the opening up of key road sections as an immediate, tangible peace dividend for the population and returnees, and have stated this to the international community and media. During his first visit to Southern Sudan from 7-13 June 2004 following the signing of the framework peace agreement, at each of his rallies the SPLM Chairman and future First Vice President of Sudan mentioned infrastructure and in particular roads and railways, as the number one priority for recovery and the consolidation of peace. He combined this trip with a visit to the ongoing WFP road repair projects, accompanied by international media,[6] and urged donors to fund the emergency road repairs. Major donors have already indicated their support for an immediate expansion of the ongoing WFP emergency road repairs.

Problem Definition

[5] Following completion of the proposed repairs and other components of LTSH remaining equal.
[6] BBC World, Kyodo News, Nation, KTN, Algezeera, AFP, Reuters.

19. In the coming years, starting with immediate effect, the road network in Southern Sudan will face a drastic jump in demand for services. This demand will be generated by the implementation of the peace agreement protocols, the expected movement of hundreds of thousands of IDPs and returnees going back to their home areas, new agencies and peace keeping operations coming in, increased operations from existing agencies and the continued need for WFP to reduce its high transport costs. The current road network cannot meet these demands. It has been neglected for over 20 years, and is contaminated with mines and unexploded ordnances. As a result, many sections of trunk and feeder roads have become impassable year-round or during the long rainy season.

Proposed Solution

20. The opening up and repair of key road corridors is essential to meet the increased requirements during the fragile period following the signing of the peace agreement.

21. WFP proposes to expand its emergency road repair activities and mine clearance to an additional five stretches, mapped in Annex III. These are:

- Yei to Juba (140 km). Links Uganda and surplus areas in W. Equatoria to Juba, providing an alternative corridor for relief and recovery to the Lokichoggio (Kenya) corridor, reducing the cost of fuel, food and nonfood supply to Juba, and facilitating return of IDPs and returnees;
- Juba to Bor (170 km). Facilitates return of IDPs and returnees to major areas of return, as well as the delivery of relief and recovery commodities;
- Rumbek – Yirol – Shambe (177 km). Connects road transport to barge transport on the river Nile;
- Rumbek – Tonj – Wau (211 km), or Tonj - Thiet - Akon (+150 km). Connects Uganda and Rumbek to N. Bahr El Gazal and the railway (once repaired);
- Pagak bridge and spot road repairs. Opens up the Ethiopia (Gambela) – Sudan corridor for Upper Nile region (140 km), with possibility to connect it to the Northern El Obeid Corridor and barge.

22. Depending on funding, progress of mine clearance, security and the "crossline" situation on the ground, some of the additional connections such as Juba-Mundri, Nimule-Juba, Bor-Pibor, Rumbek – Nyal and Panyagor-Malakal can also be addressed.
Additional repairs on the road from Kaya to Rumbek (580 km) are also planned, in order to achieve reduction in road transport rates by 75% and to allow for bulk fuel supply and stock pre-positioning at the WFP Rumbek logistics hub. The two projects currently implemented by GTZ-IS, i.e. the Narus-Juba road and the Bor dyke/road, should also continue.
The above stretches will be complemented by feeder road repairs using FFW under EMOP 10048.2. Where possible and appropriate, plant and equipment from contracted repairs on trunk roads can be used to help address the worst bottlenecks on the feeder roads.

23. The selected stretches, totalling some 1700 km. (worst sections only), are those with the highest impact in terms of opening access for facilitating the return of some 1-2 million IDPs and returnees over a period of 1-2 years; stimulating trade and self sufficiency; and reducing transport cost, thereby reducing the cost

of access to food and food production as well the cost of delivery of food and non-food assistance.

24. Should there be a funding shortfall under this SO, sections will have to be prioritised according to funds available. Priority stretches may include Yei-Juba-Bor and Kaya-Rumbek-Tonj.[7] Works on prioritised stretches in the case of phased funding, can start with an initial amount of approx. US$ 15,000,000.- This amount would allow for two mine clearance teams and two road repair teams to operate on two stretches of approx 300-350 km each.

25. Time is of the essence. Tendering procedures have already started, in order to make full use of the next dry season (Oct. 2004 – June 2005). Every month of delay in funding will mean one month less of works, or, in the equivalent of kilometres repaired, one stretch less of approx. 200-300 km. (worst sections) out of the planned 5-8 stretches. It should also be noted that mine clearance must occur before road repairs, and will take the necessary time on the ground as well.

Alternate Solutions

26. The alternative for the movement of food assistance will be to continue with the status quo, delivering some 85% of all aid into Southern Sudan by air at a cost of US$ 800-1000 per MT using the Mombasa corridors. Use of the El Obeid corridor would have to be expanded. However, the Darfur crisis and other constraints such as the limited capacity of El Obeid airport, occasional breaks in fuel supply, pipeline constraints, and the entrance of DPKO are increasing the pressure on this corridor considerably, to the point where current demands cannot be met, let alone an increased demand for Southern deliveries.

27. Some of the consequences of not implementing this project are:

- Missed opportunity to contribute to the consolidation of peace in a meaningful and effective manner. The roads have a major impact on economic recovery, which is one of the main peace dividends;
- Slower return and reintegration of IDPs and returnees;
- Acceptance of the higher transport rates by the continued use of air transport corridors instead of road corridors, a solution which cannot be considered sustainable;
- Increased possibilities of delayed supply and pipeline ruptures through the Mombasa-Lokichoggio-Sudan corridor as opposed to the Mombasa- Kampala-Sudan road corridor, due to the deteriorating and unreliable road from Eldoret to Lokichoggio;

III Project Objectives

28. The project's overall objective is to increase the transport capacity of the road network in Southern Sudan, linking regions, Northern Sudan and neighboring countries, in order to:

- Provide an immediate peace dividend to the war affected population;

[7] Priorities are subject to discussion with donors, other agencies' plans (e.g. UNMAS/DPKO, NPA) at the time of actual implementation, and WFP operational requirements / potential impact.

- Permit WFP and other relief agencies, as well as small commercial traders, to transport larger quantities of food and non-food items to more locations using a wider variety of corridors;
- Provide a reliable and cost effective alternative to air transport, facilitating the movement of a potential 30,000 MT[8] by road into S. Sudan annually under the Sudan EMOP. This would represent more than a doubling of the tonnage and beneficiaries reached by road and reduce the need for WFP to utilize the more expensive Loki air corridor, simultaneously reducing the risk of unreliable supply via the poor Eldoret-Loki road.
- Facilitate the return and reintegration of 1-2 million IDPs and returnees, providing human and material safety related to land transportation through the clearance of mine and UXO affected routes, and repair thereof;
- Reduce the cost of access to food and food production, through reduced transport rates by 25-70% (depending on the corridor) and increased transport availability;
- Stimulate domestic production of food, and inter- and intra regional trade thereof, thus stimulating self sufficiency and economic productivity;

IV. Project Implementation

29. Project implementation will occur in two phases:

- Phase one covers the first three months (01 August – 31 October 2004) and is dedicated to the mobilization of the required mine clearance capacity and training, as well as the mobilisation of road repair capacity to the extent that funds will allow.

- Phase two lasts nine months (01 Nov. 2004 – 31 July 2005) and covers the implementation of actual mine clearance and emergency road repairs, as well as one month of phase down and final reporting (July).

