

# The Shell Petroleum Company Limited

## Group Investment Proposal

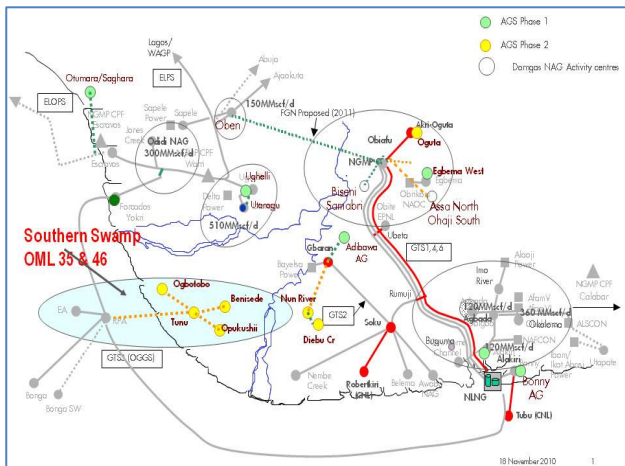
### Summary Information

| Business unit and company                               | Shell Petroleum Development Company of Nigeria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                      |                             |                 |                                |                  |             |                       |                             |                             |                 |                        |                               |       |      |     |                                      |       |                    |       |     |     |     |     |                            |     |   |     |     |     |                                                         |     |     |     |     |     |                           |   |       |      |       |      |                          |   |      |      |      |      |                                     |            |              |             |              |             |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------------------------|-----------------|--------------------------------|------------------|-------------|-----------------------|-----------------------------|-----------------------------|-----------------|------------------------|-------------------------------|-------|------|-----|--------------------------------------|-------|--------------------|-------|-----|-----|-----|-----|----------------------------|-----|---|-----|-----|-----|---------------------------------------------------------|-----|-----|-----|-----|-----|---------------------------|---|-------|------|-------|------|--------------------------|---|------|------|------|------|-------------------------------------|------------|--------------|-------------|--------------|-------------|
| 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                                                  | US\$50.2mln Shell share (MOD, 50/50), including US\$2.1mln previously approved Pre-FID; bringing the Pre-FID total to US\$52.3mln Shell share (MOD, 50/50).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                      |                             |                 |                                |                  |             |                       |                             |                             |                 |                        |                               |       |      |     |                                      |       |                    |       |     |     |     |     |                            |     |   |     |     |     |                                                         |     |     |     |     |     |                           |   |       |      |       |      |                          |   |      |      |      |      |                                     |            |              |             |              |             |
| Project                                                 | Southern Swamp AG Solutions (SSAGS <sup>+</sup> ) Project Plus, incorporating: Opukushi, Benisede, Ogbotobo and Tunu Fields                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                      |                             |                 |                                |                  |             |                       |                             |                             |                 |                        |                               |       |      |     |                                      |       |                    |       |     |     |     |     |                            |     |   |     |     |     |                                                         |     |     |     |     |     |                           |   |       |      |       |      |                          |   |      |      |      |      |                                     |            |              |             |              |             |
| Main commitments                                        | <table><thead><tr><th>Description</th><th>Prior Proposal (2010)</th><th>This Proposal (100%)</th><th>This Proposal (Shell Share)</th><th>Total IP (100%)</th><th>Total IP (Shell Share)</th></tr></thead><tbody><tr><td>FEED</td><td>2.5</td><td>6.7</td><td>2.0</td><td>9.2</td><td>2.8</td></tr><tr><td>Project Management</td><td>1.3</td><td>2.7</td><td>0.8</td><td>4.0</td><td>1.2</td></tr><tr><td>Subsurface Maturation Work</td><td>2.2</td><td>-</td><td>1.6</td><td>0.6</td><td>0.2</td></tr><tr><td>Survey Permit &amp; Consents, land acquisition. (Incl. SCD)</td><td>1.1</td><td>0.4</td><td>0.1</td><td>1.5</td><td>0.5</td></tr><tr><td>Procure LLIs - Facilities</td><td>-</td><td>122.0</td><td>36.6</td><td>122.0</td><td>36.6</td></tr><tr><td>Procure LLIs - Linepipes</td><td>-</td><td>37.0</td><td>11.1</td><td>37.0</td><td>11.1</td></tr><tr><td><b>Total US\$ mln Pre-FID 50/50</b></td><td><b>7.1</b></td><td><b>167.2</b></td><td><b>50.2</b></td><td><b>174.3</b></td><td><b>52.3</b></td></tr></tbody></table> |                      |                             |                 |                                |                  | Description | Prior Proposal (2010) | This Proposal (100%)        | This Proposal (Shell Share) | Total IP (100%) | Total IP (Shell Share) | FEED                          | 2.5   | 6.7  | 2.0 | 9.2                                  | 2.8   | Project Management | 1.3   | 2.7 | 0.8 | 4.0 | 1.2 | Subsurface Maturation Work | 2.2 | - | 1.6 | 0.6 | 0.2 | Survey Permit & Consents, land acquisition. (Incl. SCD) | 1.1 | 0.4 | 0.1 | 1.5 | 0.5 | Procure LLIs - Facilities | - | 122.0 | 36.6 | 122.0 | 36.6 | Procure LLIs - Linepipes | - | 37.0 | 11.1 | 37.0 | 11.1 | <b>Total US\$ mln Pre-FID 50/50</b> | <b>7.1</b> | <b>167.2</b> | <b>50.2</b> | <b>174.3</b> | <b>52.3</b> |
| Description                                             | Prior Proposal (2010)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | This Proposal (100%) | This Proposal (Shell Share) | Total IP (100%) | Total IP (Shell Share)         |                  |             |                       |                             |                             |                 |                        |                               |       |      |     |                                      |       |                    |       |     |     |     |     |                            |     |   |     |     |     |                                                         |     |     |     |     |     |                           |   |       |      |       |      |                          |   |      |      |      |      |                                     |            |              |             |              |             |
