PERFORMANCE AUDIT REPORT OF THE AUDITOR-GENERAL ON THE MAINTENANCE OF FEEDER ROADS

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TRANSMITTAL LETTER

Ref. No. AG.01/109/Vol.2/30

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30 September 2010

Dear Madam Speaker,

PERFORMANCE AUDIT REPORT OF THE
AUDITOR-GENERAL ON THE MAINTENANCE OF
FEEDER ROADS IN GHANA

I have the honour to submit to you for presentation to Parliament my performance audit report on the maintenance of feeder roads in Ghana in pursuance of Article 187(5) of the 1992 Constitution of the Republic of Ghana and Section 13(e) of the Audit Service Act 2000, Act 584. The Audit Service Act mandates my office to audit programmes and activities of public offices to ensure economy, efficiency and effectiveness in the use of resources.

Performance auditing was introduced into the Ghana Audit Service in 2001, as part of a capacity building project funded by the European Union. Officers who have been professionally trained in conducting performance audits to internationally recognised standards prepared this report. The team that carried out the audit comprised Ms. Roberta Dodoo, Assistant Director of Audit, (Leader), Messrs. Aikins Osei and Elliott Asiedu, both Auditors, under the supervision of Mr. Augustine. R. K. Boadu, Deputy Auditor-General.
In a rapidly changing society such as ours, there is a need for performance auditing, since the inherent incentives for improvements are limited in the public sector compared to the private one. The performance audit process results in recommendations, which initiate a process of renewal and change, leading to greater efficiency and effectiveness in government administration. Depending on the extent of coverage and complexity, it normally takes between six and twelve months to complete one performance audit, thus making it more expensive than the traditional audits. Effective performance audits can lead to better use of resources by public bodies and provide support to democratic governments by bringing about accountability, transparency, improved operations and better decision-making.

I would like to thank my staff for the preparation of this report and the staff of the Department of Feeder Roads for the assistance offered to my staff during the period of the audit.

I trust that this report would meet the approval of Parliament.

Yours sincerely,

_________________________
RICHARD Q. QUARLEY
AUDITOR-GENERAL

THE RT. HON. SPEAKER
OFFICE OF PARLIAMENT
PARLIAMENT HOUSE
ACCRA
EXECUTIVE SUMMARY

Feeder roads are roads that link rural communities and farmlands to areas of socio-economic importance. The Department of Feeder Roads (DFR) is the agency responsible for the maintenance of 41,000 kilometres of feeder roads in the country. DFR is to ensure that feeder roads in the country are made accessible all year round.

2. Government of Ghana’s investments in feeder roads in nominal terms increased from GH¢13.2 million in 2002 to GH¢73.4 million in 2007. Development Partners have also invested in the development of feeder roads in the road sector.

3. In spite of the investments, there have been public outcries on the poor state of feeder roads. Daily Graphic of Tuesday June 24, 2008 reported on the poor state of the Akyem-Anyinase junction-Pawudu feeder road. Road users on countless occasions have expressed their displeasure on the state of feeder roads in the country through the media.

4. In line with Section 13(e) of Audit Service Act 2000, Act 584, and regarding the afore mentioned issues, the Auditor-General
therefore commissioned a performance audit on maintenance of feeder roads to determine how efficient the Department of Feeder Roads is maintaining existing feeder roads.

5. The audit revealed shortcomings in the planning and management of road maintenance works and made recommendations to help address them.

**Planning road maintenance works**

6. We noted that DFR adopted the Road Prioritisation Methodology (RPM) to select road projects funded by Ghana’s Development Partners. However, this was not done in the selection and prioritisation of roads for periodic maintenance funded by the Government of Ghana. Thus many periodic maintenance projects were started simultaneously without recourse to availability of funds needed to complete them on time and within budget ceilings.

7. DFR is unable to achieve its maintenance targets despite increases in funding over the years. This has resulted in the silting of side drains, vegetation encroachment and narrowing of road widths on most feeder roads, making transportation of people and foodstuffs difficult.
8. To ensure feeder road maintenance contracts are planned properly to achieve the benefits intended we recommend management of DFR to:
   a. educate various stakeholders on the use and importance of the Road Prioritisation Methodology;
   b. put in place training and monitoring mechanisms for its regional staff to use the Maintenance Performance Budgeting System to cover 90% of all routine maintenance targets;
   c. monitor the use of funds allocated so that only completed and up to standard works are paid for; and
   d. ensure adequate monitoring and supervision of projects.

Management of road maintenance contracts
9. Our audit disclosed that, DFR delayed in delivering road maintenance contracts. The delays resulted in contractors vacating project sites and abandoning contracts without notifying DFR. Subsequently, such contracts were terminated. DFR also did not carry out daily supervision on road maintenance works. This resulted in questions being raised on the quality of works delivered by contractors.

10. To ensure efficient management and timely delivery of road maintenance contracts, we recommend to DFR to:
a. ensure that contractors provide realistic programmes of works before starting maintenance works;
b. ensure that contractors comply with all the contractual obligations;
c. ensure that contractors are also paid on time to prevent unnecessary delays;
d. build the capacity of field officers to carry out daily supervision of maintenance works; and
e. train supervisors and area engineers to use the supervision forms (S-Forms) for supervision to ensure that contracts are supervised daily to minimise or prevent substandard works by contractors.
CHAPTER ONE

1.0 INTRODUCTION

1.1 Reasons for the audit

Feeder roads link rural communities and farmlands to areas of socio-economic importance. The Department of Feeder Roads (DFR) is the agency responsible for feeder roads in Ghana. The Government of Ghana (GoG) in conjunction with its Development Partners (DPs) have made substantial investments in the feeder road infrastructure in the country. The Government of Ghana’s expenditure on feeder road maintenance in nominal terms increased from GH¢13.2 million in 2002 to GH¢73.4 million in 2007\(^1\).

2. Despite the significant investment in feeder roads, only 39% of the total 41,000 kilometres (km) of the feeder road network was in good condition, as at December 2007. This means that 25,010 km (61%) of feeder roads were in fair and poor condition\(^2\). The summary of funds and achievement from 2002 to 2007 is shown in Figure 1.


\(^2\) DFR Annual Report for 2007
3. Feeder roads in the fair and poor condition are often difficult to use especially during the rainy season. The poor state of most feeder roads leads to:
   i. foodstuffs getting stuck and rotten on farmlands;
   ii. high vehicle operating costs;
   iii. high transportation costs; and
   iv. high prices of foodstuffs in the country.

4. Additionally, some Members of Parliament ( MPs) have continuously complained of the poor state of roads in their communities and constituencies, which are important for transportation of foodstuffs to market areas.
5. Also, there have been media reports on the poor state of the roads, particularly feeder roads. The Daily Graphic of Tuesday June 24 and Monday August 8, 2008 reported on the poor state of the Akyem Anyinase Junction – Pawudu and Kade-Takrowase feeder roads respectively. These roads have deteriorated as a result of the long period of neglect in their maintenance. The condition of the road had led to drivers withdrawing their services from these routes. Farmers in these areas, which are important food baskets in the country, have expressed concern on the implication of the poor roads on food transportation in the country.
6. In line with Section 13(e) of Audit Service Act 584 of 2000, and regarding the afore-mentioned issues, the Auditor-General commissioned a performance audit at the Department of Feeder Roads with focus on maintenance of feeder roads, to determine how DFR is maintaining existing feeder roads in the country.