30. The emergency road repair component will be implemented through a competitive bidding process, using commercial contractors. Supervising engineering bureaus will be contracted to ensure quality control of the Contractors' work, and dedicated WFP civil engineers will represent WFP at site meetings and ensure coordination, evaluation, reporting and inspection. In certain instances, WFP may opt to work through non-profit NGOs or agencies such as GTZ-IS. This could be the case when for example the received offers and/or risk of claims are judged to be too high, or where it would be suitable to expand the capacity building component and hand over equipment to Sudanese authorities as a first step towards the establishment of a national road maintenance outfit. Until maintenance can be undertaken by Sudanese institutions, contracts will incorporate this aspect as part of this project. The USAID Development programme is currently engaged in the training of some 30 technical advisers at county level, who will form the start of national capacity for road maintenance programmes.
Road cross-section designs, which will form the basis of the emergency repairs, are included in Annex V.

31. The mine clearance component will be implemented by the global WFP standby partner for mine action, the Fondation Suisse de Deminage (FSD). Their capacity will consist of three teams, which will be fielded simultaneously on three

[8] Including prepositioning by road in S. Sudan

different stretches. The teams will consist of a combination of both mechanical and manual clearance technologies, and will clear corridors of 35-40 m. wide, as well as sites for borrow pits, boreholes, camps etc, in direct support of the emergency road repairs. To this end, each team will be equipped with two CASSPIR Mk2 mine protected vehicles, as well as an armoured front end loader (Komatsu) and an armoured grader. Each team will comprise of a team leader, operators, trauma medic, drivers, mechanics and guards. Some 90% of the proposed staffing will be national (153 in number), trained to international standards by FSD during the mobilisation phase. The proposed set up should allow each team to clear up to 8 km. of route per team per day. Mine risk education to increase awareness on mine threats and mine disposal activities, will be conducted for the local population and staff operating on the ground as required. All operational tasks will be conducted in close collaboration with the New Sudan Mine Action Office, which has the overall responsibility of coordinating mine action activities in Southern Sudan.

32. For both road repairs and mine clearance, inter-agency consultation and coordination is already in place. Bilateral and multilateral meetings between UNMAS, the SPLM, agencies such as UNHCR, FAO, NPA, DPKO take place regularly to exchange information on progress and plans, and to agree on courses of action in case of overlap, delays, unexpected developments, donor requests, differences in priorities etc. Due to its ongoing road repair activities, WFP is perceived as the lead agency in the area of road access and surface transport, and is often consulted for information. Agencies are well aware of WFP plans and are fully supportive. Relationships between WFP and major donors are currently very good as a result of quick response and good performance on ongoing projects, thus facilitating funding coordination and mobilization.

33. The project manager will be the WFP Sudan logistics officer based in Nairobi, also in charge of the ongoing six road activities under EMOP 10048.2. The project manager is responsible for ensuring that contracts are put in place as timely as possible; funds are mobilised and utilised properly; quality and time schedules are adhered to; progress reports and impact data are generated; and donors, authorities and implementing agencies/companies are involved and informed as required. The project manager reports to the WFP Operations Manager in Lokichoggio and the Country Director Kenya, keeping the Country Director and senior Logistics Officer in Khartoum fully informed of progress, funding status and issues arising.

V. Project Appraisal

Project cost

34. The total cost of the two components of emergency road repairs and mine clearance, is summarized as follows:

Emergency road repairs, BOQ	US$	24,744,980.-
Emergency road repairs, staffing	US$	516,000.- (incl. HQ review)
Emergency road repairs, recurring expenses	US$	232,800.-
Mine Clearance, Equipment	US$	1,859,400.- (incl.De/Mobiliz)
Mine Clearance, Staffing & travel	US$	1,680,720.-
Mine Clearance, recurring expenses	US$	690,800.-
Mine Clearance, Support costs	US$	198,733.-

WFP Indirect Support Costs	US$	2,094,640.-
TOTAL	US$	32,018,073.-

The above sum includes the cost of phase I (Mobilization) of approx. US$ 5.3 million,[9] and the cost of phase II (Implementation) of approx. US$ 24.75 million[10].

35. The cost of the required road repairs and clearance activities was estimated using the findings of the two mine assessment teams[11] and two road assessment teams[12] fielded in February 2004. The teams travelled over ten thousand kilometres and produced bills of quantities for emergency road repairs,[13] as well as data on dangerous areas of concern to the road network, cost estimates for clearance and GPS-based maps. It should be noted that the road teams have generated Bills of Quantities for US$ 51 million. Should funding in excess of the amount budgeted become available, this project can be expanded.

36. Should funding fall short of the budgeted amount, priority stretches will be set. A minimum of $ 15,000,000.- is deemed necessary to allow for road repairs and mine clearance on two road stretches at the required speed.

37. In order make optimal use of its global assets and for cost efficiency reasons, WFP intends to demobilise mine clearance assets including vehicles and mechanical mine clearance equipment, worth US$ 1.8 million from its Iraq operation to Sudan. These assets will reduce the cost of the mine clearance operation by approx. US$ 2 million (including transport), and can be pre-positioned rapidly for use in S. Sudan.

Project benefits

38. Peace dividend related benefits of safer and improved access, are as follows:

- Fostering of peace and stability, enabling communities to link up and exchange information and engage in trade. In for example the Bor counties, where communities were isolated during the war as a result of surrounding GOS controlled areas, trade will flourish between the communities;

- Safe movement on key road sections for all road users in Sudan, including local communities, 1-2 million IDPs and returnees, and over 40 humanitarian agencies, through the removal of mines and UXOs and mine risk education;

- De-isolation of former garrison towns. Road access to towns like Juba and Torit will stimulate the supply of surplus food from W. Equatoria into these deficit areas, and stimulate trade in general. The supply to e.g. Juba of cheaper and more fuel will contribute to better health and water- and sanitation conditions through the provision of electricity and potable water, of critical importance with the impending influx of IDPs and returnees;

[9] US$ 2.2 million for mine clearance, US$ 1.9 + 1.2 million for Road Contractor and Supervision
[10] US$ 2.25 million for mine clearance, US$ 21.7 + 0.8 million for road repairs, staff, recurring costs
[11] The mine assessment teams were managed by the Fondation Suisse de Deminage (FSD), WFP's global standby partner for mine clearance.
[12] The road assessment teams comprised of civil engineers accompanied by local counterparts.
[13] All cost estimates, BOQ, maps, road conditions available on interactive CDROM at Country Office

- Employment generation and capacity building for 600 - 700 Sudanese people[14], in road works, equipment use and maintenance, civil engineering and mine clearance.

39. Relief related benefits are as follows:

- Safer and improved access for approx. 1,700[15] km of main road stretches, for the transport of approx. 30,000 MT of food by road per year to reach between 0.5 – 1 million[16] beneficiaries by road. This would represent a doubling in tonnage transported by road, using a wider variety of road corridors and accessing new areas by road;

- Potential transport savings in the order of US$ 21-22 million per year, following completion of road repairs and re-orientation of the operation from air transport to surface transport.

VI Project Duration and Exit Strategy

40. The project duration is 12 months, from 01 August 2004 to 31 July 2005. Depending on funding, performance and requirements, it can be extended in time and budget.

