

# The Shell Petroleum Development Company of Nigeria Limited

## Internal Investment Proposal

### Summary Information

|                               |                                                                                                                           |                           |                       |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------------------|
| Directorate                   | Technical Directorate                                                                                                     |                           |                       |
| Group equity interest         | 100% in SPDC, whereas SPDC is the Joint Venture (JV) operator of an unincorporated JV with a 30% interest.                |                           |                       |
| Other shareholders / partners | Nigeria National Petroleum Company (NNPC: 55%), Total: 10%, Nigeria Agip Oil Company (NAOC: 5%) in SPDC-JV                |                           |                       |
| Business or Function          | Upstream International                                                                                                    |                           |                       |
| Amount                        | USD16.25 mln Shell share (MOD), 50/50 (USD54.16 mln 100% JV)                                                              |                           |                       |
| Project                       | SPDC 2011 Flow line replacement campaign                                                                                  |                           |                       |
| Main commitments              | Activity                                                                                                                  | Shell Share (US\$mln MOD) | 100% JV (US\$mln MOD) |
|                               | East Asset team Planned flowline replacement                                                                              | 5.48                      | 18.28                 |
|                               | East Asset team Vandalised flowline replacement                                                                           | 2.70                      | 9.00                  |
|                               | West Asset team Planned flowline replacement                                                                              | 5.40                      | 17.99                 |
|                               | West Asset team Vandalised flowline replacement                                                                           | 2.34                      | 7.81                  |
|                               | SCD                                                                                                                       | 0.33                      | 1.08                  |
|                               | <b>Total</b>                                                                                                              | <b>16.25</b>              | <b>54.16</b>          |
| Source and form of financing  | This investment will be financed with JV funding and Shell share capital expenditure will be met by SPDC's own cash flow. |                           |                       |
| Summary cash flow             | Not applicable. Cost only evaluation.                                                                                     |                           |                       |
| Summary economics             | Summary economics (Shell Share)                                                                                           | NPV7% (USD mln)           | VIR7%                 |
|                               | Base case                                                                                                                 | -4.3                      | -0.27                 |

## ***Section 1: The proposal (management summary)***

This proposal covers the 2011 flow line replacement for SPDC - East and West Divisions that will assure a 2011 daily oil production of ca. 57Mbopd. A total of 216.85km of flowlines is firmly proposed for replacement during the planned period (East – 86.85km, West 130km). Also an 82km Optional scope (East – 40km, West 42km), is included to address thefts / vandalism if they occur (*See Appendix 1, table 1A/B for details*). The project scope includes procurement, coating and construction, including cathodic protection. It is also proposed to complete the Mininta – Ahia bulkline in 2011. The scope of this is the completion of construction works, with procurement of some outstanding materials. The firm scope is based mainly on a structured replacement plan, as incorporated into the Flowline Integrity Management System (FIMS) and available reserves. For the West, most of the firm scope is from the prioritised Flowlines Replacement Master list in use since the 2008 Re-entry when the campaign commenced to replace these swamp lines which were stolen / vandalised or degraded during the period of nil-activity in the West.

Flowline theft / vandalism incidents are still significantly high (*See Appendix 2 for details*), with well known adverse consequences on the environment and production. Though SPDC has always acted decisively in addressing the environmental consequences of these acts of sabotage, the recent BP Gulf of Mexico spill has intensified the spotlight on the activities of the IOCs in the Niger delta. While an effective proactive long term strategy to discourage these thefts (e.g. RtP flowlines) is still in the works, the short term strategy will still be mainly reactive. In the past few years, the increasing amount of resources put into these adhoc replacements has limited our ability to deliver on the planned statutory scope. This 2011 Investment Proposal addresses this challenge and for the first time, we will seek to secure a firm budget for the replacement of vandalised and stolen flowlines.

In summary, this proposal addresses the following

1. Replacement of aged and corroded flowline based on data from the Flowline Integrity Management System (FIMS)
  - a. Proactive replacement of aged lines that are in service in order to prevent spills
  - b. Replacement of corroded lines in order to deliver new opportunities based on updated WRM model
2. Replacement of vandalised and stolen flowlines

For the replacement of the corroded flowlines, priority was given to producing lines with higher impact on the overall Production output of the asset teams.

For the replacement of Stolen or vandalised lines however, we have allowed for an Optional scope based on historical trend of vandalism in the past 3 years, taking into consideration the effectiveness of current efforts at flowline ROW surveillance.

In order to assure on the integrity and longevity, the new lines or replaced sections will be treated with the standard 3-layer PE coating and cathodically protected to minimise corrosion. Post installation surveillance monitoring and data gathering activities would continue to help improve the FIMS and thus future analysis, projections and proactive response time.

Above plans notwithstanding, Asset Operations and Security support teams are exploring ways to strengthen existing surveillance efforts as well as employ other proactive efforts to ensure a downward trend in flowline thefts / vandalism.

### Expenditure Phasing (Shell Share - \$mln)

| Description          | 2011(Shell Share) | 100% JV      |
|----------------------|-------------------|--------------|
| Flowline replacement | 15.92             | 53.08        |
| SCD                  | 0.33              | 1.08         |
| <b>Total</b>         | <b>16.25</b>      | <b>54.16</b> |

The details of the location and flowlines to be replaced are presented in Appendix 1: tables 1a and 1b. Conduit List Planned/Unplanned for Replacement in 2010 including their execution status is shown in Appendix 3.

### Section 2: Value proposition and strategic and financial context

Specifically, this project will ensure the integrity of about 80nos oil and gas flow lines being proposed for replacement, thus adding to production ca 57Mbopd of oil in both East and West.

Replacing these flow lines will minimise the risk of leakages and spills due to flowline integrity issues, and in the case of vandalism, minimise unplanned deferments, thereby enhancing SPDC's reputation as a responsible corporate citizen and reducing her potential legal liability exposure. These benefits will facilitate the sustenance of SPDC's License to operate (LTO) and continued production from SPDC assets in order to meet its production targets.

### Summary Economics

The FID economics for the Flow lines replacement project for East and West was evaluated as a cost only Oil and Gas (OGI) infrastructure project using the 50/50 project level III cost estimate.