1.2 Purpose
7. The purpose of the audit was to examine DFR’s activities related to planning and management of feeder road maintenance (routine, periodic and minor rehabilitation) contracts. This was to enable the team assess the efficiency with which DFR delivers its maintenance activities in order to identify constraints, if any, and make recommendations for improvement.

1.3 Scope
8. The audit covered roads in four regions, namely, Eastern, Western, Brong Ahafo and Northern Regions. The length of the selected feeder roads in the four regions sum up to 22,800 km (56%) of the total feeder road network of 41,000 km. The four regions are noted for the cultivation of cocoa, plantain, pineapple, orange, yam, rice, palm, cassava and millet. The audit examined events covering the
period of 2002 to 2007. However, the audit did not cover construction of new feeder roads but was limited to routine, periodic and minor rehabilitation maintenance activities carried out on sampled existing feeder roads.

1.4 Methods and implementation

9. We interviewed 25 key personnel of DFR in the four regions. These were regional managers, contract managers, operations managers, material engineers, area engineers and laboratory technicians. These personnel were interviewed to enhance our understanding of the processes involved in feeder road maintenance and ascertain how their actions have contributed to the current situation and seek their contribution for the way forward.

10. We also interviewed five contractors to find out their capacity and role in feeder road maintenance and the constraints they faced. We further interviewed community members in five districts, to find out how regularly feeder roads in their communities are maintained and how the conditions of the feeder roads affect their economic activities. Community leaders of the villages visited were also
interviewed to find out whether their views are solicited in the selection of roads in their area for maintenance and rehabilitation.

11. The team, accompanied by engineers from DFR also inspected 25 feeder roads. Also, we reviewed annual reports, quarterly progress reports, and selected 85 out of 490 road contract files for review. This was to understand the processes and procedures regarding feeder road maintenance. The documents reviewed are listed in Appendix 1.
CHAPTER TWO

2.0 DESCRIPTIVE CHAPTER

2.1 Historical background

12. The Department of Feeder Roads (DFR) was established on 1 July 1981 with the responsibility of administering, developing and maintaining the network of rural roads. The feeder roads network increased from 24,000 km in 2000 to 41,000 km in 2007\textsuperscript{3}. DFR is now present in all the 10 regions and 90 area centres out of the 138 District Assemblies (DAs) in the country. Feeder roads are classified into two categories: access feeder roads (spurs) and connectors\textsuperscript{4}.

13. Access feeder roads (spurs) connect to only one road, and such roads normally connect a few communities to another road. These roads are relatively short in length and carry relatively low volumes of motorised traffic. Connectors, on the other hand, are roads which have their ends connected to two other roads. In addition to providing access to communities along the road, connectors form part of routes followed by motorists making long journeys that do not terminate in

\textsuperscript{3} Ministry of Transportation Statistical and Analytical report published in 2008
\textsuperscript{4} & \textsuperscript{5} New classification for feeder roads in Ghana (August 2001) page 2-3
the road corridor. The function of these roads is principally traffic-related and they carry relatively high volumes of traffic\(^5\).

14. DFR has grouped its feeder roads into three types, namely: engineered, partially engineered and un-engineered feeder roads. Engineered feeder roads are feeder roads that have been uplifted from earth surface to gravel or bitumen surface and provided with drainage structures such as culverts, ditches and drains. Partially engineered feeder roads are those that have been uplifted by providing ditches and blading of the surface. Un-engineered feeder roads are farm tracks that lead to villages but have not received any engineering intervention.

15. The engineered feeder road network is 23,700 km. The partially engineered network is 5,100 km and the un-engineered network is 12,200 km. The surface type of the feeder road network comprises 22,000 km of gravel roads, 17,600 km of earth roads and 1,300 km of bituminous surface roads. The road condition mix which shows the surface condition and roughness of feeder roads as at December 2007\(^6\) was 39% good, 29% fair and 32% poor. Pictures 1

\(^6\) DFR 2007 Annual report page 5

Performance audit report of the Auditor-General on the maintenance of feeder roads in Ghana
and 2 show engineered and partially engineered feeder roads respectively.

**Picture 1: Engineered road**

![Engineered road](source)

*Source: Audit Service field inspection (Bediako-Kasapin-Adiembra road, Brong Ahafo Region, Nov. 2008)*

**Picture 2: Partially-engineered feeder road**

![Partially-engineered feeder road](source)

*Source: Audit Service field inspection (Pong-Gaa road, Northern Region, Nov 2008)*
2.2  DFR’s goals and objectives

16. The audit examined the following objectives of DFR related to the maintenance of feeder roads:

   i. to provide improved access for the movement of people and goods to facilitate the promotion of economic activities and access to social services in rural communities;

   ii. to assist the Municipal/District Assemblies in the prioritisation and selection of roads for maintenance using the Road Prioritisation Methodology (RPM);

   iii. to consolidate and expand the Maintenance Performance Budgeting System (MPBS) to cover about 90% of all the routine maintenance works;

   iv. to undertake routine/periodic maintenance activities on the engineered network; and

   v. to find out whether the supervision system put in place by DFR ensured that work was executed as planned and to the right quality, standard and specification.
2.3 Statutory mandate

17. The Department of Feeder Roads is not established under any Legislative Instrument or Act of Parliament. It exists as an agency under the Ministry of Transportation (MoT)\(^7\) and it is responsible for maintaining feeder roads in Ghana.

2.3.1 Mission

18. The Department of Feeder Roads exists to ensure the provision of safe, all weather accessible feeder roads at optimum cost to facilitate the movement of people, goods and services and to promote socio-economic development, in particular agriculture.

2.3.2 Vision

19. The vision of DFR is to ensure that all rural communities in Ghana are provided with access at optimum cost under the decentralised feeder roads unit\(^8\).

2.3.3 Organisational structure

20. DFR is headed by a Director who is assisted by three deputy directors for planning, development and maintenance respectively at

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\(^7\) Now Ministry of Roads and Highways

\(^8\) DFR 2007 Annual report page 1-3
the Head Office in Accra. Regional managers head DFR’s regional offices. The regional managers are followed directly by the operations managers. The operations managers oversee the activities of the area engineers, while area engineers oversee the activities of district foremen. The organisational structure is provided in Appendix 3.9.

2.3.4 Staffing
21. DFR has a total of 665 staff, made up of 376 technical and 289 non-technical staff with various professional backgrounds. The establishment for technical staff is 870; however, 376 (43%) were at post during the audit, leaving 494 (57%) vacancies yet to be filled10.

2.3.5 Major activities
22. DFR carries out the following activities to achieve its goals:
   i. planning, developing, maintaining, protecting and administering of the feeder roads network
   ii. participatory approach to feeder roads planning, prioritising and selecting through the application of the Road Prioritisation Methodology (RPM)

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9 DFR organizational review (May 2007)
10 DFR 2007 Annual report page 32-34
iii. tendering and administering contracts for feeder roads, and

iv. implementing and supervising routine and periodic maintenance activities undertaken by independent contractors.

2.4 System description

23. The main activities of DFR are geared towards the provision of durable rural roads to facilitate economic activities. This is done through:

i. planning for road maintenance works

ii. selecting roads for maintenance works

iii. procuring road maintenance works, and

iv. managing and delivering road maintenance works.