41. WFP does not intend to engage in emergency road repairs and mine clearance in Sudan for many years. While it has an immediate role to play given the current lack of capacity in the face of fast growing needs, including those of its own operations, it is expected that other institutions such as the World Bank, UNDP, EU and USAID Development will engage in more durable, larger scale, multi-year infrastructure development in Sudan by end 2005 or from 2006 onwards. These agencies will build on the first high-impact steps made by WFP in the vulnerable first months of peace. With the entry of other agencies and commercial companies, WFP will demobilise its mine clearance assets and phase out its emergency road repairs activities.

VII Monitoring and Reporting

[14] This figure excludes FFW beneficiaries, which total some 8000 direct participants

[15] Kaya-Rumbek (580) + RK-Wau (211) + RK-Shambe (177) + Yei-Juba (140) + Narus Juba (320) + Juba-Bor (170), Bor counties (100). Additional Nimule-Juba (170), RK-Nyal (163), Wau-Aweil (120), Juba-Mundri (171). Feeder roads addressed by FFW total 1182 km, expansion expected in 2005.

[16] Depending on season, pre-positioning and ration size

42. For the emergency road repair component, monthly technical progress reports will be issued by the Supervising engineers. WFP Sudan will ensure the collection of indicator data such as traffic counts, transport rates per MT/km./corridor, tonnage delivered by road and air transport savings, convoy turn around times, basic food commodity prices, etc. While sub offices may be requested to assist in collecting this information, consolidation and analysis will be led by the Nairobi S. Sudan office. In addition, regular donor reports will be issued and ppt. presentations shown as required. The standard WFP reporting format for Special Operations will be used.

43. For the mine clearance component, internal Quality Assurance will be conducted in accordance with the FSD standard operating procedures. Copies of all Quality Assurance reports will be forwarded to the NSMAO and UNMAS. As standard practice, FSD uses the information Management System for Mine Action (IMSMA) formats for all technical reporting, also used by UNMAS Sudan. Weekly sitreps will report the number and size of dangerous areas identified of concern to the road stretches, the number of mines and UXOs identified and disposed, the achievement of milestones in mine clearance by stretch to be repaired, the listing of constraints, and financial expenditures. Cost/Benefit analysis showing the cost of removing items per km or per item, will also be generated and integrated with road data (for example, the removal or destruction of 71,660 items over a total of 5850 km of roads surveyed for a cost of $ 462,549.- translates into $ 6.45/item). The Nairobi S. Sudan office will ensure that the information is consolidated regularly and distributed internally and externally using appropriate formats.

44. In addition to the above measures, a budget of $ 30,000.- has been incorporated for financial and performance project evaluation by WFP Headquarters, in line with the WFP Evaluation Policy.

RECOMMENDATION

45**.** This Special Operation 10368.0 covering the period from 01 August 2004 to 31 July 2005, at a total cost to WFP of US$ 32,018,073.- is recommended for approval by the Executive Director with the budget provided in Annex I.

APPROVAL

_____

James T. Morris
Executive Director, WFP

Date: …….

Project Type:	SO
Recipient Country:	S. Sudan
Project Number:	10368.0
Duration (months):	12.0
Start Date:	01-Aug-2004
End Date:	31-Jul-2005

		Total US$
DIRECT OPERATIONAL COSTS (DOC)	$	29,421,833
DIRECT SUPPORT COSTS (DSC)	$	501,600
TOTAL WFP DIRECT COSTS	**$**	**29,923,433**
INDIRECT SUPPORT COSTS (ISC) 7%	$	2,094,640
TOTAL WFP COSTS	**$**	**32,018,073**

1/ This format should also be used for Project Budget Plan Revisions.
2/ Please adapt your planning according to the Project Document (duration of the project).
3/ This worksheet includes total amounts for all years.
4/ The ISC is indicated here to provide a picture of the overall WFP costs even though they are not Project Costs per se.
The ISC rate may be amended by the Executive Board during the Project's life.

OTHER DIRECT OPERATIONAL COSTS

		1 Aug-31 Dec 04	1 Jan-31Jul 05		
Staff and Staff-Related Costs		Year *1*	Year *2*	Year *3*	Year *4*
551010	International Consultants (incl. Travel), 3 engineers @ 8000/mth incl travel			-	-
551020	National Consultants, 2 engineers @ $3500/mth incl travel			-	-
551030	Temporary Assistance (Sudanese counterparts)			-	-
551040	UNVs	6,000	8,400	-	-
552000	Non-WFP Staff Training			-	-
	HQ Evaluation			-	-
	Subtotal	**6,000**	**8,400**	**-**	**-**

Recurring Expenses		Year *1*	Year *2*	Year *3*	Year *4*
554010	Rental of Facility			-	-
554020	Utilities General			-	-
554030	Office Supplies	6,500	9,100	-	-
554040	Communications and IT Services - 12xthuraya monthly cost	10,500	14,700	-	-
554050	Insurance			-	-
554060	Equipment Repair and Maintenance			-	-
554070	Vehicle Maintenance and Running Costs - 10 lease vehicles	80,000	112,000	-	-
554080	Contracted Services			-	-
554090	Other Office Expenses			-	-
	Subtotal	**97,000**	**135,800**	**-**	**-**

Equipment & Capital Costs		Year *1*	Year *2*	Year *3*	Year *4*
555010	Agricultural Tools and Equipment			-	-
555020	Kitchen & Canteen Material and Equipment			-	-
555030	Health Related Material and Equipment			-	-
555040	School Related Material and Equipment			-	-
555050	Building Material			-	-
555060	Vehicles			-	-
555070	Computer for the Project Manager/clerk			-	-
555080	Tools, Material and Equipment - Demining and Road Repairs - see detail sheets	12,156,097	17,018,536	-	-
	Subtotal	**12,156,097**	**17,018,536**		**-**

TOTAL OTHER DIRECT OPERATIONAL COSTS	**12,259,097**	**17,162,736**		**-**

1/ Planned costs should be included for ODOC items that are relevant to the SO.

	National staff B3	m/mnth	$50	170	$8,500	$1,545	$6,955	$8,500		
	International Insurance A1	m/mnth	$660	84	$55,440	$13,860	$41,580	$55,440		
	International Insurance A2	m/mnth	$470	28	$13,160	$3,290	$9,870	$13,160		
	Third Party Liability Insurance	Lumpsun	Based on 0.02% of sa		$0	$0	$0	$0		
Total Staff Costs					**$1,641,220**	**$365,485**	**$1,275,735**	**$1,641,220**		
	Travel									
	International flights	trips	$1,600	20	$32,000	$16,000	$16,000	$32,000		
	Internal flights	trips	$250	30	$7,500	$2,500	$5,000	$7,500		
Total Travel and Subsistance					**$39,500**	**$18,500**	**$21,000**	**$39,500**		
	Equipment - non consumable									
	Laptop Computer	items	$3,000					$0	IT equipment	
	Nissan Patrol 4x4	vch	$30,000					$0	Landrove	12
	Nissan Patrol Ambulance 4x4	vch	$32,000	6	$192,000	$192,000		$192,000	Samil 10	2
	CASPIR Mk2	vch	$110,000	6	$660,000	$660,000		$660,000	Komatsu	2
	Armoured Grader	vch	$100,000	3	$300,000	$300,000		$300,000	MV-4	1
	Komatsu and Samil 100	vch	$180,000	1	$180,000	$180,000		$180,000		
	Mobile workshop	vch	$35,000	2	$70,000	$70,000		$70,000	Bomb loc	8
	Ebinger	items	$2,900	30	$87,000	$87,000		$87,000	Ebinger	60
	Upex Locator array	items	$5,200	8	$41,600	$41,600		$41,600	BAC dete	60
	Protective Clothing	sets	$750	30	$22,500	$22,500		$22,500	Protectiv	80
	Remote Demining Equipment	sets	$12,000	3	$36,000	$36,000		$36,000	Technical equipme	
	(Tents-Cooking Equip.-Generators etc)							$0		
	Demining Tool Sets	sets	$250	30	$7,500	$7,500		$7,500	Demining	60
	HF Radios	items	$3,600					$0	Radios	
	VHF Vehicle Radios	items	$600					$0		
	VHF Hand Held Radios	items	$500					$0		
	Uniforms	sets	$250	180	$45,000	$45,000		$45,000		
	Trauma Medical Packs	packs	$2,900	2	$5,800	$5,800		$5,800	Medical Packs	