Sensitivities were carried out on the project cost to show the impact of low and high CAPEX, and 1.5% cost mark up due to BVA (benchmarked verified and approved) issues. The details are shown in table 2 below.

**Table 1: Economics Grid (Shell share)**

| PV Reference Date: 1/7/2011             | NPV<br>(S/S \$ mln) |      | VIR   | RTEP | UTC<br>(RT \$/boe) |    | Payout-<br>Time<br>(RT) | Maximum Exposure<br>(RT) |
|-----------------------------------------|---------------------|------|-------|------|--------------------|----|-------------------------|--------------------------|
| Cash flow forward from: 1/1/2011        | 0%                  | 7%   | 7%    | %    | 0%                 | 7% | yyyy                    | mln                      |
| <b>Base Case</b>                        |                     |      |       |      |                    |    |                         |                          |
| RV-RT (\$70/bbl RT11)*                  | -2.7                | -4.2 | -0.26 | NA   | NA                 | NA | NA                      | US\$ 12.7 mln (2011)     |
| <b>Sensitivities (on base case)</b>     |                     |      |       |      |                    |    |                         |                          |
| Low Capex (-10%)                        |                     | -3.8 | -0.26 |      |                    |    |                         | US\$ 11.4 mln (2011)     |
| High Capex (+15%)                       |                     | -4.8 | -0.26 |      |                    |    |                         | US\$ 14.5 mln (2011)     |
| 1.5% FID cost mark up due to BVA issues |                     | -5.0 | -0.30 |      |                    |    |                         |                          |

\*Note: Same result applies to SV-RT and HV-RT since there is no revenue stream.

**Table 2: Key Project Parameter Data (Shell Share)**

|                   | Unit     | Bus Plan<br>BP10 | Low  | Mid    | High | Comments                                                 |
|-------------------|----------|------------------|------|--------|------|----------------------------------------------------------|
| Capex (MOD)       | US\$ mln | 15.9             | 14.3 | 15.9   | 18.3 | Provided in BP10. Low & high based on Capex sensitivity. |
| Opex (MOD)        | US\$ mln | 0.3              | 0.3  | 0.3    | 0.4  | SCD                                                      |
| Production volume | Mmboe    | NA               | NA   | NA     | NA   |                                                          |
| Commission Date   | mm/yyyy  | Dec-11           | NA   | Dec-11 | NA   |                                                          |

## **Economics Assumptions**

- Full project 50/50 cost estimates treated as CAPEX
- 10% of total project RT CAPEX treated as abandonment cost.
- Project specific SCD Opex applied and treated as Opex.
- NDDC levy 3% of total expenditure.

## ***Section 3: Risks, opportunities and alternatives***

### **Alternative Considered**

- Do nothing: This implies leaving the flowlines as is. This option however, will expose the company to the risk of possible spills and production losses resulting from integrity related leakages.
- Shut off High-risk flowlines; this is a commercially unviable option especially for high producers and will impact on our production system capacity and stability.

### **Opportunity**

- Opportunity exists to achieve the following:
- Reinstate integrity of flowlines.
- Ensure continuity in meeting statutory obligations on integrity of the oil and gas flowlines.
- Avert possible flowline failures (rupture)
- Assure continued oil and gas production.
- Increase Production capacity by laying flowlines to new opportunities; contingent upon reducing impact of unplanned work on budget

## **Risks**

The principal risks associated with this project and key mitigation measures are, but not limited to:

| <b>Risks Category</b>   | <b>Risk Description</b>                                      | <b>Mitigation/Remedial Effort</b>                                                                                                                                                                                                                                                                                   |
|-------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Commercial              | Delays Internal & External approvals                         | Delays in securing internal and joint venture partners' approval could delay the project. Prompt, aggressive and continuous engagement of JV partners will be ensured throughout the project execution.                                                                                                             |
|                         | Delays in procurement of materials                           | The engineering team will finalize discussion with SCM on the procurement of standard hook up items as stock items.                                                                                                                                                                                                 |
| Technical / Operational | Limited Indigenous vendor with adequate capacity             | The technical evaluation criteria will be robust and stringent enough to screen out incompetent vendors<br>Provision of experienced personnel for the project and rigorous supervision of contractor using all available project management tools.                                                                  |
|                         | Unnecessary replacement of good lines.                       | The flowlines to be replaced is selected by obtaining and analysing the relevant fluid and static data, UT measurements, followed by a review leak history in last 5years and failure investigation. The result of this checks are kept and updated regularly in the flowlines information management system (FIMS) |
| HSE Risk                | HSE hazards and Interface problems with existing habitation. | Detailed job hazard analysis prior to commencement of work. Proper supervision                                                                                                                                                                                                                                      |

|                           |                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           | Pollution of environment due to flowline leaks as a result of poor asset, which can lead to loss of ISO14001 certification, and consequently loss of production (LTO) if deteriorated flowlines are not inspected and maintained. | Flowline Integrity Management System (FIMS) has been put in place for better prediction of flowline integrity to eliminate leaks.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Managing community issues | Potential delay due to pressure to use labour from communities.                                                                                                                                                                   | <ul style="list-style-type: none"> <li>• Community will be proactively engaged</li> <li>• Terms of agreement during FTO engagements (labour employment, sub contracting &amp; community support).</li> <li>• FTO will be secured via SPDC community relations officers for the various communities.</li> <li>• Vendors to employ community workers to execute non-technical scopes of the projects.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Security                  | Threat to Personnel & Assets. Disruptions to commencement/execution/completion of flowline replacement activities.                                                                                                                | <ul style="list-style-type: none"> <li>• Front-end planning of flowline replacement activities includes development of activity-specific security plans, in consonance with relevant Asset security plans.</li> <li>• SPDC Security Risk Exposure Matrix (SREM) will be routinely applied for evaluation of real-time risk on flowline replacement projects.</li> <li>• Use of government security forces (Joint Task Force – JTF) to provide protection for operational sites.</li> <li>• Structured approach to community entry for flowline activities, in close collaboration with SPDC Sustainable Community Development (SCD) Team, to avoid unnecessary tensions.</li> <li>• Use of information provided to the asset teams via the Integrated Pipeline Systems Surveillance (IPSS) contracts.</li> <li>• Own security arrangements by installation contractors subjected to review / acceptance by SPDC security dept prior to implementation.</li> </ul> |

#### ***Section 4: Corporate structure, and governance***

The existing corporate structure and arrangements of SPDC-JV with SPDC as operator will be used as the vehicle for the investment and operations. The project assurance model of the ORP-lite would be implemented.