The system description is shown as a flow chart in Figure 1.
A detailed flow chart of the process is provided in Appendix 4.
2.5 Funding

24. In 2007, the nominal expenditure of DFR on feeder road maintenance was GH¢73.4 million. Funding for DFR activities is from three sources namely:

i. GoG Fund – for development works, minor rehabilitation and upgrading of roads. Under this source of funding are:
   • HIPC Fund – funds from Highly Indebted Poor Countries initiative
   • Cocoa roads project – funds from COCOBOD dedicated to maintaining and upgrading roads in cocoa areas, and
   • Cashew roads project – funds dedicated to maintaining roads in cashew growing towns and villages.

ii. Ghana Road Fund (GRF) – funds from road tolls, fuel levy and vehicle registration dedicated to road maintenance, and

iii. Development Partners (Donor Funds) – funds sourced from foreign donors through agencies like DANIDA, EU, IDA, DUTCH GOVERNMENT, JICA and DFID.
25. The investment in maintenance of feeder roads from 2002 to 2007 is shown in Table 1.

Table 1: Nominal estimated budget and real expenditure on feeder roads

<table>
<thead>
<tr>
<th>Year</th>
<th>Nominal budget (GH¢ million)</th>
<th>Nominal expenditure on routine and periodic maintenance (GH¢ million)</th>
<th>Price index</th>
<th>Real budget (GH¢ million)</th>
<th>Real expenditure (GH¢ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>67.67</td>
<td>20.96</td>
<td>100</td>
<td>67.67</td>
<td>20.96</td>
</tr>
<tr>
<td>2003</td>
<td>78.74</td>
<td>22.98</td>
<td>126.7</td>
<td>62.15</td>
<td>18.14</td>
</tr>
<tr>
<td>2004</td>
<td>82.58</td>
<td>41.96</td>
<td>112.7</td>
<td>73.27</td>
<td>37.23</td>
</tr>
<tr>
<td>2005</td>
<td>84.09</td>
<td>57.16</td>
<td>115.1</td>
<td>73.06</td>
<td>49.66</td>
</tr>
<tr>
<td>2006</td>
<td>110.89</td>
<td>70.50</td>
<td>110.9</td>
<td>100</td>
<td>63.57</td>
</tr>
<tr>
<td>2007</td>
<td>111.34</td>
<td>73.37</td>
<td>110.7</td>
<td>100.57</td>
<td>66.28</td>
</tr>
<tr>
<td>Total</td>
<td>590.81</td>
<td>286.93</td>
<td></td>
<td>476.72</td>
<td>255.84</td>
</tr>
</tbody>
</table>


2.6 Current development

2.6.1 Millennium Challenge Goals

26. The Government of Ghana has signed an agreement with the Millennium Challenge Authority of the United States of America (USA) to access the Millennium Challenge Account (MCA), which is worth US$547.0 million with the aim of reducing poverty in the country. As part of the agreement, the government is to use GH
€132.1 million to improve the transport system with emphasis on road infrastructure, especially in rural Ghana where incidence of poverty is high. The expectation is an increase in the funding for the improvement in the conditions of feeder roads from 2006.

2.7 Key players and main activities
27. Key players in the maintenance of feeder roads include Ministry of Transportation (MoT), Department of Feeder Roads (DFR), Ministry of Finance and Economic Planning (MoFEP), Development Partners (DPs), Ghana Road Fund (GRF), Ministry of Food and Agriculture (MoFA), Regional Co-ordinating Councils (RCCs), District Assemblies (DAs), Consultants and Road Contractors. The activities of the key players can be found in Appendix 5.
CHAPTER THREE

3.0 FINDINGS

3.1 Introduction

28. Feeder roads in good condition are vital in ensuring access and movement of people and goods from one community to the other. Feeder road maintenance is important in protecting the roads all year round to facilitate movement of foodstuffs from rural to urban centres. We reviewed activities related to management of feeder road maintenance (routine, periodic and minor rehabilitation) works from 2002 to 2007.

29. Within the audit period, DFR has put in place various levels of maintenance interventions to address maintenance needs of feeder roads. The levels of maintenance interventions adopted by DFR include routine and periodic maintenance. These maintenance interventions have positively impacted on the conditions of feeder roads. The feeder roads in poor condition dropped from 49% to 28% within the audit period.

30. However, DFR is unable to achieve its goal of providing durable feeder roads that can be used continuously throughout the
year because of lapses in planning road maintenance works and managing road maintenance contracts.

3.2 Planning road maintenance works

31. Planning for road maintenance works involves obtaining current and accurate data on the feeder road network. DFR collects this data by conducting road inventory and road condition survey. The data collected is used to prioritise and select roads for routine maintenance, periodic maintenance and rehabilitation. DFR’s priority on feeder roads is routine maintenance, followed by periodic maintenance and rehabilitation. DFR sets targets for the year based on the condition of the feeder roads and the funding available. We identified three areas where DFR needs to improve and these concern the following:

i. RPM not used in selecting and prioritising roads for periodic maintenance and rehabilitation funded by Government of Ghana,

ii. there was low annual coverage of routine/recurrent maintenance works carried out on the 28,000 km of engineered and partially engineered feeder roads, and

iii. DFR was not able to achieve its periodic maintenance targets.
3.2.1 RPM was not used in selecting and prioritising roads for periodic maintenance and rehabilitation funded by Government of Ghana

32. Periodic maintenance works comprise upgrading, spot improvement, surfacing and rehabilitation of feeder roads. More funds are required for a kilometre of periodic maintenance works compared to a kilometre of routine maintenance works due to differences in the scope of works involved. Detailed and careful planning is therefore required under periodic maintenance especially funding, to ensure that works are completed within budget and on time. DFR’s policy on selection of roads for periodic maintenance requires DFR to assist the Municipal/District Assemblies using the Road Prioritisation Methodology (RPM). DFR initiates the RPM process by informing the District Assemblies of roads to be maintained.

33. The RPM is a planning tool that allows road users (community members, opinion leaders, and women groups), District/Municipal heads and DFR engineers to be involved in prioritising and selecting roads for periodic maintenance (rehabilitation). The methodology combines participatory consultations with road users and M/DAs, and technical appraisal by DFR. The methodology allows community members and women groups in the districts to select roads that will improve their living conditions rather than limiting the selection to the
heads of District/Municipal Assemblies. The use of the RPM also ensures that roads are tackled in order of priority with the limited funding available.

34. The communities, through area and district consultative meetings (public hearing), perform area and district rankings of their roads in order of importance, based on economic (access to markets) and social factors (access to health centres and schools). At the same time, DFR conducts a technical appraisal of the same roads using population, motor traffic per day, cost of access and rehabilitation, impassability and trafficability. A detailed flow chart of the RPM sequence is shown in Appendix 6.

35. Our review of DFR paper on RPM shows that DFR applied the RPM on periodic maintenance works (spot improvement, surfacing and minor rehabilitation) funded by some Development Partners (DPs) such as the DFID. The RPM was applied in Nanumba, Nkwanta, Kete-Krachi, Sene and Atebubu Districts in selecting roads funded by DPs. Table 2 shows how the RPM was applied in Nanumba District of the Northern Region to rank and select roads for periodic maintenance.  

11 Paper on Road Prioritisation Methodology page 11-12
Table 2: Comparison of rankings in Nanumba District

<table>
<thead>
<tr>
<th>Road</th>
<th>Prioritisation index</th>
<th>District Assembly</th>
<th>Public</th>
</tr>
</thead>
<tbody>
<tr>
<td>Binch – Kuraa</td>
<td>1</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Chamba – Ukalajab</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Bakabou – Koribiyili</td>
<td>4</td>
<td>13</td>
<td>3</td>
</tr>
<tr>
<td>Nakpayili-Kapogu</td>
<td>5</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>Juanayili – Jeji</td>
<td>6</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

Source: DFR Paper on Road Prioritisation Methodology

36. From Table 2, the Nanumba District Assembly prioritised Binch-Kuraa feeder road as the eighth to be maintained (rehabilitated). However, when public hearing was organised to rank the roads listed in Table 2 in order of importance, the same road was ranked and prioritised as first by the community to be maintained (rehabilitated). The technical appraisal (prioritisation index) also ranked Binch-Kuraa as the first prioritised road to be maintained taking into account social and economic factors as well as funds available.