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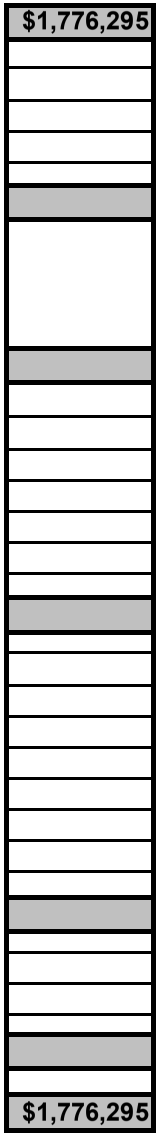
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ROAD VS. AIR TRANSPORTATION COSTS -Western Corridor ANNEX III

	AIR						
Location	Flight Time (BH) C-130	Rate/MT*/BH C-130	Total USD/MT C-130	Flight Time (BH) AN-12	Rate/MT*/BH AN-12	Total USD/MT AN-12	Average C130/AN12
Rumbek	2.20	263	579	2.25	181	406	493
Mapel	2.53	263	666	2.59	181	468	567
Thiet	2.48	263	653	2.54	181	459	556
Yirol	1.59	263	419	2.03	181	366	393
Lunyaker	3.04	263	800	3.11	181	561	681
Liethnom	3.07	263	808	3.14	181	567	688
Alek	3.16	263	832	3.23	181	583	708
Ajiep	3.12	263	821	3.18	181	574	698
Tonj	2.46	263	648	2.52	181	455	551
Adet	3.07	263	808	3.13	181	565	687

* For C-130 and AN-12 as per updated TAF matrix (2004)

	ROAD					After Repair			
Location	Distance fm Kaya km.	Rate* USD/MT/km	Total USD/MT	% of Air Cost	Savings vs air	Potential Rate	Potential USD/MT	Potential % of Air cost	Pot. Saving vs Air
Rumbek	592	0.40	236.80	48%	52%	0.12	71.04	14%	86%
Mapel	743	0.40	297.20	52%	48%	0.25	185.75	33%	67%
Thiet	753	0.40	301.20	54%	46%	0.25	188.25	34%	66%
Yirol	573	0.40	229.20	58%	42%	0.25	143.25	36%	64%
Lunyaker	851	0.40	340.40	50%	50%	0.3	255.3	37%	63%
Liethnom	942	0.40	376.80	55%	45%	0.3	282.6	41%	59%
Alek	918	0.40	367.20	52%	48%	0.3	275.4	39%	61%
Ajiep	903	0.40	361.20	52%	48%	0.3	270.9	39%	61%
Tonj	711	0.40	284.40	52%	48%	0.25	177.75	32%	68%
Adet	898	0.40	359.20	52%	48%	0.3	269.4	39%	61%

* Contracted rate 2004, before repairs

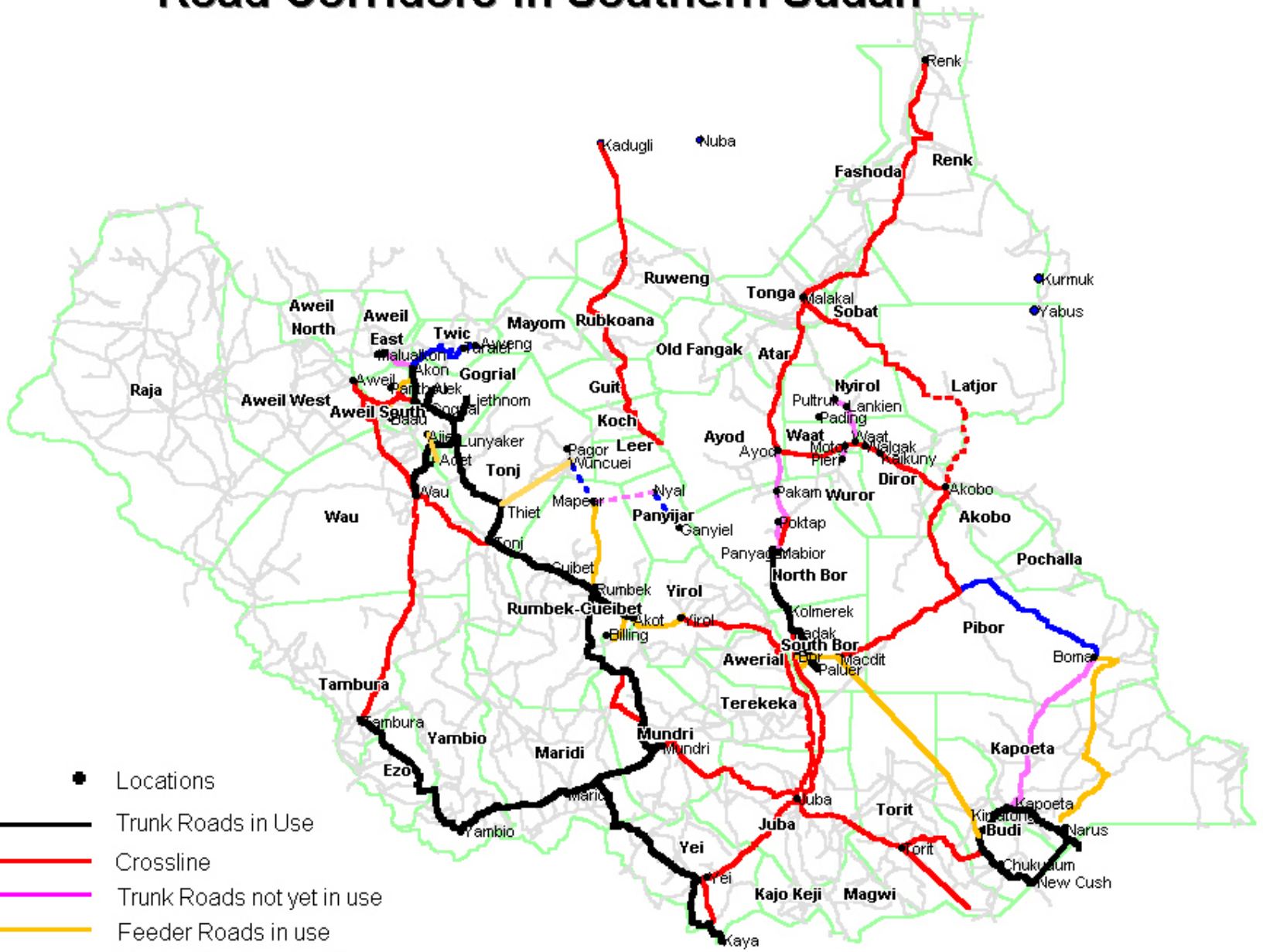
ROAD VS. AIR TRANSPORTATION COSTS -Eastern Corridor