#### ***Section 5: Functional Support and consistency with Group and Business Standards***

Conducting our business in a safe and responsible manner is the bedrock upon which SPDC policies and practices are founded. Increasing and sustaining production is the primary commercial aspirations of the company. The safe and efficient execution of this project represents technical directorate's contribution to this overarching goal. Support from other functional teams will also be secured to ensure a seamless project execution.

SPDC HSE and SDCR policies will be strictly adhered to with a view to minimise the risk of accident and disruptions to work programme. The 3 Golden rules and 12 Life saving rules will be continually emphasised as an essential step in attaining GOAL ZERO.

In addition, a project-specific HSE plan incorporating all the potential hazards relating to these projects will be put in place.

Contractor's HSE plan will be reviewed to ensure it adequately addresses all possible hazards of the project and communicated to contractor staff in kick-off meetings, daily tool box meetings and site inspections.

### **Social Performance Management**

Freedom to operate (FTO) will be secured from all affected communities. For communities covered by operational GMoU's this will be through their respective Cluster Development Board. For those without operational GMoU's individual FTO's will be through the community representatives.

The key benefits that will be offered are: employment opportunities, community support, sub-contracting to community vendors and associated community content initiatives. To manage social performance (SP) in the project, 2% of the total project cost will be used for the engagements and community support. The Asset/SDCR teams will manage social performance in the project.

### ***Section 6: Project management, monitoring and review***

A project Engineer will be dedicated to this project to monitor progress on daily and weekly basis.

Project site representatives will also be employed for this project to ensure that vendors' carry out the scope of work as stated in the contract document and that good quality project is delivered to the asset teams.

Post-investment review for this project will be included in the overall scope.

### ***Section 7: Budget provision***

There is a budget provision for the proposed commitments in the 2011 business plan. With proper project management, the financial commitments of these projects will not exceed the expenditure limits.

### ***Section 8: Group financial reporting impact***

The financial impact of this proposal on Shell Group financial is as outlined in the table below:

| US\$ Million              | 2011         | 2012        | 2013        | 2014        | 2015        | Post 2015   |
|---------------------------|--------------|-------------|-------------|-------------|-------------|-------------|
| <b>Total Commitment</b>   | <b>16.25</b> | <b>0.00</b> | <b>0.00</b> | <b>0.00</b> | <b>0.00</b> | <b>0.00</b> |
| <b>Cash Flow</b>          |              |             |             |             |             |             |
| SCD Expenditure           | 0.33         |             |             |             |             |             |
| Pre-FID Expenditure       |              |             |             |             |             |             |
| Capital Expenditure       | 15.92        |             |             |             |             |             |
| Operating Expenditure     | 0.48         |             |             |             |             |             |
| Cash flow From Operations | 1.45         | 3.16        |             |             |             |             |
| Cash Surplus/(Deficit)    | (14.47)      | 3.16        |             |             |             |             |
| <b>Profit and Loss</b>    |              |             |             |             |             |             |
| NIBIAT +/-                | 0.70         |             |             |             |             |             |
| <b>Balance Sheet</b>      |              |             |             |             |             |             |
| Avg Capital Employed      | 7.58         | 13.59       | 12.01       | 12.01       | 12.01       | 12.01       |

### ***Section 9: Disclosure***

Media Relations Protocol, Investor Relations Protocol and Market Abuse Directive Guidelines will follow approved SPDC procedures.

### ***Section 10: Financing***

The project will be funded from SPDC's JV budgetary provision for 2011 activities to an amount not exceeding USD54.16 Mln.

### ***Section 11: Taxation***

The flowline replacement project is taxed with oil fiscal regime. Capital expenditure is tax deductible at the statutory rate of 85% under the Petroleum Profit Tax Act 2004. Fiscal depreciation is given over 5 year's straight line with 1% retention in the fifth year. In addition, a one off investment allowance of 5% is claimable on the capital expenditure.

### ***Section 12: Key Parameters***

Consideration is required of the soundness of the expenditure commitments for: The 2011 SPDC flowline replacement for the sum of US\$16.25 mln (Shell share).

### ***Section 13: Signatures***

This Proposal is submitted to UIG Directors for approval.

Supported by:

For Business approval:

.....

**Bernard Bos**

**FUI/F**

**Date ....../....../....**

.....

**Lismont Bart**

**UIG/T**

**Date ....../....../....**

***Initiator:***     *Ojo Afolabi*

*Mr Project Manager (UIG/T/PA)*

*Date .../....../....*

## **Appendix 1:**

For the East, the 40 no flowlines (total length ca. 86.85km) proposed for replacements in 2011 have been selected on two key basis:

**Swamp:** Completion of swamp flowstations re-entry scope, some of which could not be completed in 2011.

**Land:** selected and prioritised from FIMS list and are aligned with 2011 production forecast. Asides that their replacement is statutory, their Net Oil potential (bopd) and Reserves volume (MMbbls) further justify their selection for full replacement in 2010 (See Appendix 1, table 1A for details).

For the West, most of the firm scope is from the prioritised Flowlines Replacement Master list in use since the 2008 Re-entry when the campaign commenced to replace all swamp lines vandalised / stolen / degraded during the period of nil-activity in the West. Total length of flowlines to be replaced is 130km.

Opportunities that come up within the year, but not captured in the lists below will be ranked and if executed, a list of revisions and actual work done will be captured in the next IP.