37. The Development Partners funded 18% of the 34 periodic maintenance works reviewed during the audit and Government of
Ghana (GoG) funded the remaining 82%. The total cost of these projects was approximately GH¢16 million. Progress report on donor funded projects reviewed showed that, they were completed within time and budget. We noted that the donor agencies made adequate funds available to complete the prioritised list of projects. We, however, noted that this was not so with periodic road maintenance works funded by GoG. Community and District Assembly members we interviewed during the audit were not aware of the RPM and its importance.

38. We found that the RPM was not used for GoG funded contracts because DFR had not created sufficient awareness for majority of stakeholders to appreciate the importance of the RPM. Communities we visited during the audit were not aware that they have to be involved in selecting and prioritising roads in their districts for periodic maintenance. Interviews with regional, operational and field officers in the regions we visited showed that some officers knew about the RPM whilst others had no knowledge about the RPM. Regional managers acknowledged that though some officers were trained in the use of the RPM, they were no longer with the region. Also, our review of the training file at DFR’s head office showed no
evidence of training for DFR officials or stakeholders on the RPM during the audit period (2002 -2007).

39. Interviews conducted with regional managers also showed the RPM process takes a long time to come out with prioritised list of roads and hence cannot be used for emergency situations. We noted that political interference in the selection of roads for periodic maintenance made it difficult for DFR to resort to and follow the RPM for GoG funded periodic maintenance projects.

40. In effect, many GoG funded periodic maintenance contracts were started simultaneously without adequate funds to complete them which have led to delays and in some cases the abandoning of the projects.

3.2.2 There was low annual coverage of routine maintenance works carried out on engineered and partially engineered feeder roads

41. DFR’s maintenance manual requires that routine maintenance works be carried out on feeder roads at least once every year. Routine maintenance activities include patching of potholes, light grading, grass cutting, tree and bush clearing along the fringes of the road, clearing of gutters, drains and culverts and minor repairs of slopes.
DFR’s policy is to maintain all engineered and partially engineered feeder roads annually to keep them motorable.

42. We noted that the annual coverage of routine maintenance works for engineered and partially engineered feeder roads averaged 55% between 2002 and 2007. Also, the national average coverage of routine maintenance for the national average network of 35,000 km\textsuperscript{12} was 47% for the same period. The targets for routine maintenance are shown in Table 3.

Table 3: Routine maintenance targets and achievements

<table>
<thead>
<tr>
<th>Year</th>
<th>Target (km) ((x1000))</th>
<th>Achievement (km) ((x1000))</th>
<th>Total Network (km) ((x1000))</th>
<th>Achievement compared to total network</th>
<th>Achievement compared to engineered and partially engineered network (29,000km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>14</td>
<td>12</td>
<td>33</td>
<td>36%</td>
<td>41%</td>
</tr>
<tr>
<td>2003</td>
<td>17</td>
<td>17</td>
<td>33</td>
<td>52%</td>
<td>59%</td>
</tr>
<tr>
<td>2004</td>
<td>21</td>
<td>18</td>
<td>33</td>
<td>55%</td>
<td>62%</td>
</tr>
<tr>
<td>2005</td>
<td>24</td>
<td>17</td>
<td>33</td>
<td>52%</td>
<td>59%</td>
</tr>
<tr>
<td>2006</td>
<td>27</td>
<td>17</td>
<td>33</td>
<td>52%</td>
<td>59%</td>
</tr>
<tr>
<td>2007</td>
<td>27</td>
<td>14</td>
<td>42</td>
<td>33%</td>
<td>50%</td>
</tr>
<tr>
<td>Average</td>
<td>22</td>
<td>16</td>
<td></td>
<td>47%</td>
<td>55%</td>
</tr>
</tbody>
</table>


\textsuperscript{12} DFR national average network size from 2002 to 2007
43. Our analyses showed that DFR could have achieved more with routine maintenance based on funds allocated annually. In 2003 DFR’s real expenditure increased by 40.2% from GH¢ 2.51 million in 2002 to GH¢3.52 million and maintenance achieved was 17,000 km from 12,000 km in 2002, an increase of 41.7%. However, DFR’s real expenditure in 2004 was increased to GH¢3.6 million, an increment of 2.6% over the 2003 expenditure but achieved 18,000 km. DFR was expected to achieve 35,000 km of routine maintenance works in 2005 with an expenditure of GH¢ 7.3 million. Actual achievement, however, was 17,000 km, representing 48.6% of the expected achievement. Summary of the analysis is shown in Table 4.

Table 4: DFR expenditure and routine maintenance achievements from 2002 to 2007

<table>
<thead>
<tr>
<th>Year</th>
<th>Nominal expenditure on routine maintenance (GH¢ million)</th>
<th>Actual expenditure (Inflation adjusted) (GH¢ million)</th>
<th>Routine maintenance achievement (km)(x1000)</th>
<th>Expected achievement based on 2002 expenditure(^{13})</th>
<th>Cost per km achieved (GH¢/km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>2.51</td>
<td>2.51</td>
<td>12</td>
<td>12</td>
<td>209</td>
</tr>
<tr>
<td>2003</td>
<td>4.40</td>
<td>3.52</td>
<td>17</td>
<td>17</td>
<td>207</td>
</tr>
<tr>
<td>2004</td>
<td>4.51</td>
<td>3.61</td>
<td>18</td>
<td>17</td>
<td>200</td>
</tr>
<tr>
<td>2005</td>
<td>8.18</td>
<td>7.27</td>
<td>17</td>
<td>35</td>
<td>428</td>
</tr>
<tr>
<td>2006</td>
<td>6.45</td>
<td>5.53</td>
<td>17</td>
<td>26</td>
<td>325</td>
</tr>
<tr>
<td>2007</td>
<td>6.72</td>
<td>5.76</td>
<td>14</td>
<td>28</td>
<td>376</td>
</tr>
</tbody>
</table>

Source: Audit Service Analysis of 2007 MoT Review report and 2007 DFR Review report

\(^{13}\) We adopted ratio and proportion to arrive at the expected values. Year 2002 was used as the base year.
We found that DFR could not complete minimum routine maintenance works on the entire 29,000km engineered and partially engineered feeder roads annually. This is because DFR regional offices visited were not implementing fully the Maintenance Performance Budgeting System (MPBS). MPBS allows the Department to perform at least a minimum\(^{14}\) routine maintenance on all identified feeder roads with the funding available. We also noted that the cost per kilometre of maintaining feeder roads has been on the rise since 2002. From Table 4, the cost per kilometre of carrying out routine maintenance rose from \(\text{GHc}209\) in 2002 to \(\text{GHc}376\) at the end of 2007, an increase of 79.9%. The rising cost of carrying out routine maintenance also accounted for DFR’s inability to maintain all engineered and partially engineered feeder roads in the country.

DFR’s inability to achieve annual routine maintenance targets has resulted in the silting of ditches, vegetation encroachment and narrowing of road widths on feeder roads. There is general deterioration of the road surface due to erosion, making roads difficult to travel on. During the audit in November 2008, we found that all 25

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\(^{14}\) Minimum routine maintenance is cutting of vegetation and clearing ditches along feeder roads.
roads inspected had not received any form of minimum routine maintenance for the year 2008.