| FEED                                                    | 2.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 6.7                  | 2.0                         | 9.2             | 2.8                            |                  |             |                       |                             |                             |                 |                        |                               |       |      |     |                                      |       |                    |       |     |     |     |     |                            |     |   |     |     |     |                                                         |     |     |     |     |     |                           |   |       |      |       |      |                          |   |      |      |      |      |                                     |            |              |             |              |             |
| Project Management                                      | 1.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 2.7                  | 0.8                         | 4.0             | 1.2                            |                  |             |                       |                             |                             |                 |                        |                               |       |      |     |                                      |       |                    |       |     |     |     |     |                            |     |   |     |     |     |                                                         |     |     |     |     |     |                           |   |       |      |       |      |                          |   |      |      |      |      |                                     |            |              |             |              |             |
| Subsurface Maturation Work                              | 2.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | -                    | 1.6                         | 0.6             | 0.2                            |                  |             |                       |                             |                             |                 |                        |                               |       |      |     |                                      |       |                    |       |     |     |     |     |                            |     |   |     |     |     |                                                         |     |     |     |     |     |                           |   |       |      |       |      |                          |   |      |      |      |      |                                     |            |              |             |              |             |
| Survey Permit & Consents, land acquisition. (Incl. SCD) | 1.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0.4                  | 0.1                         | 1.5             | 0.5                            |                  |             |                       |                             |                             |                 |                        |                               |       |      |     |                                      |       |                    |       |     |     |     |     |                            |     |   |     |     |     |                                                         |     |     |     |     |     |                           |   |       |      |       |      |                          |   |      |      |      |      |                                     |            |              |             |              |             |
| Procure LLIs - Facilities                               | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 122.0                | 36.6                        | 122.0           | 36.6                           |                  |             |                       |                             |                             |                 |                        |                               |       |      |     |                                      |       |                    |       |     |     |     |     |                            |     |   |     |     |     |                                                         |     |     |     |     |     |                           |   |       |      |       |      |                          |   |      |      |      |      |                                     |            |              |             |              |             |
| Procure LLIs - Linepipes                                | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 37.0                 | 11.1                        | 37.0            | 11.1                           |                  |             |                       |                             |                             |                 |                        |                               |       |      |     |                                      |       |                    |       |     |     |     |     |                            |     |   |     |     |     |                                                         |     |     |     |     |     |                           |   |       |      |       |      |                          |   |      |      |      |      |                                     |            |              |             |              |             |
| <b>Total US\$ mln Pre-FID 50/50</b>                     | <b>7.1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>167.2</b>         | <b>50.2</b>                 | <b>174.3</b>    | <b>52.3</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. Formal JV partners' approval will therefore be obtained.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                      |                             |                 |                                |                  |             |                       |                             |                             |                 |                        |                               |       |      |     |                                      |       |                    |       |     |     |     |     |                            |     |   |     |     |     |                                                         |     |     |     |     |     |                           |   |       |      |       |      |                          |   |      |      |      |      |                                     |            |              |             |              |             |