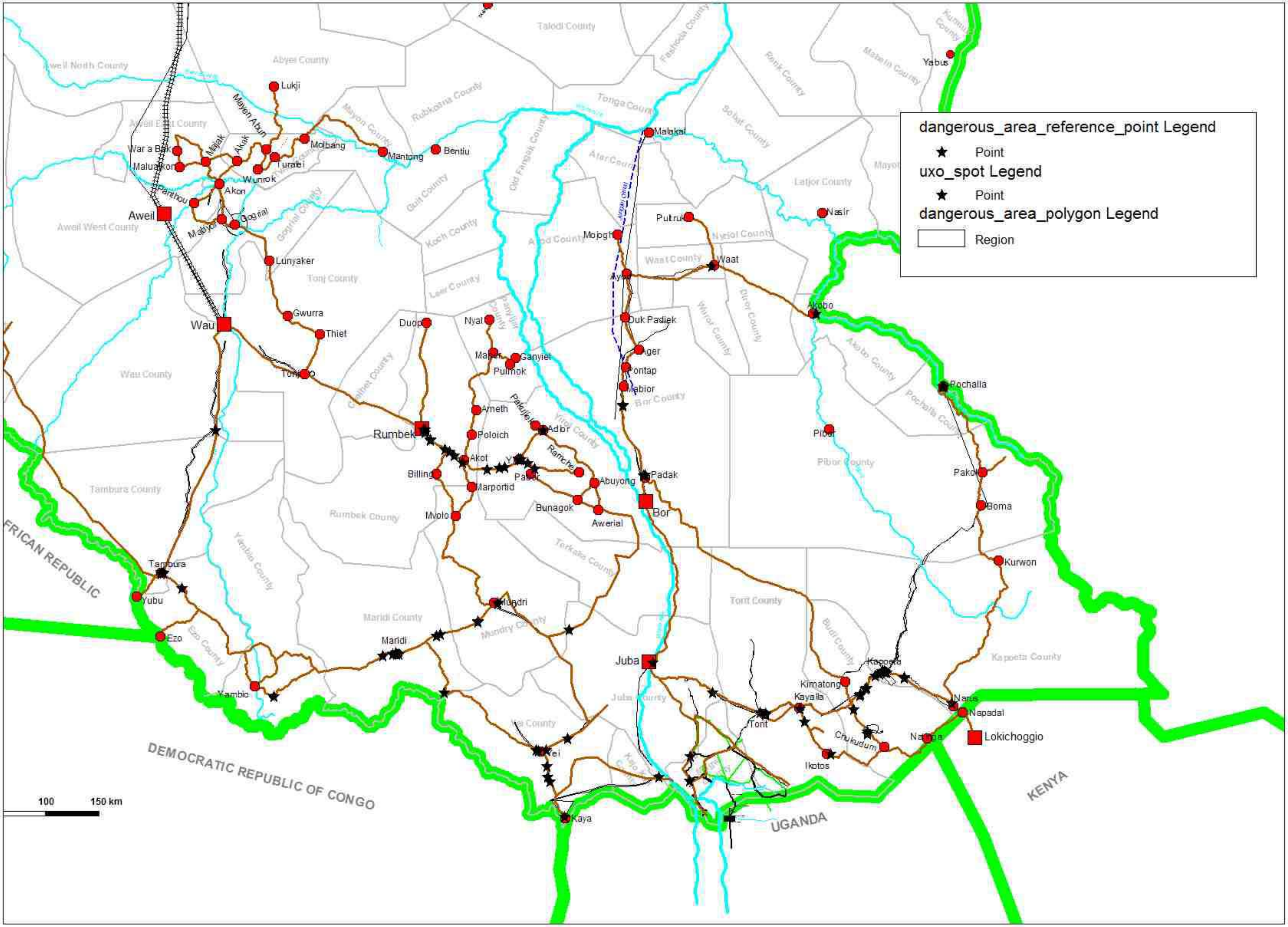
				AIR			
Location	Flight Time (BH) C-130	Rate/MT*/BH C-130	Total USD/MT C-130	Flight Time (BH) AN-12	Rate/MT*/BH AN-12	Total USD/MT AN-12	Average C130/AN12
Boma	0.54	263	142	0.56	181	101	122
Chukudum	0.47	263	124	0.49	181	88	106
Kapoeta	0.35	263	92	0.36	181	65	79
Budi	0.40	263	105	0.42	181	76	91
Torit	1.02	263	269	1.04	181	188	228
Mabior	1.40	263	369	1.51	181	273	321
Paliau	1.45	263	382	1.49	181	269	325
Padak	1.34	263	353	1.37	181	247	300
Kolmerek	1.37	263	361	1.41	181	255	308
Wernyol	1.50	263	395	1.54	181	278	336
Pochalla	1.18	263	311	1.21	181	218	265
Paluer 1	1.24	263	326	1.27	181	229	278
Poktap	1.52	263	400	1.56	181	282	341
Yomchiir	1.36	263	358	1.39	181	251	304

* For C-130 and AN-12 as per updated TAF matrix (2004)

		ROAD			After Repairs			
Location	Distance km.	Rate*USD/MT/km	Total USD/MT	% of Air Cost	Potential Rate	Potential USD/MT	Potential % of Air cost	Pot. Saving vs Air
Boma	310	0.54	167.40	138%	0.25	77.5	64%	36%
Chukudum	155	0.54	83.70	79%	0.25	38.75	37%	63%
Kapoeta	78	0.54	42.12	54%	0.25	19.5	25%	75%
Budi	181	0.54	97.74	108%	0.25	45.25	50%	50%
Torit	287	0.54	154.98	68%	0.25	71.75	31%	69%
Mabior	760	0.54	410.40	128%	0.35	266	83%	17%
Paliau	730	0.54	394.20	121%	0.35	255.5	79%	21%
Padak	689	0.54	372.06	124%	0.35	241.15	80%	20%
Kolmerek	719	0.54	388.26	126%	0.35	251.65	82%	18%
Wernyol	800	0.54	432.00	128%	0.35	280	83%	17%
Pochalla	470	0.54	253.80	96%	0.35	164.5	62%	
Paluer 1	664	0.54	358.56	129%	0.35	232.4	84%	
Poktap	840	0.54	453.60	133%	0.35	294	86%	
Yomchiir	700	0.54	378.00	124%	0.35	245	80%	

Road Corridors in Southern Sudan

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Abyei County
Aweil North County
Aweil West County
Wau County
Tambura County
Tonj County
Rumbek County
Maridi County
Torit County
Kapoeta County
Pibor County
Latjor County
Renk County
Sobat County
Akobo County
Pochalla County
Bor County
Waat County
Koch County
Leer County
Guit County
Terkeka County
Yambio County
Ezo County
Mundry County

Emergency Roads Repair in south Sudan
SO - Budget for commercial contractors

BILL OF QUANTITY

SUMMARY

Bill No.	Description	Amount US $
1	General Items	2,850,662.00
2	Earthworks and Pavement	15,803,488.60
3	Structures and Bridges	4,829,343.40
Subtotal		23,483,494.00
4	Dayworks	271,486.00
Total Amount carried to Form of Agreement		23,754,980.00
Supervising Consultants costs.		990,000.00
FSD Deming proposal		4,727,088.00
other WFP costs		523,200.00
Total to programme costs.		29,995,268.00