46. When the audit team with a DFR engineer inspected the 6.8 km Asumura – Adiepena feeder road in the Asunafo District of the Brong Ahafo Region, we found the road in a bad condition. Vegetation had encroached on the road, side drains were silted with weeds, growing in them, and the middle of the road was overgrown with weeds while sections of the road had also eroded. The width of the road at the time of the audit was 2.5 metres; a reduction of 3.5 metres from the original width of 6.0 metres. The bad state of the road made it difficult to transport foodstuffs and cash crops such as cocoa to the market at Asumura. The road is shown in Pictures 3 and 4.
Picture 3: Portion of Adiepena feeder road encroached with vegetation (November 2008)

Source: Audit Service field inspection (Eastern Region)

Picture 4: A dilapidated wooden bridge which has to be crossed to transport cocoa from Gyesewobre to Asumura (November 2008)

Source: Audit Service field inspection (Brong Ahafo Region)
47. We inspected the Owura Kesem–Asamankese feeder road awarded in August 2007 which was to be completed in February 2008. This stretch of feeder road was recorded in the progress report of Eastern Regional Office of DFR as ‘work in progress’ and the percentage completed as nil, indicating that no work had been done from 2007. The sides of the road were bushy. The over grown bushes had narrowed the road width to about 3.5 metres. An interview with the community leader of Betom confirmed that the last time the road was reshaped was in 2006. A section of the road is shown in Picture 5.

Picture 5: Status of Owura Kesem–Asamankese feeder road (October 2008)

Source: Audit Service field inspection (Eastern Region)
48. We inspected the feeder road from Betom to Kofi-Pare in the Eastern Region and found that this road was also in a bad state. The road was about 4.0 metres in width and riddled with potholes and stagnant water. The inhabitants of Kofi-Pare lamented about the bad state of the road and indicated that they found it difficult to send their produce such as cassava, plantain and sugar cane to market centres and had to sell their produce at very low prices to the few traders who managed to get to the village. A section of the road is shown in Picture 6. Picture 7 also shows a portion of the Benso-Mpohor feeder road in the Western Region that was inspected during the audit.

Picture 6: Portion of Betom to Kofi-Pare feeder road (October 2008)

Source: Audit Service field inspection (Eastern Region)
3.2.1 DFR was not able to achieve its periodic maintenance targets

49. Periodic maintenance involves activities on a section of a road at regular and long intervals in order to preserve the structural integrity of the road. These activities comprise regravelling, resealing and resurfacing of feeder roads and minor rehabilitation which involve upgrading of the entire section of feeder roads and surfacing. The scope of works carried out under periodic maintenance and rehabilitation, require more resources in the form of equipment, technical expertise, time and money compared to routine maintenance.
50. These activities require careful planning, dedicated funding and proper contract management in order to achieve set targets. Contract management involves procuring competent contractors with the capacity to execute contracts within budget ceiling and on time, effective monitoring and supervision of contracts to ensure that contractors follow contract conditions and programmes of works to avoid delays.

51. We, however, found that with the exception of 2005, when DFR exceeded its target by over 3%, DFR could not achieve all its periodic maintenance and minor rehabilitation targets from 2002 to 2007. In 2002, DFR set a periodic maintenance target of 4,000 km but achieved 3,600 km. Details of the targets and achievements are shown in Table 5 and Figure 2.

Table 5: Periodic maintenance and minor rehabilitation targets and achievements

<table>
<thead>
<tr>
<th>Year</th>
<th>Target (km)</th>
<th>Achievement (km)</th>
<th>Maintenance Deficit (km)</th>
<th>GoG actual expenditure (Inflation adjusted) (GH¢ million)</th>
<th>Development Partners actual expenditure (Inflation adjusted) (GH¢ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>4.0</td>
<td>3.6</td>
<td>0.51</td>
<td>11.02</td>
<td>7.77</td>
</tr>
<tr>
<td>2003</td>
<td>4.7</td>
<td>3.2</td>
<td>0.90</td>
<td>12.59</td>
<td>2.11</td>
</tr>
<tr>
<td>2004</td>
<td>4.3</td>
<td>3.6</td>
<td>0.80</td>
<td>23.58</td>
<td>9.57</td>
</tr>
<tr>
<td>2005</td>
<td>3.6</td>
<td>3.7</td>
<td>(0.70)</td>
<td>22.90</td>
<td>10.45</td>
</tr>
<tr>
<td>2006</td>
<td>2.8</td>
<td>1.9</td>
<td>0.60</td>
<td>41.08</td>
<td>13.26</td>
</tr>
<tr>
<td>2007</td>
<td>3.1</td>
<td>2.2</td>
<td>0.90</td>
<td>33.69</td>
<td>13.73</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>144.86</td>
<td>56.89</td>
</tr>
</tbody>
</table>

Source: Audit Service analysis of MoT statistical and analytical report (2000-2006) and MoT 2007 annual review report.
52. We also noted that DFR set targets between 2,000 km and 5,000 km and achievements were in the range of 1,000 km to 4,000 km, while DFR’s expenditure on periodic maintenance and rehabilitation from both GoG and DPs rose from GH¢18.8 million in 2002 to GH¢47.4 million in 2007. This represents an increase of approximately 152.1% over the five year period. On the other hand, the achievements dropped from 3,600 km in 2002 to 2,200 km in 2007, representing a 38.9% decline over the same period. Details of
the expenditure on periodic maintenance and rehabilitation are shown in Table 6.

### Table 6: Analysis of periodic maintenance and rehabilitation achievements and expenditure

<table>
<thead>
<tr>
<th>Year</th>
<th>Achievement (km)(x1000)</th>
<th>Maintenance deficit (km)(x1000)</th>
<th>GoG Actual expenditure (Inflation adjusted) (GH¢ million) A</th>
<th>DP actual expenditure (Inflation adjusted) (GH¢ million) B</th>
<th>Total expenditure (GH¢ million) (A+B)</th>
<th>Cost per kilometer achieved (GH¢/km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>3.6</td>
<td>0.51</td>
<td>11.02</td>
<td>7.77</td>
<td>18.79</td>
<td>5,200</td>
</tr>
<tr>
<td>2003</td>
<td>3.2</td>
<td>0.90</td>
<td>12.59</td>
<td>2.11</td>
<td>14.7</td>
<td>4,600</td>
</tr>
<tr>
<td>2004</td>
<td>3.6</td>
<td>0.80</td>
<td>23.58</td>
<td>9.57</td>
<td>33.15</td>
<td>9,200</td>
</tr>
<tr>
<td>2005</td>
<td>3.7</td>
<td>(0.70)</td>
<td>22.90</td>
<td>10.45</td>
<td>33.35</td>
<td>9,000</td>
</tr>
<tr>
<td>2006</td>
<td>1.9</td>
<td>0.60</td>
<td>41.08</td>
<td>13.26</td>
<td>54.34</td>
<td>28,600</td>
</tr>
<tr>
<td>2007</td>
<td>2.2</td>
<td>0.90</td>
<td>33.69</td>
<td>13.73</td>
<td>47.42</td>
<td>21,600</td>
</tr>
</tbody>
</table>

Source: Audit Service analysis of MoT statistical and analytical report (2000-2006) and 2007 annual review report

53. DFR was unable to achieve its periodic maintenance and rehabilitation targets because contract management in the Department was poor. DFR, however, attributed its inability to achieve periodic maintenance targets to the increasing costs of periodic maintenance activities. We noted that the cost per kilometre of periodic maintenance and rehabilitation works for 2006 had increased to about six times the amount for 2002. Details of this analysis are shown in Table 6.
54. DFR’s inability to achieve periodic maintenance targets will lead to further deterioration of the unattended roads. The unattended roads will add up to increase in the length of feeder roads in poor condition. This situation if not checked could lead to DFR requiring more resources to undertake periodic maintenance works.