| Summary cash flow                                       | <div><p>Southern Swamp AGS+ project_full project, Post FID cashflow (Shell Share PSV RV-RT)</p><p>Annual Cashflow (\$mln RT2011)      Cumulative Cashflow (\$mln RT2011)</p><p>Legend: Annual Cash Flow (\$mln RT2011) - 7%   RT CAPEX   Cum cashflow 0%   Cum cashflow 7%</p></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                      |                             |                 |                                |                  |             |                       |                             |                             |                 |                        |                               |       |      |     |                                      |       |                    |       |     |     |     |     |                            |     |   |     |     |     |                                                         |     |     |     |     |     |                           |   |       |      |       |      |                          |   |      |      |      |      |                                     |            |              |             |              |             |
| Summary economics                                       | <table><thead><tr><th>At Ranking PSV (\$70/bbl RT11)</th><th>NPV7% (US\$ mln)</th><th>VIR7%</th><th>RTEP (%)</th></tr></thead><tbody><tr><td>Base Case (50/50) – Pre-FID</td><td>-13.5</td><td>-0.30</td><td>NA</td></tr><tr><td>Base case (50/50) - Post –FID</td><td>265.1</td><td>0.56</td><td>26%</td></tr><tr><td>6mnths Delay (if there's no Pre-FID)</td><td>237.1</td><td>0.50</td><td>23.3%</td></tr></tbody></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                      |                             |                 | At Ranking PSV (\$70/bbl RT11) | NPV7% (US\$ mln) | VIR7%       | RTEP (%)              | Base Case (50/50) – Pre-FID | -13.5                       | -0.30           | NA                     | Base case (50/50) - Post –FID | 265.1 | 0.56 | 26% | 6mnths Delay (if there's no Pre-FID) | 237.1 | 0.50               | 23.3% |     |     |     |     |                            |     |   |     |     |     |                                                         |     |     |     |     |     |                           |   |       |      |       |      |                          |   |      |      |      |      |                                     |            |              |             |              |             |
| At Ranking PSV (\$70/bbl RT11)                          | NPV7% (US\$ mln)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | VIR7%                | RTEP (%)                    |                 |                                |                  |             |                       |                             |                             |                 |                        |                               |       |      |     |                                      |       |                    |       |     |     |     |     |                            |     |   |     |     |     |                                                         |     |     |     |     |     |                           |   |       |      |       |      |                          |   |      |      |      |      |                                     |            |              |             |              |             |
| Base Case (50/50) – Pre-FID                             | -13.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | -0.30                | NA                          |                 |                                |                  |             |                       |                             |                             |                 |                        |                               |       |      |     |                                      |       |                    |       |     |     |     |     |                            |     |   |     |     |     |                                                         |     |     |     |     |     |                           |   |       |      |       |      |                          |   |      |      |      |      |                                     |            |              |             |              |             |
| Base case (50/50) - Post –FID                           | 265.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0.56                 | 26%                         |                 |                                |                  |             |                       |                             |                             |                 |                        |                               |       |      |     |                                      |       |                    |       |     |     |     |     |                            |     |   |     |     |     |                                                         |     |     |     |     |     |                           |   |       |      |       |      |                          |   |      |      |      |      |                                     |            |              |             |              |             |
| 6mnths Delay (if there's no Pre-FID)                    | 237.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0.50                 | 23.3%                       |                 |                                |                  |             |                       |                             |                             |                 |                        |                               |       |      |     |                                      |       |                    |       |     |     |     |     |                            |     |   |     |     |     |                                                         |     |     |     |     |     |                           |   |       |      |       |      |                          |   |      |      |      |      |                                     |            |              |             |              |             |