**Table 1A showing Conduit List Planned for Replacement in 2011 (East)**

| S/NO | Field             | Tag number  | Fluid | LINE SIZE (INS) | LINE LENGTH (KM) | Net Pot. (bpd) | Rem Res (mmbbl) | estimated Conduit Life(yrs) | Cost (\$'000 ) |
|------|-------------------|-------------|-------|-----------------|------------------|----------------|-----------------|-----------------------------|----------------|
| 1    | CAWTHORNE CHANNEL | CAWC045T    | oil   | 6               | 1.36             | 3046.8         | 11.32           | 10.17213828                 | 414.80         |
| 2    | CAWTHORNE CHANNEL | CAWC043S    | oil   | 4               | 1.70             | 2340.4         | 20.97           | 24.53116177                 | 405.77         |
| 3    | AWOBA             | AWOB003L    | oil   | 4               | 2.00             | 1190.6         | 1.3             | 2.98942216                  | 477.38         |
| 4    | OBIGBO NORTH      | OBN002T     | oil   | 4               | 0.42             | 1120.4         | 3.34            | 8.161747259                 | 54.05          |
| 5    | BONNY NORTH       | BONN010L    | oil   | 4               | 0.98             | 1058.6         | 3.41            | 8.819262407                 | 233.92         |
| 6    | OGUTA             | OGUTA W/26T | oil   | 4               | 2.90             | 1044           | 0.17            | 0.445818615                 | 373.20         |
| 7    | CAWTHORNE CHANNEL | CAWC004T    | oil   | 4               | 0.24             | 901.03         | 2.43            | 7.383746837                 | 57.29          |
| 8    | EKULAMA           | EKUL038S    | oil   | 4               | 2.78             | 882.33         | 4.58            | 14.21164032                 | 663.56         |
| 9    | AWOBA             | AWOB006L    | oil   | 4               | 3.50             | 873.61         | 1.37            | 4.293512641                 | 835.42         |
| 10   | EKULAMA           | EKUL036S    | oil   | 4               | 1.20             | 772.69         | 3.6             | 12.75577895                 | 286.43         |
| 11   | EKULAMA           | EKUL036L    | oil   | 4               | 1.20             | 770.88         | 5.15            | 18.29069577                 | 286.43         |
| 12   | IMO RIVER         | IMOR023L    | oil   | 4               | 0.66             | 753.26         | 1.29            | 4.688723038                 | 84.94          |
| 13   | OGUTA             | OGUTA W13T  | oil   | 4               | 4.98             | 752            | 0.09            | 0.327668312                 | 640.88         |
| 14   | AGBADA            | AGBD061L    | oil   | 4               | 4.65             | 706.66         | 1.55            | 6.005248238                 | 598.41         |
| 15   | AWOBA             | AWOB005L    | oil   | 4               | 2.20             | 558.3          | 0.56            | 2.746187428                 | 525.12         |
| 16   | CAWTHORNE CHANNEL | CAWC037L    | oil   | 4               | 1.33             | 553.53         | 1.05            | 5.193473392                 | 317.46         |
| 17   | BONNY NORTH       | BONN018S    | oil   | 4               | 0.85             | 535.1          | 2.28            | 11.66566958                 | 202.89         |
| 18   | CAWTHORNE CHANNEL | CAWC021S    | oil   | 4               | 1.78             | 514.57         | 0.75            | 3.990493209                 | 424.87         |
| 19   | EKULAMA           | EKUL038L    | oil   | 4               | 2.78             | 467.51         | 3.82            | 22.370837                   | 663.56         |
| 20   | EKULAMA           | EKUL021L    | oil   | 4               | 3.07             | 459.59         | 1.55            | 9.233596728                 | 732.78         |
| 21   | UMUECHEM          | UMUE012L    | oil   | 3               | 0.62             | 413.35         | 0.76            | 5.033909757                 | 79.79          |
| 22   | AGBADA            | AGBD033L    | oil   | 4               | 5.57             | 405.87         | 1.18            | 7.959849037                 | 716.80         |
| 23   | CAWTHORNE CHANNEL | CAWC021L    | oil   | 4               | 1.77             | 384.9          | 0.49            | 3.485442675                 | 422.48         |
| 24   | OGUTA             | OGUTA W12T  | oil   | 6               | 4.32             | 372            | 0.782           | 5.755374504                 | 885.60         |



|    |                   |               |     |                    |       |        |       |             |                 |
|----|-------------------|---------------|-----|--------------------|-------|--------|-------|-------------|-----------------|
| 25 | IMO RIVER         | IMOR036L      | oil | 4                  | 0.89  | 359.97 | 0.65  | 4.943753678 | 114.53          |
| 26 | AWOBA             | AWOB009S      | oil | 4                  | 3.20  | 506    | 1.17  | 6.330603599 | 763.81          |
| 27 | OGUTA             | OGUTFLO26T    | oil | 4                  | 5.57  | 381    | 1.54  | 11.06637851 | 716.80          |
| 28 | OGUTA             | OGUTFLO13T    | oil | 4                  | 4.98  | 719    | 0.563 | 2.143824747 | 640.88          |
| 29 | BONNY NORTH       | BONNFLO12S    | oil | 4                  | 0.01  | 263    | 0.62  | 6.454249004 | 1.43            |
| 30 | CAWTHORNE CHANNEL | CAWC018T      | oil | 4                  | 2.00  | 442    | 0.24  | 1.486615812 | 477.38          |
| 31 | BELEMA            | BELEFLO06L    | oil | 4                  | 1.96  | 147    | 0.73  | 13.59612976 | 467.83          |
| 32 | BELEMA            | BELEFLO10L    | oil | 4                  | 2.95  | 618    | 1.15  | 5.094706157 | 704.14          |
| 33 | NEMBE CREEK       | NEMCFLO64TA/B | oil | 4                  | 3.20  | 2240   | 2.39  | 2.921189009 | 763.81          |
| 34 | KRAKRAMA          | KRAKFLO04T    | oil | 4                  | 1.04  | 115    | 0.22  | 5.237627593 | 248.24          |
| 35 | KRAKRAMA          | KRAKFLO04S    | oil | 4                  | 1.04  | 303    | 0.36  | 3.252892024 | 248.24          |
| 36 | KRAKRAMA          | KRAKFLO08L    | oil | 4                  | 1.37  | 614    | 0.03  | 0.133771211 | 327.01          |
| 37 | KRAKRAMA          | KRAKFLO08S    | oil | 4                  | 1.04  | 439    | 0.58  | 3.617206051 | 248.24          |
| 38 | KRAKRAMA          | KRAKFLO13L    | oil | 4                  | 3.40  | 570    | 1.82  | 8.741909531 | 811.55          |
| 39 | KRAKRAMA          | KRAKFLO14L    | oil | 4                  | 0.64  | 938    | 2.44  | 7.121914628 | 152.76          |
| 40 | KRAKRAMA          | KRAKFLO16S    | oil | 4                  | 0.70  | 510    | 0.37  | 1.986283904 | 167.08          |
| 41 | AHIA              | BULKLINE-3    | oil | 10                 | 14.50 | 5558.9 |       | 0           | 1042.49         |
|    |                   |               |     | <b>GRAND TOTAL</b> |       |        |       |             | <b>18280.00</b> |