### 3.3 Managing road maintenance works

55. Management of road maintenance contracts involves ensuring that contracts are completed on or before time, within budget and to the expected quality. Road contracts are executed using the standards and specifications set by DFR with the ultimate aim of ensuring that road maintenance contracts are efficiently managed. We found the following:

i. delay in majority of routine and periodic maintenance contracts.

ii. failure to carryout daily supervision of maintenance works.

#### 3.3.1 Delay in majority of routine and periodic maintenance contracts

56. Federation of International Consulting Engineers (FIDIC) general conditions of contract clause 43.1 requires that all contracts are completed on or before a specified period of time. To help manage the contract efficiently, the contractor is required to provide
programme of works. The contractor is to notify DFR in writing, circumstances beyond his control that may delay the works for extension of time to be granted.

57. We reviewed 82 sampled routine/periodic maintenance contracts and found that:

- only 26 contracts or 31.7% of the contract files reviewed had been completed within time, and
- the remaining 56 road contracts or 68.3% of the contract files were behind schedule, terminated and/or abandoned.

The breakdown of the 82 contracts reviewed is graphically presented in Figure 3.

58. Analysis of the 82 sampled projects shows that road maintenance works that should be completed in 10 to 12 months took an average of 40 months to complete. The contract sums of the sampled delayed projects stood at GH¢15.0 million, while GH¢6.4 million had been expended at the time of our audit.
59. Our review of routine maintenance progress reports of the Northern Region disclosed that, the Regional Manager had recommended for termination 34 maintenance contracts which started in January 2007 to be completed in March 2007. We also noted that the Brong Ahafo Regional Manager, in a letter dated 28 February 2007, addressed to the Director of Feeder Roads had recommended 12 maintenance contracts for termination and re-award. This was because of failure to complete the contracts within the contract period, poor performance and non-compliance with contractual provisions on the
part of contractors. Review of the correspondence file showed that DFR’s head office had ordered the termination of all maintenance contracts that had delayed for two years or more beyond the expected completion dates.

60. The delay in the delivery of routine and periodic maintenance contracts was caused by poor supervision and poor monitoring of contractors and failure by DFR to ensure that contractors produce and abide by their programme of works. According to management of DFR, delays can be attributed to delay in payment for work done which is a result of over commitment of road project. This situation for them is due to increase demand and pressure from Politicians, Members of Parliament, District Assemblies, Chiefs and Local Communities for various road projects.

61. Delay in the delivery of maintenance contracts resulted in communities not benefiting from all-weather accessible feeder roads in the time intended. Uncompleted roads delays accessibility as the community will have to go through difficulties or look for alternative routes to transport their food stuffs to market centres. Pictures 5, 6 and 7 are examples of roads which are difficult to access, especially
during the rainy season due to delay in completing feeder road maintenance works on them.

62. Delayed contracts attract extra cost due to fluctuations in the cost of construction materials. The only compensation available to Government is the application of Liquidated and Ascertained Damages (LAD) which DFR has not been consistent in applying.

63. We found that road contracts that were unduly delayed were terminated and re-awarded at extra cost. For instance, a review of the contract for the spot improvement of Jema-Dumso feeder road showed that the contract was awarded in November 2003, to be completed in November 2004 at a sum of GH¢ 193,537.17. This contract was terminated in May 2006 after 18 months delay and the uncompleted section re-awarded to another contractor at a new contract sum of GH¢ 346,505.00, an increase of 79% over the previous contract sum of GH¢193,537.17.

64. We also found that the Tolon Town roads contract which started in 2002, and was expected to be completed in 2003 delayed unduly and was terminated in 2007. The contractor had completed 31% of the works. The contract sum was GH¢293,754.11 and
GH¢98,364.45 had been paid for works executed. This road has also been repackaged and is yet to be awarded to a new contractor under a new contract though works had not started at the time of the audit.

### 3.3.2 DFR does not carry out daily supervision of maintenance works

65. Federation of International Consulting Engineers (FIDIC) general conditions of contract clause 13.1 stipulates that all materials, plant and workmanship shall be of the respective kinds described in the contract and in accordance with the engineer’s instructions. This is to ensure that materials and workmanship measure up to standard and specification outlined in the conditions of contract. This can be achieved through daily supervision of works through the use of the supervision forms (‘S’ forms). “S” forms are used to plan site visits, maintain a diary of when site visits took place and to record deficiencies observed and follow up actions taken after site visits.

66. Apart from Nkoranza District in the Brong Ahafo region where the area engineer had knowledge about the “S” forms and used them in supervising his projects, none of the area engineers in the 22 districts in the four regions visited used the “S” forms in supervising their maintenance project works. Interviews with the area engineers showed that the forms were complex, contrary to the audit team’s review of the S-forms which shows that it is easy to read and
understand. On the other hand, the regional engineers are not enforcing the use of the S forms.

67. Absence of daily supervision of works results in works done which do not meet contract specifications as shown in some case examples 1 and 2. These deficiencies were detected when completed works had to be certified for payments. Though DFR can be commended for certifying sections of completed works before payments, the danger is that they cannot carry out test on an entire stretch of a maintained feeder road to detect deficiencies. Again, certifying sections of completed works for payments cannot be wholly relied on since the audit team saw in a letter dated 30 March 2007 from Sunyani office of DFR that officials use false data to certify works completed for payment.
Picture 8: Feeder road in Kukurantumi (East Akim District of Eastern Region) overgrown with vegetation as a result of no routine maintenance (October 2008)

Source: Audit Service field inspection (Eastern Region)

Picture 9: Tolon town road is still not tarred after construction began in 2002 (November 2008)

Source: Audit Service field inspection (Northern Region)
Picture 10: Poor condition of the feeder road at Tanoboase due to lack of maintenance 
(November 2008)

Source: Audit Service field inspection (Brong Ahafo Region)

Case Example 1

The Review of Spot improvement of Adidase-Asuoyaa and Najong-Kambatiak feeder roads contract files in the Brong Ahafo and Northern regions respectively revealed that the concrete specification of 1:3:6 was not followed by the contractors and the works had to be demolished because the concrete works did not pass the strength test.

Source: Audit Service review of contract files for Brong Ahafo and Northern regions
Case Example 2

The rehabilitation of the 8km Benchema Junction – Juabeso feeder road in the Western Region was contracted for GH¢1,115,035. The works had been completed to primer seal at the time of the inspection. It was however noted that the Contractor had changed the specification of the 5Km primer seal already executed by using emulsified bitumen instead of cutback bitumen without the necessary approval from the Engineer.

Source: Audit Service analysis of MoT monitoring report for 2005

68. Also, review of contract file on spot improvement of Ntankro-Kunsu feeder road in Brong Ahafo region showed that the contractor laid a sub base of 100 mm contrary to contract specification of 150 mm. This anomaly would have been prevented if there was a DFR official on site to supervise works.