Date

_____

Emergency Roads Repair in south Sudan
SO - Budget for commercial contractors

BILL OF QUANTITY

Item No	Description	Unit	Pay Item	Qty	Rate US $	Amount US $
	Bill No. 1 - General Items					
	Section 1300: Contractor's Establishment on site & General Obligations.					
1.01	The contractor's general obligations for all charges in respect of the establishment of the contractor's organization, camps, accommodation and construction plant on the site and their removal on completion of the contract, and also the financing costs, risks, legal and contractual obligations and general items of cost not covered elsewhere		13.01			
(a)	Fixed obligations	LS		1		
(b)	Value-related obligations	LS		1		
(c)	Time-related obligations	Month		10		
(d)	Insurances and Bond	LS		1		
	Section 1400: Housing, Offices & Laboratories for the Engineer's site personnel.					
1.02	Office and laboratory accommodation for the Engineer:		14.01			
(a)	Offices for the Engineer (2 No)	LS		1		
(b)	Laboratory (1 No) including Laboratory Equipment	LS		1		
1.03	Office and laboratory furniture as detailed in Subclauses 1400	LS	14.02	1		
1.04	Office and laboratory fittings, installations and equipment as detailed in Subclauses 1400	LS	14.03	1		
	Bill No 1 - General Items - s/total carry forward					

Emergency Roads Repair in south Sudan
SO - Budget for commercial contractors

BILL OF QUANTITY

Item No	Description	Unit	Pay Item	Qty	Rate US $	Amount US $
	Bill No 1 - General Items - s/total brought forward					
1.06	Houses for the Engineer (3 No)	Month	14.06	30		
1.07	Services to Houses and Offices:		14.08			
(a)	Services at offices (2 No)	Month		20		
(b)	Services at laboratories (1 No)	Month		10		
(c)	Services at houses (3 No)	Month		30		
1.08	Provision of vehicles for the Engineer, as specified (3 No):	Num	14.11	3		
	Services for vehicles (3 No)	Month		30		
1.09	Radio in the vehicles (3 No) and office (1 No) and maintenance for the period of the contract.	Month	14.12	40		
1.10	Personnel for the exclusive use of the Engineer:		14.16			
(a)	Qualified engineer (1 No)	Month		10		
(b)	Driver (3 No)	Month		30		
(c)	Road Inspectors (4 No)	Month		40		
(d)	Labourer (4 No)	Month		40		
						2,850,662.00
	Total Bill No. 1 - General Items - Carried to Summary					**2,850,662.00**

Emergency Roads Repair in south Sudan
SO - Budget for commercial contractors

BILL OF QUANTITY

Item No	Item Description	Unit	Pay Item	qty	Rate US $	Amount US $
	Bill No. 2 - Earthworks and Pavement					
2	Clearing and grubbing	Ha	17.01	1,600	800.00	1,280,000.00
2.3	Remove Trees larger than 300mm girth		17.02			
(a)	of girth 301 - 500mm	Num		4,340	25.00	108,500.00
(b)	of girth 501 -1000mm	Num		766	80.00	61,280.00
(c)	of girth 1001 - 2000mm	Num		71	200.00	14,200.00
2.4	Fill from road cross-cuts or from borrow pits, including compaction and transport up to **1** Km	m3	33.01	1,350,000	4.80	6,480,000.00
2.5	Extra over for excavating and breaking in hard material.	m3	33.03	475	28.00	13,300.00
2.6	Removal of of topsoil, cut to spoil and removal of unsuitable material in road cuts	m3	33.04 a)	294,190	1.49	438,343.10
2.7	Roadbed preparation and compaction	m2	33.10	4,150,000	0.50	2,075,000.00
2.8	Excavation of trial pits to a depth of 1.0m	Num	33.16	1,129	10.00	11,290.00
2.10	Excavate V-shape Mitre Drains up to 0.7m depth	m3	21.01	199,290	2.95	587,905.50
2.11	Provision of murram or sandy material for wearing course from road cuts or borrow pits, including compactiob and transport up to 5 km	m3	34.01	622,500	6.90	4,295,250.00
2.12	Overhaul for transport of wearing course and rock boulders in excess of 5 Km	m3*km	16.01	1,660,750	0.24	398,580.00
2.13	Provision of naturally occurring rock boulders including transport up to 5 km	m3		1,328	30.00	39,840.00
	Total Bill No. 2 - Earthworks and Pavement - Carried to Summary					**15,803,488.60**

Emergency Roads Repair in south Sudan
SO - Budget for commercial contractors

BILL OF QUANTITY

Item No	Item Description	Unit	Pay Item	qty	Rate US $	Amount US $
	Bill No 3 - Structures and Bridges					
3.1	Excavation in common material for structures to any depth including backfilling .	m3	26.01	16,608	9.30	154,454.40
3.1(a)	Excavate inlet and outlet drains in soft material	m3	21.01	665	6.50	4,322.50
3.2(a)	Cast in place concrete grade 10-15 Mpa including Formworks	m3		265	210.00	55,650.00
3.2(b)	Cast in place concrete for structures grade 25 Mpa including Formworks.	m3		132	660.00	87,120.00
3.3	Steel reinforcement for structures	ton	63.01	14	2,100.00	29,400.00
3.4	Wooden Logs for Structures 120-150mm Dia	m	67.03	2657	9.20	24,444.40
3.5	Corrugated Metal Pipes:		22.04			
(a)	600 mm diameter	m		3,321	140.00	464,940.00
(b)	900 mm diameter	m		7,970	222.00	1,769,340.00
(c)	1200 mm diameter	m		798	282.00	225,036.00
3.8	Masonry works for structures in abutments, head walls, wingwalls, etc.	m3	25.03	3,322	209.00	694,298.00
3.9	Repair existing masonry	m2	25.08	1,660	58.00	96,280.00
3.10	Grouted stone pitching 200 to 250mm thick	m3	25.01	997	42.00	41,874.00
3.13	Provide baskets and fill with boulders Gabion Boxes Maccaferri type or similar, sectional area, 1m x 1m.	m3	52.03	332	130.00	43,160.00
3.14	Construct and fill with boulders Reno Mattresses Maccaferri or similar, sectional area 2 x 0.3.	m3	52.03	332	150.00	49,800.00
	BRIDGES and CROSSINGS					
3.15	Structural steel, provision, painting, erection	Ton	67.01	132	3,100.00	409,200.00
	Steel Decking Planks ….m long for a temporary bridge deck	Provisional Sum	67.01	6	3337.35	20,024.10
3.16	Bailey Bridge ...m span, single span, maximum load ...ton. Provision, transport, erection	Provisional Sum	1.00	6	110000.00	660,000.00
3.17	Floating Pontoon Bridge, ….m long. Provision, transport, erction.	Provisional Sum	1.00		--	NIL
3.18	Floating Pontoon Bridge, ….. long. Provision, transport, erction.	Provisional Sum	1.00		--	NIL
	Total Bill No. 3 - Structures and Bridges - Carried to Summary					**4,829,343.40**

Emergency Roads Repair in south Sudan
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BILL OF QUANTITY

Bill No. 4 - Dayworks

General
Dayworks must be instructed in writing by the Engineer.
The rates entered shall constitute full compensation for all costs of organization of works, overheads, profits, duty, taxes, royalties, incidentals, wastage, transport to site, tools and all other costs necessary for the performance of the works on a daywork basis.
For Labour and Plant only the actual time of engagement on the works will be measured for payment.