**Table 1B showing Conduit List Planned for Replacement in 2011 (West)**

| S/NO | Field    | Tag number | Fluid | LINE SIZE (INS) | LINE LENGTH (KM) | Net Potential (bpd) | Rem Res (mmbbl) | Cost (\$'000 ) |
|------|----------|------------|-------|-----------------|------------------|---------------------|-----------------|----------------|
| 1    | EVWRENI  | EVWRW1L    | Oil   | 4               | 0.5              | 582                 | 0.26            | 55.00          |
| 2    | OLOMORO  | OLOM006L   | Oil   | 4               | 0.73             | 300                 | 0.36            | 80.30          |
| 3    | OLOMORO  | OLOM006S   | Oil   | 4               | 0.73             | 1200                | 1.30            | 80.30          |
| 4    | OLOMORO  | OLOM036S   | Oil   | 4               | 1.20             | 210                 | 0.76            | 132.00         |
| 5    | OLOMORO  | OLOM017S   | Oil   | 4               | 1.50             | 1238                |                 | 165.00         |
| 6    | KOKORI   | KOKRW001S  | Oil   | 6               | 0.5              | 746                 | 0.52            | 55.00          |
| 7    | KOKORI   | KOKRW001L  | Oil   | 6               | 0.5              | 351                 | 0.52            | 55.00          |
| 8    | BENISEDE | BEN9L      | Oil   | 4               | 1.70             | 574                 | 0.096           | 238.00         |
| 9    | BENISEDE | BEN19L     | Oil   | 4               | 2.60             | 261                 |                 | 364.00         |
| 10   | OPUKUSHI | OPUK10L    | Oil   | 4               | 1.70             | 290                 |                 | 238.00         |
| 11   | OPUKUSHI | OPUK16T    | Oil   | 4               | 1.40             | 776                 |                 | 196.00         |
| 12   | OPUKUSHI | OPUK27T    | Oil   | 6               | 4.00             | 627                 |                 | 560.00         |
| 13   | OPUKUSHI | OPUK30L    | Oil   | 4               | 6.00             | 200                 |                 | 810.00         |
| 14   | OPUKUSHI | OPUK30S    | Oil   | 4               | 6.00             | 600                 | 1.498           | 810.00         |
| 15   | OPUKUSHI | OPUK38T    | Oil   | 4               | 2.50             | 664                 | 0.94            | 350.00         |
| 16   | OPUKUSHI | SIEB1T     | Oil   | 6               | 2.10             | 1100                | 1.42            | 294.00         |
| 17   | OPUKUSHI | SIEB2L     | Oil   | 6               | 1.20             | 1000                | 0.958           | 168.00         |
| 18   | OPUKUSHI | SIEB2S     | Oil   | 6               | 1.20             | 900                 | 0.735           | 168.00         |
| 19   | OPUKUSHI | SIEB3L     | Oil   | 6               | 0.20             | 900                 | 0.836           | 28.00          |
| 20   | OPUKUSHI | SIEB3S     | Oil   | 6               | 0.20             | 1500                | 0.44            | 28.00          |
| 21   | OPUKUSHI | BULK       | Oil   | 6               | 30.00            | Bulk Line           |                 | 4200.00        |
| 22   | OPUKUSHI | AJAT1L     | Oil   | 6               | 13.00            | 1400                | 1.92            | 1820.00        |
| 23   | OGBOTOB  | OGBO1T     | Oil   | 4               | 1.40             | 734                 | 1.89            | 196.00         |

|    |          |          |     |              |               |                  |      |                  |
|----|----------|----------|-----|--------------|---------------|------------------|------|------------------|
| 24 | OGBOTOBO | OGB05T   | Oil | 6            | 5.40          | 818              | 1.24 | 756.00           |
| 25 | OGBOTOBO | OGB08T   | Oil | 6            | 2.55          | 234              | 0.40 | 357.00           |
| 26 | OGBOTOBO | OGB09T   | Oil | 6            | 4.00          | 620              | 1.61 | 560.00           |
| 27 | OGBOTOBO | OGB010T  | Oil | 6            | 4.50          | 708              | 0.84 | 607.50           |
| 28 | OGBOTOBO | OGB011T  | Oil | 6            | 4.50          | 504              | 0.40 | 607.50           |
| 29 | OGBOTOBO | OGB012T  | Oil | 6            | 4.00          | 679              | 0.19 | 555.00           |
| 30 | OGBOTOBO | OGB013T  | Oil | 6            | 4.00          | 2830             | 3.61 | 555.00           |
| 31 | OGBOTOBO | OGB014T  | Oil | 6            | 2.50          | 960              | 1.76 | 350.00           |
| 32 | OTUMARA  | OTUM009T | Gas | 4            | 1.20          | 938              |      | 168.00           |
| 33 | OTUMARA  | OTUM011T | Gas | 4            | 2.00          | 445              |      | 280.00           |
| 35 | OTUMARA  | OTUM044S | Gas | 4            | 7.0           | 350              |      | 945.00           |
| 36 | OTUMARA  | OTUM051G | Gas | 4            | 3.20          | 798              |      | 448.00           |
| 37 | OTUMARA  | OTUM057T | Gas | 4            | 3.20          | 400              |      | 448.00           |
| 38 | OTUMARA  | OTUM007S | Gas | 4            | 1.90          | 300              |      | 266.00           |
|    |          |          |     | <b>TOTAL</b> | <b>130.81</b> | <b>26,737.00</b> |      | <b>17,993.60</b> |