69. Again site inspection in the Western Region, showed a contractor using gravel material not specified in the contract condition and without the consent of the supervising engineer as shown in case example 3. At the time of the audit inspection, there was no DFR official on site supervising works.
Case Example 3

Site inspection at Nkroful in the Western Region, on the Telekubukazo-Anyinase (PH.I) road which was under construction, revealed that the workers were using river bed gravel material instead of granite chippings without written approval by the engineer. Picture 11 captured during the audit shows workers using the unapproved material for making concrete u-drains.

Source: Audit Service field inspection (October 2008)

Picture 11: The section of Telekubukazo-Anyinase road in the Western Region visited, where workmen were using riverbed sand to mix concrete for constructing drains without authority from the site engineer. (October 2008)

Source: Audit Service field inspection (Western Region)
70. The laxity in ensuring that daily supervision is carried out may lead to works completed not meeting required standard and specification. Furthermore extra funds and time will be required to remedy the defects detected in completed works.

3.4 Summary and conclusions
71. Planning and management of feeder road maintenance contracts in the country, is bedevilled with problems. We found that 60% of the 41,000 km of feeder roads in the country is not in good condition. The Department of Feeder Roads (DFR) is thus unable to adequately provide all weather accessible feeder roads at all times for the movement of people and goods because of the following:

a. The RPM was not used in the prioritisation and selection of Government of Ghana (GoG) funded feeder road periodic maintenance works. The RPM consultation process is not exhaustive since broad consultation with all stakeholders (Area Council and Unit Committee members, women groups and service providers) does not take place when selecting roads for periodic maintenance. DFR has not created adequate awareness of the RPM for its staff, stakeholders (area council and unit committee members, women groups and service providers) and Municipal/
District Chief Executives (M/DCEs) in communities. Hence, roads selected for maintenance do not necessarily serve the social and economic needs of communities. Thus the DFR’s objective to assist the Municipal/District Assemblies in the prioritisation and selection of roads for maintenance, using the RPM was not realised.

b. DFR was unable to achieve annual routine/recurrent maintenance targets. On the average, 55% of the 29,000 km engineered and partially network of feeder roads did not receive routine maintenance annually. This was due to DFR failure to implement fully the Maintenance Performance Budgeting System (MPBS). In effect, feeder roads have developed silted side drains, eroded surfaces, vegetation encroachment and narrowed widths. Therefore DFR’s objectives of undertaking routine and periodic maintenance on the engineered network and consolidating and expanding the MPBS to cover about 90% of all the routine maintenance works were not achieved.

c. DFR could not achieve its periodic and minor rehabilitation targets despite increasing funding. DFR
periodic maintenance achievement fell from 3,600 km in 2002 to 2,200 km in 2007. This has also contributed to the poor nature of targeted roads which were not attended to.

d. DFR’s objective of providing improved access for the movement of people and goods to facilitate the promotion of economic activities and access to social services in rural communities was also not realised. DFR delayed in delivering road maintenance works. There was an average delay of 40 months in delivering feeder road maintenance works as a result of poor supervision and monitoring. Consequently, feeder road contracts are delayed, abandoned or terminated. Government in turn incurs financial loss in terms of sunk cost on unfinished contracts which have to be re-awarded.

e. The S-forms were not used by field officers to ensure effective supervision of contracts. DFR’s priority is more on completed works to the detriment of ensuring that specifications are followed during actual maintenance works. In effect, completed works are demolished when found not to have met standards and specifications. This
has contributed to delay in completion of works, double work and costs. Here again, the DFR’s objective of ensuring that work is executed as planned and to the right quality, standards and specification was not enforced nor achieved.
CHAPTER FOUR

4.0 RECOMMENDATIONS

4.1 Improving planning of road maintenance works

4.1.1 The RPM was not used in selecting and prioritising roads for periodic maintenance contracts funded by Government of Ghana though it was used for donor funded projects

72. The Road Prioritisation Methodology (RPM) adopts both social criteria and economic values in prioritising and selecting feeder roads for maintenance in the context of a limited budget.

73. To ensure that roads selected represent the economic and social needs of communities, we recommend to management of DFR to educate District and Municipal Assemblies, MPs, communities, women’s groups, road users and the technical staff of Department of Feeder Roads on the use of the RPM as an effective planning tool for prioritising and selecting roads for maintenance. This is intended to reduce or eliminate the political interference in road maintenance activities.

4.1.2 Low coverage of routine/recurrent maintenance works carried out on engineered and partially engineered feeder roads

74. The annual coverage of routine maintenance works for engineered and partially engineered feeder roads averaged 56% between 2002 and 2006, whiles the national average for the same
period was 49%. We observed a low coverage of maintenance works on engineered and partially engineered feeder roads. The neglected feeder roads were found to have developed silted ditches, vegetation encroachment and eroded surfaces. To ensure that the Department meets its annual routine maintenance targets, we recommend to management to:

- ensure that the policy of employing the Maintenance Performance Budgeting System to cover 90% of all routine maintenance targets is achieved, and
- monitor the use of funds allocated so that only completed and up to standard works are paid for.

4.1.3 DFR was not able to achieve its periodic maintenance targets

75. To enable DFR achieve its periodic maintenance targets we recommend that Operations Managers should ensure adequate monitoring and supervision of DFR’s projects.

4.2 Efficient management of road maintenance contracts

4.2.1 DFR was not able to achieve its periodic maintenance targets

76. Out of the 82 maintenance contracts surveyed valued at GH¢15,071,851.95 which were scheduled to be completed within 10 and 12 months, 66% were found behind schedule on an average 40 months. Nine percent of the 82 contracts had been terminated and 23% had been completed within the contract period. This shows that majority of maintenance contracts were not delivered on time. To
ensure that maintenance contracts are delivered on time we recommend to management of DFR to:

- ensure that contractors provide realistic programme of works as part of the contract agreements starting maintenance work
- ensure that contractors comply with all the contractual obligations, and
- ensure that contractors are also paid on time to prevent unnecessary delays.

4.2.2 DFR does not carry out daily supervision of road maintenance works

77. DFR does not carry out daily supervision of maintenance works. This is because the system designed to ensure daily supervision is not being enforced. Some completed concrete works are therefore demolished because they are of low quality leading to delay, double work and cost. To ensure that contractors adhere to contract specifications, we recommend to management of DFR to:

- build the capacity of field officers to carry out daily supervision of maintenance works.
- train supervisors and area engineers to use the supervision forms (S-Forms) for supervision to ensure that contracts are supervised daily to minimise, if not prevent substandard works by contractors.
Appendix 1

List of documents reviewed


c. Road Prioritisation Methodology Document

d. Organisational review: key roles and responsibilities.

e. New Charter for Department of Feeder Roads


g. Ministry of Transportation Monitoring Report (2005 and 2007)


j. Ministry of Transportation Standards for Road and Bridge Works

k. New Classification Guidelines for Feeder Roads in Ghana (2001)

l. Department of Feeder Roads Routine Maintenance Training Manual

m. General Conditions of Contracts
## Appendix 2

### Projects inspected during the audit between October and November 2008

<table>
<thead>
<tr>
<th>No.</th>
<th>REGION</th>
<th>PROJECT</th>
<th>DISTRICT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>EASTERN REGION</td>
<td>REHABILITATION OF ADASAWASE – ATIWA TINI WATERFALLS</td>
<td>ATIWA</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>RESURFACING OF AKIM-SWEDRU-APOLI JUNCTION F/R</td>
<td>BIRIM SOUTH</td>
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<tr>
<td>3</td>
<td>EASTERN REGION</td>
<td>SURFACING OF SUHUM TOWN ROADS AND ASUBOI TOWN ROADS PH1</td>
<td>SUHUM</td>
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<td>RESHAPING OWURAM-BETOM-KWAMETEA AND OTHERS</td>
<td>WEST AKIM</td>
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<tr>
<td>5</td>
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<td>RESHAPING KUKURANTUMI-ASAFO AND OTHERS</td>
<td>EAST AKIM</td>
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<td>RESHAPING ANUM APAPAM-KOFI PARE AND OTHERS</td>
<td>SUHUM KROABOA</td>
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<td>AKYEM BEGORO-OBUOHO</td>
<td>FANTEAKWA</td>
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<td>8</td>
<td>WESTERN REGION</td>
<td>SURFACING OF AMANFULKUMA JN – AMANFULKUMA</td>
<td>AHANTA WEST</td>
</tr>
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Appendix 3