Item No	Description	Unit	Qty	Rate US $	Amount US $
L	**LABOUR**				
L1	Ganger	hr	640	8.00	5,120.00
L2	Skilled labour	hr	1275	4.00	5,100.00
L3	Semiskilled Labour	hr	1910	2.00	3,820.00
L4	Unskilled Labour	hr	3185	1.00	3,185.00
L5	Mechanic	hr	640	2.00	1,280.00
L6	Light Plant Driver / Operator	hr	640	2.00	1,280.00
L7	Heavy Duty Plant Driver / Operator	hr	640	3.00	1,920.00
L8	Surveyor	hr	318	4.00	1,272.00
L9	Chainman	hr	1275	3.00	3,825.00
L10	Laboratory Materials technician	hr	318	4.00	1,272.00
	Bill No 4 - Dayworks - LABOUR - s/total carry to Total of Dayworks				28,074.00

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BILL OF QUANTITY

Item No	Description	Unit	Qty	Rate US $	Amount US $
M	**MATERIALS**				
M1	Ordinary Portland Cement	ton	98	415.00	40,670.00
M2	Mild Steel Reinforcing Bars all dia.	ton	6	820.00	4,920.00
M3	High Grade Reinforcing Bars all dia.	ton	6	840.00	5,040.00
M4	Plywood 12mm	m2	127	12.00	1,524.00
M5	Timber for Shuttering	m3	31	510.00	15,810.00
M6	Formork Rough	m2	318	26.00	8,268.00
M7	Sand for Concrete	m3	318	70.00	22,260.00
M8	Coarse Aggregates for Concrete	m3	318	80.00	25,440.00
M9	Masonry Boulders	m3	318	50.00	15,900.00
M10	Rip-Rap Boulders	m3	318	50.00	15,900.00
	Bill No 4 - Dayworks - MATERIALS - s/total carry to Total of Dayworks				155,732.00

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BILL OF QUANTITY

P **PLANT**

NOTE The Plant listed below is for Tender evaluation only.
In his qualification information, the Contractor will supply the list of major items of plant that he intends to bring to the site for carrying out the works.
The Contractor is requested to price his own plant per hour in this **ANNEX 1 to Dayworks**
The rates offered will be evaluated separately.

Item No	Description	Capacity	Unit	Qty	Rate US $	Amount US $
P1	Bulldozer CAT D8 or equivalent		hr	128	100.00	12,800.00
P2	Grader CAT 14 or equivalent		hr	128	90.00	11,520.00
P3	Wheel Loader CAT 966 or equivalent		hr	128	45.00	5,760.00
P4	Excavator CAT 320 or equivalent		hr	128	130.00	16,640.00
P5	Low-Loader	35-40 ton	hr	128	60.00	7,680.00
P6	Tipper	20 ton	hr	128	50.00	6,400.00
P7	Tipper	10 ton	hr	128	35.00	4,480.00
P8	Water Tanker	15-20m3	hr	128	30.00	3,840.00
P9	Flat Lorry	10 ton	hr	128	30.00	3,840.00
P10	Vibrating Roller	10 ton	hr	128	45.00	5,760.00
P11	Concrete Mixer	500 ltr	hr	128	5.00	640.00
P12	Air Compressor	5 m3/min	hr	128	25.00	3,200.00
P13	Generator	50 kw	hr	128	25.00	3,200.00
P14	Diesel Water Pump	50mm	hr	128	5.00	640.00
P15	Pick-up	1 ton	hr	128	10.00	1,280.00
	Bill No 4 - Dayworks - PLANT - s/total carry to Total of Dayworks					87,680.00

Emergency Roads Repair in south Sudan
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BILL OF QUANTITY

TOTAL OF DAYWORKS

L	**LABOUR**	28,074.00
M	**MATERIALS**	155,732.00
P	**PLANT**	87,680.00
	Bill No 4 - Dayworks - Total carry to Summary	271,486.00

BILL OF QUANTITY

ANNEX 1 to DAYWORKS

PLANT LISTED BY THE CONTRACTOR FOR DAYWORKS (Rates only)

Item No	Description	Capacity	Num. available	Unit	Rate US $
PP0			hr		
PP1			hr		
PP2			hr		
PP3			hr		
PP4			hr		
PP5			hr		
PP6			hr		
PP6			hr		
PP8			hr		
PP9			hr		
PP10			hr		
PP11			hr		
PP12			hr		
PP13			hr		
PP14			hr		
PP15			hr		
PP16			hr		
PP17			hr		
PP18			hr		
PP19			hr		
PP20			hr		
PP21			hr		