## Appendix 2

### Data on Vandalised/Stolen flowlines

#### SPDC - EAST

|                    | PLANNED REPLACEMENTS     |             |                         |               | VANDALISED/STOLEN LINES REPLACED                    |               |                  |              |
|--------------------|--------------------------|-------------|-------------------------|---------------|-----------------------------------------------------|---------------|------------------|--------------|
| Year               | Planned Full Replacement |             | Actual Full Replacement |               | Sectional Replacement                               |               | Full Replacement |              |
|                    | No. of lines             | Length (Km) | No. of lines            | Length (Km)   | No. of lines                                        | Length (Km)   | No. of lines     | Length (Km)  |
| <b>2008</b>        | n/a                      |             | 16                      | <b>33.303</b> | 12                                                  | <b>N/A</b>    | 12               | <b>36.91</b> |
| <b>2009</b>        | 27                       | 67.881      | 5                       | <b>12.36</b>  | 9                                                   | <b>10.3</b>   | 8                | <b>19.90</b> |
| <b>Q1-Q3, 2010</b> | 39                       | 97.69       | 7                       | <b>19.83</b>  | 33                                                  | <b>28.728</b> | 12               | <b>34.76</b> |
|                    |                          |             |                         |               | Total Length(km) of vandalised lines in Q1-Q3, 2010 |               |                  | <b>63.59</b> |

#### SPDC - WEST

|             | PLANNED REPLACEMENTS |             | VANDALISED /STOLEN LINES REPLACED |             |
|-------------|----------------------|-------------|-----------------------------------|-------------|
| Year        | No. of lines         | Length (Km) | No. of lines                      | Length (Km) |
| <b>2008</b> | <b>0</b>             | <b>0</b>    | <b>0</b>                          | <b>0</b>    |
| <b>2009</b> | <b>25</b>            | <b>68</b>   | <b>48</b>                         | <b>52</b>   |
| <b>2010</b> | <b>9</b>             | <b>85</b>   | <b>76</b>                         | <b>35</b>   |
|             |                      |             |                                   |             |

### Appendix 3:

The sum of F\$ 27.99 mln (F\$8.40 mln Shell Share) was approved for flowline replacement under the 2010 flowline replacement IP for the replacement of 39 lines in the East and 9 lines in the West. Out of these, 22 lines (planned) and 50 lines (unplanned, including sectional replacements) were completed in the East. For the West, 4 lines (planned) and 36 lines (unplanned, including sectional replacements) were completed and a total spend of F\$27.99mln (F\$ 8.40mln Shell Share). *See details in table below.*