## Section 1: The Proposal

### Management Summary

The Southern Swamp area comprises 16 fields (10 producing) in OML 35, 36 & 46 with significant oil and gas resources; STOIP of 2,814 MMstb (UR = 1600 MMbbl, 56%RF), FGIIP and CIIP of, 7.6 Tcf (UR=4.0 Tcf, 53% RF). Of this, 792 MMbbl with 444 Bscf associated gas has been produced from the fields in the period January 1976 to December 2010. The fields lie in the coastal swamp area, 65km South of Warri, currently with 100 flowing wells and flow lines producing through 4 flow stations (Benisede, Opukushi, Ogbotobo and Tunu) and a new FLB at Tunu at advanced stage of completion. Oil evacuation is via the Trans Ramos pipeline to Forcados Terminal whilst associated gas is flared. NAG resources in the node have not been developed and the SSAGS<sup>+</sup> project represents the first of such developments.



The effort to provide AG solution in the Southern swamp began in October 1999 with the SSAGG

project which later expanded to include a nodal wide development called Southern Swamp Integrated Oil & Gas Project (SSIOGP) aimed at developing 407 MMstb oil expectation reserves and 505 Bscf associated gas (87 MMboe) through drilling and completion of 51 oil and 2 CRI wells. The project passed VAR4, but became stalled at DG4 due to higher than expected bid prices for the main EPC contracts and constrained funding. Renewed effort was launched in 2008 to provide AGS for NFA production only but given the huge resource potential in the node and the opportunity of funding that came with domestic gas supply, the project was re-conceptualised as a Domgas supplier (previous concept was to supply AG to NLNG). However, this revised concept meant that a reasonable volume and long term gas supply has to be guaranteed to meet the Government aspiration for Domgas Supply. This could not be met with AG alone and therefore the need for a portfolio review to identify more secure sources of gas supply. In 2010, a due diligence study of the previous SSIOGP Nodal Development work confirmed the selection of 21 oil wells out of the original 51 wells to be developed in a phased manner once the AG infrastructure has been provided. Feasibility was also carried out to develop Dodo North NAG to supplement the AG in order to sustain supply of 100MMscf/d minimum to the domestic market for at least 10 years. The study also identified backfilling opportunities for the gas supply that could be matured in a second phase development to extend plateau beyond the initial 10 years. This include Opukushi F3000A and F5000, which together hold 1 Tcf (UR of 650Bcf) and discovered potential in Opukushi deep (penetrated by Opuk-6 & 6ST), subject to further appraisal. There is also 'game changer' opportunity in Tolugbene exploration.

The new project called **Southern Swamp Associated Gas Solutions plus (SSAGS<sup>+</sup>)** is primarily aimed at providing AG solutions to secure NFA production (140 MMbbl + 97 Bcf associated gas) while also drilling 21 oil wells to utilise capacity in the flow stations, thereby developing 125 MMbbl new oil (with 72 Bcf AG). It also includes the drilling of 2 gas wells from Dodo North to guarantee the sustenance of the 100 MMscf/d supply. The project successfully passed DG3 in December 2010, following an ESAR and focused VAR3. Also a pre-FID IP of F\$7.1m was approved in April 2010 to facilitate early study works.

The Gas Flaring (Prohibition and Punishment) Bill 2009, currently before the national assembly, specifies payment of fines by non-compliant companies of not less than the cost of gas at the international market plus another 50% of the penalty sum to the Local Government Area for community development activities. The impact of the law could be adverse if current efforts at providing Associated Gas solutions to the Southern Swamp fields are not accelerated. Apart from shut-in of the assets post-flares out date (2012 proposed), the likelihood of non-renewal of expiring Acreage Licenses

due in 2019 by government, loss of surface asset to vandalism and loss of opportunity to develop and book significant reserves (both NFA and FOD) are very high.

**This pre-FID Investment Proposal:**

Part of the enablers endorsed by DRB at DG3 in order to deliver the project within scheduled OSD of December 2014, was the need to raise pre-FID IP value from the present F\$7.1mln to F\$250m so as to commit and place order for Long Lead Items (LLI) ahead of project FID now slated for Q1 2012. This has the advantage of bringing OSD forward by six months. The Group Guidelines provides that all pre-FID sums must be categorised as Opex, but could be capitalized where there are assets to be acquired and such assets could find alternative use within the business where the project in question does not go forward after FID. In addition, a positive FID must be expected within 12 months. Accordingly, UIG regional Finance Controllers' (RFC) approval was sought to capitalize the LLI element of the pre-FID cost (Capex US\$159 mln and Opex US\$15.3 mln making a total of US\$174.3 mln) (see appendix I for approval as conveyed via email.)