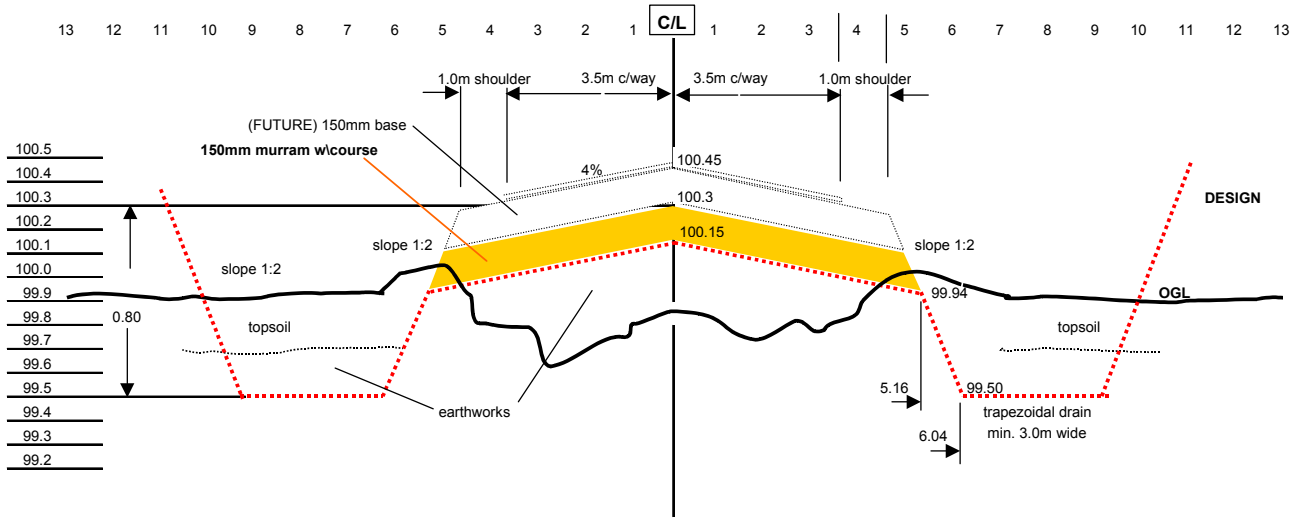
Section VII. Drawings

TYPICAL ROAD SECTIONS

General Note: Levels are indicative and may vary according to local conditions

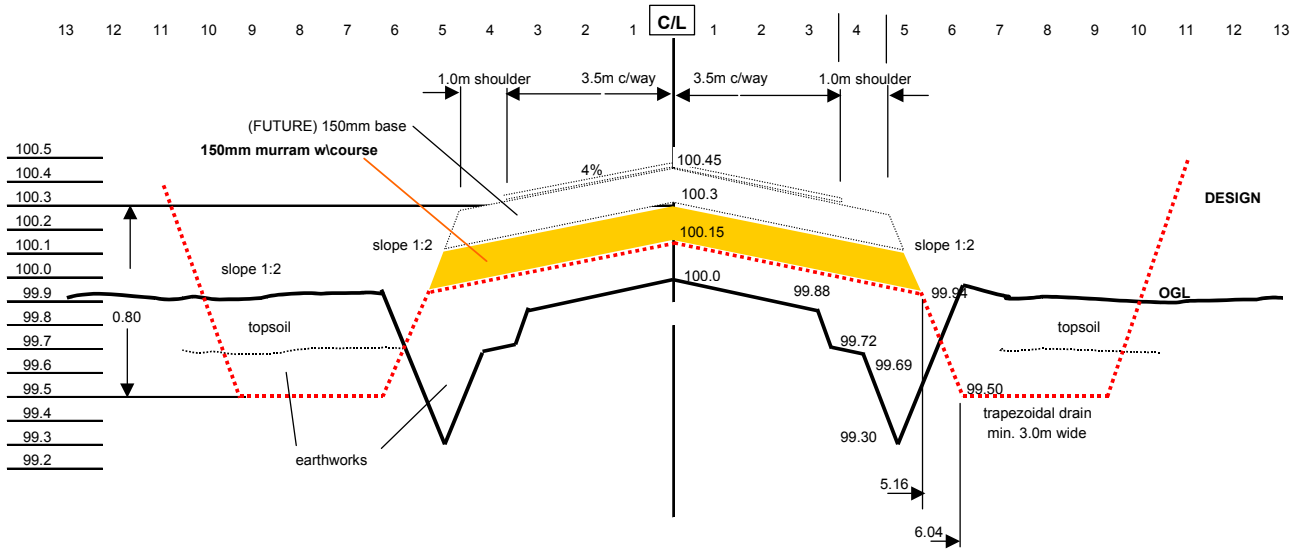
TRUNK ROADS - Section A

OVER UNTOUCHED EXISTING ROADS



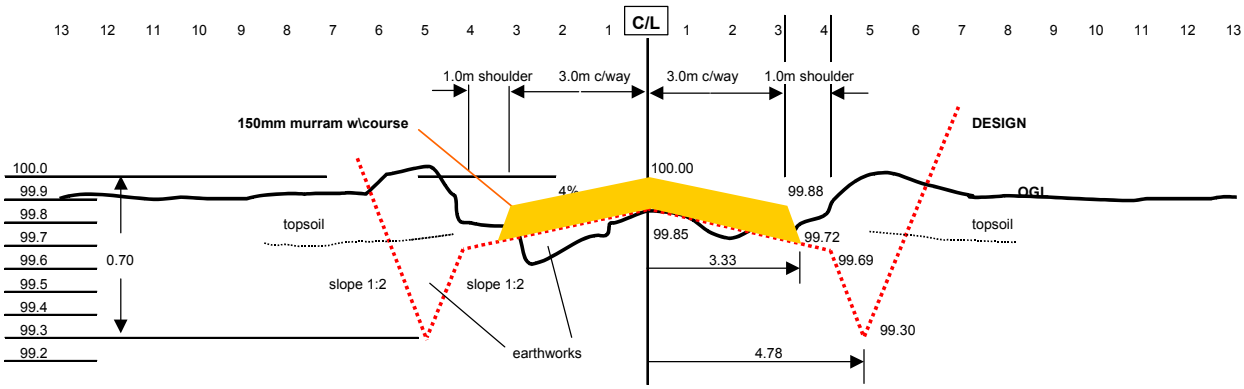
TRUNK ROADS - Section B

OVER IMPROVED EXISTING ROADS



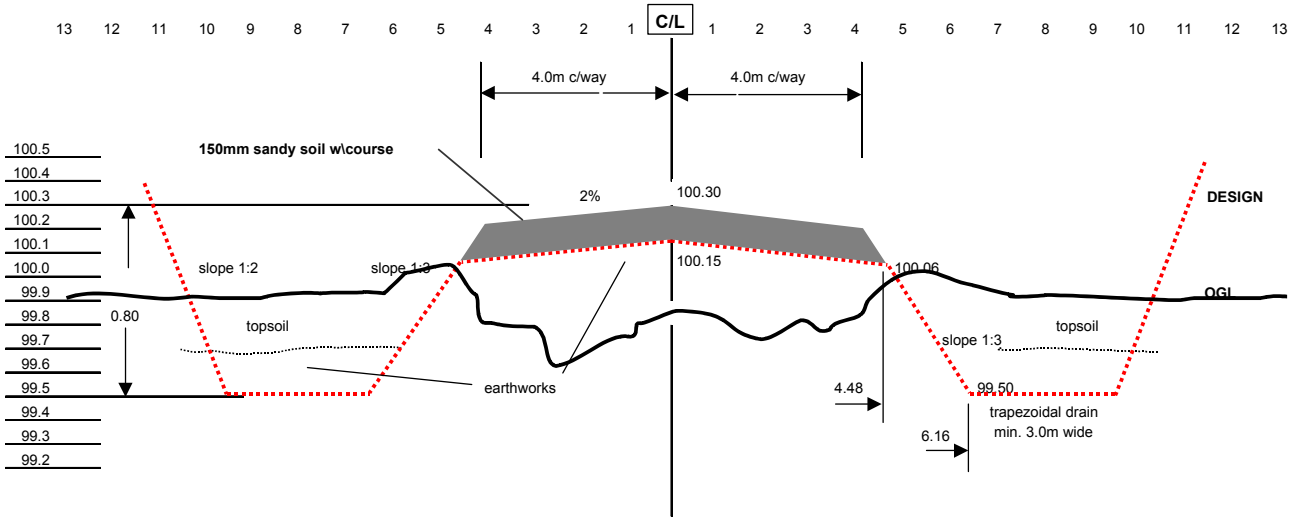
FEEDER ROADS - Section C

OVER UNTOUCHED EXISTING ROADS

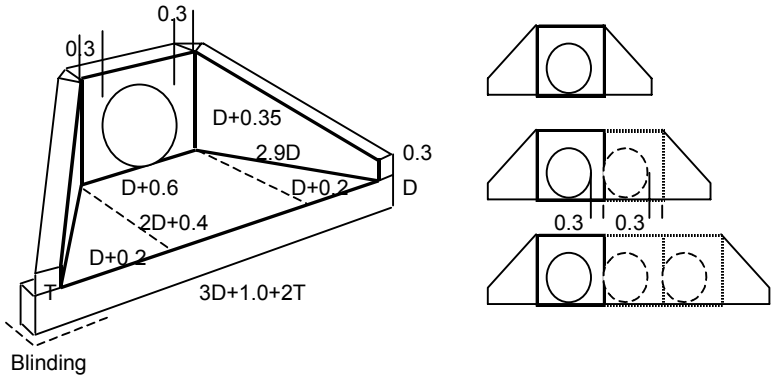


FEEDER ROADS - Section D

OVER UNTOUCHED EXISTING ROADS
THROUGH AREAS WITH NO MURRUM SOURCES



TYPICAL MASONRY END STRUCTURE



TYPICAL DRIFT CROSS SECTION (LENGTH VARIES)