**Table 3A: Conduit List Planned for Replacement in 2010 including their execution status**

| S/No.                    | Field   | Conduit                     | Fluid | ANSI RATING | Pipe Size (INS) | Length of line (Km) | Projected 2010 (bopd/MMs cf) | COST (\$)        | COMPLETION STATUS                             |
|--------------------------|---------|-----------------------------|-------|-------------|-----------------|---------------------|------------------------------|------------------|-----------------------------------------------|
| <b>STATUS OF 2010 IP</b> |         |                             |       |             |                 |                     |                              |                  |                                               |
| <b>EAST</b>              |         |                             |       |             |                 |                     |                              |                  |                                               |
| 1                        | AKASO   | AKOS003L                    | oil   | 600         | 4               | 4.7                 | 917.34                       | 1473450          | COMPLETED                                     |
| 2                        | AWOBA   | AWOB 3L                     | oil   | 600         | 4               | 2                   | 1054.25                      | 627000           | COMPLETED                                     |
| 3                        | AWOBA   | AWOB 3S                     | oil   | 600         | 4               | 2                   | 307.45                       | 627000           | COMPLETED                                     |
| 4                        | CAWC*   | CAWC23L                     | oil   | 600         | 4               | 1.74                | 633.12                       | 545490           | COMPLETED                                     |
| 5                        | EKULAMA | EKUL026L                    | oil   | 600         | 4               | 3.83                | 244.58                       | 1201646          | COMPLETED                                     |
| 6                        | EKULAMA | EKUL038L                    | oil   | 600         | 4               | 2.78                | 246.38                       | 870276           | COMPLETED                                     |
| 7                        | EKULAMA | EKUL038S                    | oil   | 600         | 4               | 2.78                | 470.11                       | 870903           | COMPLETED                                     |
| 8                        | AKASO   | AKOS009S                    | oil   | 600         | 4               | 4.65                | 623.56                       | 1457775          | COMPLETED                                     |
| 9                        | ALAKIRI | ALAK21T                     | gas   | 2500        | 6               | 2.09                | 17177.36                     | 655842           | ON HOLD                                       |
| 10                       | AWOBA   | AWOB 7L                     | oil   | 600         | 4               | 1.4                 | 3125.54                      | 438900           | COMPLETED                                     |
| 11                       | EKULAMA | EKUL031S                    | oil   | 600         | 4               | 2.91                | 61.44                        | 911345           |                                               |
| 12                       | EKULAMA | EKUL039L                    | oil   | 600         | 4               | 2.19                | 229.38                       | 685311           |                                               |
| 13                       | SOKU    | Soku W14L                   | oil   | 600         | 4               | 1.8                 | 375                          | 429642           |                                               |
| 14                       | SOKU    | Soku W21S                   | oil   | 600         | 4               | 2.8                 | 112                          | 668332           |                                               |
| 15                       | SOKU    | Soku W08T                   | oil   | 600         | 4               | 2.4                 | 227                          | 572856           |                                               |
| 16                       | AKASO   | Akaso 10L/S                 | oil   | 600         | 4               | 3                   | 700                          | 716070           |                                               |
| 17                       | AKASO   | Akaso 13L                   | oil   | 600         | 4               | 2.44                | 400                          | 582404           |                                               |
| 18                       | CAWC*   | CawC W51T                   | oil   | 600         | 4               | 1.14                | 1000                         | 272107           |                                               |
| 19                       | CAWC*   | CawC W18T                   | oil   | 600         | 4               | 2.44                | 500                          | 582404           | To be done in 2011                            |
| 20                       | AWOBA   | Awoba W6L                   | oil   | 1500        | 4               | 3.5                 | 1669                         | 835415           | To be done in 2011                            |
| 21                       | AWOBA   | Awoba W9S                   | oil   | 1500        | 4               | 3.2                 | 1600                         | 763808           | To be done in 2011                            |
| 22                       | CAWC*   | CawC 24T Riser Leak repairs | oil   | 600         | 4               | 0.05                | 500                          | 11935            |                                               |
| 23                       | NEMBE   | Nembe Creek 63L/S           | oil   | 600         | 4               | 4.68                | 6834                         | 1117069          | COMPLETED                                     |
| 24                       | BELEMA  | Belema 01L/S                | oil   | 600         | 4               | 5.36                | 6637                         | 1279378          | COMPLETED                                     |
| 25                       | BELEMA  | Belema 02T                  | oil   | 600         | 4               | 3.09                | 3710                         | 737552           | COMPLETED                                     |
| 26                       | NEMBE   | Nembe Creek 10T             | oil   | 600         | 4               | 2.47                | 3124                         | 589564           | COMPLETED                                     |
| 27                       | NEMBE   | Nembe Creek 23T             | oil   | 600         | 4               | 5.93                | 2952                         | 1415432          | COMPLETED                                     |
| 28                       | BELEMA  | Belema 08T                  | oil   | 600         | 4               | 1.14                | 1864                         | 272107           | COMPLETED                                     |
| 29                       | BELEMA  | Belema 05L                  | oil   | 600         | 4               | 1.85                | 563                          | 441577           |                                               |
| 30                       | BELEMA  | Belema 06L                  | oil   | 600         | 4               | 1.96                | 147                          | 467832           |                                               |
| 31                       | BELEMA  | Belema 04T                  | oil   | 600         | 4               | 4.37                | 542                          | 1043075          |                                               |
| 32                       | NEMBE   | Nembe Creek 43L             | oil   | 600         | 4               | 1.2                 | 3145                         | 286428           | COMPLETED                                     |
| 33                       | NEMBE   | Nembe Creek 43S             | oil   | 600         | 4               | 1.2                 | 2465                         | 286428           | COMPLETED                                     |
| 34                       | NEMBE   | Nembe Creek 27L             | oil   | 600         | 4               | 1.2                 | 1294                         | 286428           | COMPLETED                                     |
| 35                       | NEMBE   | Nembe Creek 29S             | oil   | 600         | 4               | 1.2                 | 647                          | 286428           | COMPLETED                                     |
| 36                       | NEMBE   | Nembe Creek 19L             | oil   | 600         | 4               | 1.28                | 1510                         | 305762           | COMPLETED                                     |
| 37                       | NEMBE   | Nembe Creek 15S             | oil   | 600         | 4               | 0.98                | 1416                         | 232961           |                                               |
| 38                       | NEMBE   | Nembe Creek 22S             | oil   | 600         | 4               | 1.88                | 1121                         | 448976           | COMPLETED                                     |
| 39                       | NEMBE   | Nembe Creek 56S             | oil   | 600         | 4               | 2.07                | 921                          | 494327           | COMPLETED                                     |
|                          |         |                             |       |             |                 | <b>97.7</b>         | <b>71065.51</b>              | 25791233         |                                               |
| <b>WEST</b>              |         |                             |       |             |                 |                     |                              |                  |                                               |
| 1                        | OLOMORO | OLOMW003L                   | Oil   | 600         | 4               | 2.5                 | 1265                         | 478,750          |                                               |
| 2                        | OLOMORO | OLOMW005L                   | Oil   | 600         | 4               | 0.5                 | 900                          | 95,750           | Completed                                     |
| 3                        | KOKORI  | KOKR035T                    | Oil   | 600         | 4               | 1.95                | 680                          | 373,425          |                                               |
| 4                        | KOKORI  | KOKR001L                    | Oil   | 600         | 4               | 1.95                | 420                          | 373,425          |                                               |
| 5                        | EVWRENI | EVWR001L                    | Oil   | 600         | 4               | 0.5                 | 200                          | 95,750           |                                               |
| 6                        | UTOROGU | UTOR029T                    | Gas   | 2500        | 6               | 0.7                 | 50                           | 195,000          | Flowlines laid in 2008, but hooked up in 2010 |
| 7                        | UTOROGU | UTOR031T                    | Gas   | 2500        | 6               | 0.7                 | 45                           | 195,000          | -do-                                          |
| 8                        | UTOROGU | UTOR030T                    | Gas   | 2500        | 6               | 0.7                 | 45                           | 195,000          | -do-                                          |
| 9                        | UTOROGU | UTOR025T                    | Gas   | 2500        | 6               | 0.7                 | 50                           | 195,000          | -do-                                          |
|                          |         |                             |       |             |                 | <b>10.2</b>         |                              | <b>2,197,100</b> |                                               |