The scope of the pre-FID expenditure will cover for the following:

- a. Studies including FEED (Complete NDP, FDPs and carry out FEED)
- b. Project Management (Staff salaries, travels and incidental costs for project team and support team members)
- c. Surveys and Permits acquisition (revalidate/acquire new PTS, OPL, ESHIA, NCD waivers, NDP, FDPs)
- d. Procurement of Long Lead items ( LLI) (commit to procure materials/equipment that could take up to 20 months to be fully prepared for site installation)

The initial pre-FID of US\$7.1 million approved in April 2010 was to enable commencement of the project front end study works. This pre-FID IP is to cover the full costs of items (a - d) in line with the scope and schedule endorsed at DG3. The LLIs comprise three elements:

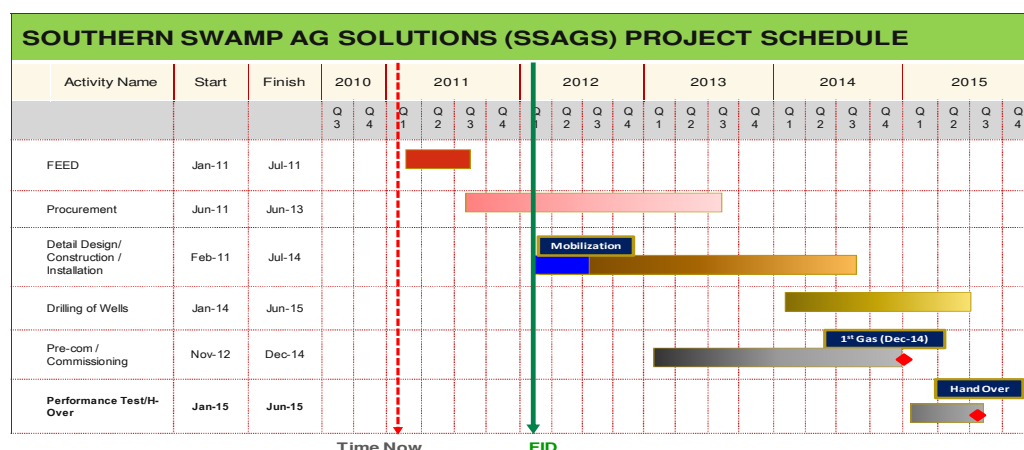
- Gas Compressors (2 x 40 MMScf/d AG Compressor (5bar to 110bar) & 2 x 80 MMScf/d Export Compressor (69bar – 135 bar))
- Gas treatment Package: 160 MMScf/d Twister Package
- Line Pipes (12"x 40Km, 8" x 16Km, 10" x 20Km, 16" x 32Km)

Items (a – c) above shall be classed as Opex (\$15.3 mln 100% JV) whilst item (d) is Capex (\$159 mln 100% JV) as approved by RFC based on the following justification for alternative use:

1. Gas Compressors; The compressors units to be ordered could be modified for use in some on-going projects (e.g. Soku AGG, Replacement of over sized comp at Cawthorne Channel or Awoba further development) if FID for the SSAGS+ project is not taken. There will be sufficient time to work with the vendor to modify the compressors to suit a utility different from the one intended for SSAGS.
2. Twister Package: The Twister package could find alternative use at Okoloma Gas plant where de-bottlenecking work will be required in order to produce Buguma Creek NAG development in the near term. The Buguma Creek project is presently pre-DG3. It can also find use in Okpokunou or Awoba further development projects.
3. Line Pipes: All of the line pipe sizes fall within the requirement of some pre-DG3 projects (e.g. Buguma creek, Okpokunou or Awoba further development projects) or could be held in stock for replacement activities as the sizes and specifications are common with the existing gas infrastructure in SPDC.

Meanwhile, Fig 1, Appendix I attached shows a full commitment exposure curve developed with information provided by the vendors through the various category managers of the respective materials. It shows that at FID date of January 2012, less than 25% of the LLI cost would have been expended. At that point, except for the line pipes there exists an opportunity to limit cost exposure through cancellation of order. The penalty may however be up to 10% of order value, estimated at US\$12m for the 4 compressor units and the Twister package.

The P50 date for full FID is February 2012. Level 1 schedule for the project is shown below.



FID will be based on tendered bids for the main EPC contracts (facilities and pipelines). The contracting strategy for SSAGS (approved by NAPIMS GEC) is to revalidate/renegotiate the EPC bids from the technical qualified bidders from the 2005 tender exercise; in order to significantly reduce the time required for tendering.

The estimated total Capex for the SS AGS+ project is approximately \$2.03 bln (MOD) plus SCD (Opex) cost of \$50 mln. The project is phased into 3 discrete steps for funding in installments under the

Domgas (Step\_1) and JV Base tranches (Step\_2 & 3). It is noteworthy that the Domgas funding has been coming regularly, and the circa F\$625 mln required for steps 1 & 2 are considered fundable within the JV base funding plan. Regardless of the stepwise funding the DRB's decision at D G3 was to go for single FID proposal in order to present (and preserve) the total investment value.