Organisational Structure of DFR

DFR Director

- Deputy Director Planning
- Deputy Director Development
- Deputy Director Maintenance

Regional Manager

- Chief Technician Engineer Survey
  - Technician Engineers
  - Draughtsman
- Operation Managers
  - Materials Engineer
- Area Engineers
  - District Foreman

Contracts Manager
- Quantity Surveyors
Details of system description

1. PLANNING FOR ROAD MAINTENANCE WORKS
   • Participatory consultation
   DFR in consultation with DA, road users (area council and unit committee members, women groups and service providers, nominate three candidate roads in the community. Two out of the three are selected by ranking in order of importance to the community. The ranking of the roads takes into consideration accessibility to schools, markets, health centres and main farming or fishing communities.
   
   • Technical appraisal
   DFR collects and analyses data on the existing road condition, traffic survey (motorized and non-motorized), population data for communities served by each road, social access from health and market facilities and engineering costs of improvement to arrive. The result of the analyses is used to calculate a Prioritisation Index to obtain the ranked roads taking into consideration the funds available.
2. SELECTING ROADS FOR MAINTENANCE WORKS

- **Road inventory/ Road condition survey**
  DFR collects engineering data on the selected road which includes the traffic conditions (number and types of vehicles, pedestrians, non-motorised transport and travel times of each mode) and population counts for the town. DFR analyses the data to arrive at the best design for the road.

- **Preparing estimates for road maintenance**
  The Regional Engineer gives a copy of the inventory data to the surveyor who then carries out an engineering survey of the road. The surveyor in the region carries out the design of the road in conformity with DFR design and safety standards. The draftsman produces drawings and submits to the quantity surveyor for the preparation of a priced bill of quantity in addition to a line diagram. The estimates are sent to the head office for review by the Principal Engineer and Principal Quantity Surveyor. The reviewed estimates are forwarded to the Director of DFR for approval. The director scans the estimates for completeness before giving his approval.
3. PROCUREMENT OF ROAD MAINTENANCE WORKS

- Tendering for road maintenance works
  Tendering is a systematic procedure for the economical, efficient and transparent process where expressions of interest are invited from all eligible contractors to execute road maintenance works.

- Prequalification of contractors
  Prequalification documents are prepared by the Principal Engineer and Quantity Surveyor and submitted to the Deputy Director and the Director to be appraised. The Director of DFR places an advertisement for Expressions of Interest (EOI) and issues the pre-qualification documents and dossiers to contractors. DFR receives and opens completed pre-qualification dossiers when the contractors return them DFR.

- Selection of qualified contractor
  DFR constitutes an evaluation team consisting of engineers to evaluate the completed dossiers. The evaluation team assesses the bids for responsiveness capacity to execute the works and presents an evaluation report where they recommend the lowest responsive qualified contractor to the Adjudication Team. Upon approval the director of DFR issues a letter of notification of pre-qualification to the successful contractor. Unsuccessful applicants are also notified. The winner is notified and invited to enter into an agreement. DFR prepares contract agreement, which they sign with the contractor.
4. DELIVERY OF ROAD MAINTENANCE WORKS

- Monitoring and supervision of road maintenance works
  This involves daily supervision of works on site by the site supervisors and engineers to ensure that the contractor is following standards and specifications. The engineer monitors the works to make sure that the contractor is following his work plan to avoid delays. The Supervisors also measure the works being executed to make sure that claims by the contractor are genuine and accurate.

- Quality control of road maintenance works
  DFR supervisors test and approve materials used for construction to make sure they are of the required specification. The Supervisors also test finished works to make sure that the contractor meets specified strengths and tolerances specified in the contract.
### Key players and their roles

<table>
<thead>
<tr>
<th>No.</th>
<th>KEY PLAYERS</th>
<th>ACTIVITIES</th>
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<tbody>
<tr>
<td>1</td>
<td>Ministry of Transportation</td>
<td>Policy formulation for department of feeder roads</td>
</tr>
<tr>
<td>2</td>
<td>Department of Feeder Roads</td>
<td>Administering, developing and maintaining the network of rural roads</td>
</tr>
<tr>
<td>3</td>
<td>Ministry of Finance and Economic Planning</td>
<td>Budgetary support to department in the payment of contractors</td>
</tr>
<tr>
<td>4</td>
<td>Development Partners</td>
<td>Financiers of road projects</td>
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<tr>
<td>5</td>
<td>Ministry of Food and Agriculture</td>
<td>Development projects with road components (cashew, rice, cocoa etc.)</td>
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<tr>
<td>6</td>
<td>Ghana Road Fund Secretariat</td>
<td>Payment of works for road maintenance</td>
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<tr>
<td>7</td>
<td>Regional Coordinating Councils</td>
<td>Approval of tender evaluation reports and recommendation for award</td>
</tr>
<tr>
<td>8</td>
<td>District Assemblies</td>
<td>Assist in the selection of prioritized rural roads for construction</td>
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<tr>
<td>9</td>
<td>Consultants</td>
<td>Design and supervision of roads</td>
</tr>
<tr>
<td>10</td>
<td>Road Contractors</td>
<td>Execution of road projects</td>
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</table>
Appendix 6

RPM sequence for selecting feeder roads for maintenance (rehabilitation)

Liaise with District Assemblies

Organise and meet with the following interested parties
1. Communities
2. Assemblymen
3. Unit Committees
4. Opinion Leaders
5. Stakeholders

Select candidate roads

Perform ranking of roads from areas

Perform District ranking

Carry out technical prioritization using the following parameters
1. Engineering cost surveys
2. Road condition surveys
3. Traffic volume
4. Population

Review prioritisation of roads

Did every district benefit?

Yes

No

Regional Engineer

District Assembly

Interested Parties/Stakeholders

Area councils under District Assembly

Regional Engineer

Regional Engineer

Performance audit report of the Auditor-General on maintenance of feeder roads in Ghana
Yes

Discuss roads selected with RM

Regional Engineer

Satisfactory?

No

Approve Roads selected

Regional Engineer

Inform District Assemblies of approved roads

Regional Engineer

Carry out detailed engineering studies and design

Regional Engineer
### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tr>
<td>DA</td>
<td>District Assembly</td>
</tr>
<tr>
<td>DAG</td>
<td>Deputy Auditor-General</td>
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<tr>
<td>DANIDA</td>
<td>Danish International Development Agency</td>
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<tr>
<td>DFID</td>
<td>Department for International Development</td>
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<td>DFR</td>
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<td>DP</td>
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<td>EOI</td>
<td>Expression of Interest</td>
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<td>EPA</td>
<td>Environmental Protection Agency</td>
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<td>Evaluation Report</td>
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<td>Ghana Poverty Reduction Strategy</td>
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<td>International Development Association</td>
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