**Table 3B : Unplanned Conduit List Replaced in 2010 (East)**

| Team | Well Name     | FLUID TYPE | Length replaced(km) | Net Oil      | Work Type                                  |
|------|---------------|------------|---------------------|--------------|--------------------------------------------|
|      | <b>EAST</b>   |            |                     |              |                                            |
| PEL2 | ADIB016T      | Oil        | 2.5                 | 839          | Flowline Full Replacement                  |
| PEL2 | Ahia 7L       | Oil        | 1.8                 | 568          | Flowline Full Replacement                  |
| PES1 | AKOS003S      | Oil        | 5.3                 | 1713         | Flowline Full Replacement                  |
| PES1 | AKOS004S      | Oil        | 2.8                 | 4500         | Flowline Full Replacement                  |
| PES1 | CAWC042T      | Oil        | 2                   | 1828         | Flowline Full Replacement                  |
| PES2 | EKUL005L      | Oil        | 3.1                 | 682          | Flowline Full Replacement                  |
| PES2 | EKUL005S      | Oil        | 3.1                 | 805          | Flowline Full Replacement                  |
| PES2 | EKUL024T      | Oil        | 3.058               | 711          | Flowline Full Replacement                  |
| PES2 | EKUL035S      | Oil        | 1.73                | 1054         | Flowline Full Replacement                  |
| PEL1 | IMOR37L       | Oil        | 4.6                 | 289          | Flowline Full Replacement(Integrity)       |
| PEL1 | OBN003L/S     | Oil        | 2.2                 | 748          | Flowline Full Replacement                  |
| PES1 | SOKU028L      | oil        | 0.6                 | 317          | Flowline Full Replacement                  |
| PEL2 | ADIB010S      | Oil        | 0.06                | 1477         | Flowline Sectional Replacement             |
| PEL2 | ADIB025L      | Oil        | 0                   |              | Flowline Sectional Replacement/spool piece |
| PEL2 | ADIB04S       | Oil        | 0.5                 | 116          | Flowline Sectional Replacement             |
| PEL2 | ADIB07T       | Oil        | 0.4                 | 35           | Flowline Sectional Replacement             |
| PEL2 | ADIB08S       | Oil        | 0.5                 | 170          | Flowline Sectional Replacement             |
| PEL1 | AGBD012L      | Oil        | 0.036               | 279          | Flowline Sectional Replacement             |
| PEL1 | AGBD032S      | Oil        | 2                   | 1207         | Flowline Sectional Replacement             |
| PEL1 | AGBD58L       | Oil        | 0.036               | 643          | Flowline Sectional Replacement             |
| PES1 | AKOS007L      | Oil        | 4                   | 1625         | Flowline Sectional Replacement             |
| PES2 | AWN001L       | Oil        | 5.5                 | 4528         | Flowline Sectional Replacement             |
| PES2 | AWN001S       | Oil        | 5.5                 | 2593         | Flowline Sectional Replacement             |
| PES1 | AWOB 7L       | Oil        | 0.072               | 6500         | Flowline Sectional Replacement             |
| PES1 | CAWC024T      | Oil        | 1                   | 200          | Flowline Sectional Replacement             |
| PES2 | EKUL027S      | Oil        | 0.12                | 1700         | Flowline Sectional Replacement             |
| PEL1 | Imor 19S      | Oil        | 0.05                | 226          | Flowline Sectional Replacement             |
| PEL1 | Imor 21L      | Oil        | 0.7                 | 419          | Flowline Sectional Replacement             |
| PEL1 | Imor 53L      | Oil        | 0                   | 479          | Flowline Sectional Replacement             |
| PEL1 | Imor 53L      | Oil        | 0.2                 | 479          | Flowline Sectional Replacement             |
| PEL1 | Imor 53L      | Oil        |                     | 479          | Flowline Sectional Replacement             |
| PEL1 | IMOR57L       | Oil        | 0.042               | 405          | Flowline Sectional Replacement             |
| PEL2 | KOCR 25T      | Oil        | 1.5                 | 870          | Flowline Sectional Replacement             |
| PEL2 | KOCR25T       | Oil        | 1                   | 1083         | Flowline Sectional Replacement             |
| PEL2 | KOCR21T       | Oil        | 0.8                 | 645          | Flowline Sectional Replacement             |
| PEL2 | Kocr 3T       | Oil        | 3                   | 1222         | Flowline Sectional Replacement             |
| PEL1 | Nkali 10S     | Oil        | 0.2                 | 489/4.2mmcf  | Flowline Sectional Replacement             |
| PEL1 | Nkali 13S     | Oil        | 0.2                 | 624/5MMSCF   | Flowline Sectional Replacement             |
| PEL1 | OBN0048L      | Oil        | 0.25                | 800          | Flowline Sectional Replacement             |
| PEL2 | OBN0048S      |            | 0.25                | 0            | Flowline Sectional Replacement             |
| PEL1 | Otam 5L       | Oil        | 0.012               | 222          | Flowline Sectional Replacement             |
| PES1 | SOKU016L      | GAS(HP)    | 0.12                | HP GAS       | Flowline Sectional Replacement             |
| PEL1 | AGBD029GLL    | GAS        | 0.012               |              | Gasline Sectional Replacement              |
| PEL1 | AGBD58 GLL    | GAS        | 0.036               |              | Gasline Sectional Replacement              |
| PEL1 | IMOR001GLL    | GAS        | 0.2                 | 409          | Gasline Sectional Replacement              |
| PEL1 | IMOR012GLL    | GAS        | 0.2                 | 168          | Gasline Sectional Replacement              |
| PEL1 | IMOR037GLL    | GAS        | 0.2                 | 437          | Gasline Sectional Replacement              |
| PEL1 | IMOR057GLL    | GAS        | 0.2                 | 402          | Gasline Sectional Replacement              |
| PEL1 | OBN010TGLL    | GAS        | 0                   |              | Gasline Sectional Replacement(FRANGE)      |
| PEL1 | OBN027T/GLL   | Oil        | 0.15                | 678          | Gasline Sectional Replacement              |
|      | <b>TOTALS</b> |            | <b>62.634</b>       | <b>47140</b> |                                            |

**Unplanned Conduit List Replaced in 2010 (West)**

| S/No. | ITEM DESCRIPTION                                                          | Length Replaced | Size |
|-------|---------------------------------------------------------------------------|-----------------|------|
| 1     | Eriemu 21 New F/L; Eriemu 16L&S, 14L&S, 11L&S, 8L&S F/L Rerouting         | 2.14            | 4in  |
| 2     | Eriemu 8, 11, 13, 14, 16, 19 GLL Sectional Replacement                    | 4.2             | 2in  |
| 3     | Olomoro Wells 2, 12, 14, 21, 25, 26, 31, 33, 35 GLL Sectional Replacement | 2.4             | 2in  |
| 4     | Afiesere Well 8, 18, 36, 37 GLL Sectional Replacement                     | 1.80            | 2in  |
| 5     | Uzere 17, 19, 20, 26 GLL Sect Replacement                                 | 0.7             | 2in  |
| 6     | Olomoro Wells 21, 23, 24, 38 F/L                                          | 3.0             | 4in  |
|       | <b>GRAND TOTAL</b>                                                        | <b>14.24Km</b>  |      |