The full scope will be the subject of a GIP proposal to be issued post VAR4 later in 2011. The overall project cost phasing is shown below:

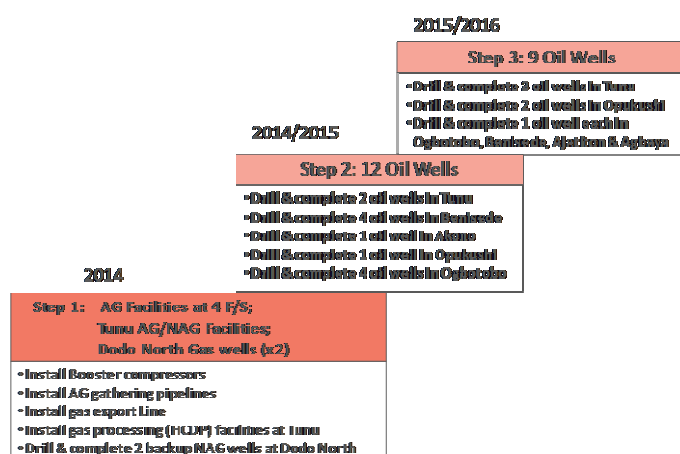


Table 1: Full Project CAPEX phasing

| Scope                                        | Cost \$million |             |            |            |            |            |            | Total       |
|----------------------------------------------|----------------|-------------|------------|------------|------------|------------|------------|-------------|
|                                              | 2010           | 2011        | 2012       | 2013       | 2014       | 2015       | 2016       |             |
| Step_1 Gas Facility/Infrastructure Incl. NAG | 1.6            | 49          | 269        | 392        | 497        | 140        | 56         | 1405        |
| Step_2 Oil Development (12wells)             |                |             |            |            | 161        | 164        |            | 325         |
| Step_3 Oil Development (9wells)              |                |             |            |            |            | 202        | 99         | 301         |
| SCD (Opex)                                   | 0              | 1.2         | 6          | 9          | 16         | 12         | 6          | 50          |
| <b>Total</b>                                 | <b>1.6</b>     | <b>50.2</b> | <b>275</b> | <b>401</b> | <b>674</b> | <b>518</b> | <b>161</b> | <b>2081</b> |

## Section 2: Value Proposition and financial context

This pre-FID Investment Proposal is required to complete early activities to define the project scope in full, commit to procurement of long lead items (facilities and line pipes) and have a clear idea of cost and schedule as input into full GIP proposal.

Two alternative schedule cases considered at DG3, with and without pre-FID commitment on LLI showed that procurement of long lead items accelerates OSD by about 6 months, from mid 2015 to December 2014. This translates to saving in deferment of 19.9 MMboe production, which is about 11%

of the 2015 BP10 production forecast in SPDC Western Division. The incremental value of the early delivery (6 months acceleration) is also compelling as shown in the economic sensitivity in section 3 below (6-months delay case). And although the proposed pre-FID cost is F\$174.3mln, actual spend at FID is estimated at F\$50.2 out of which potential Opex will be F\$26 mln (7.8 mln Shell Share), should the option be taken to cancel orders for compressors and Twister.

### Summary Economics

The Pre-FID economics was evaluated on a cost only basis with the long-lead line pipes and facilities cost capitalized as agreed with finance (see Appendix 1). The full value of the project can only be realized on full project execution post-FID, therefore the full project value is shown in Table 3 to support this pre-FID request

The full project (including the pre-FID spend) was evaluated on a forward-look basis using the post flares down NFA + FOD production forecast (Oil and AG) for the affected fields and 50/50 level II CAPEX estimates. The gathered gas is expected to be sold to the domestic market. Key sensitivities are shown in the grid.

**Table 2: Economics Grid - Pre-FID**

| PV Reference Date: 1/7/2011        | NPV (\$/S \$ mln) |       | VIR   | RTEP | UTC (RT \$/boe) |    | Payout-Time (RT) | Maximum Exposure (RT) |
|------------------------------------|-------------------|-------|-------|------|-----------------|----|------------------|-----------------------|
| Cash flow forward from: 1/1/2011   | 0%                | 7%    | 7%    | %    | 0%              | 7% |                  | AT                    |
| Base Case*                         |                   |       |       |      |                 |    |                  |                       |
| RV (\$70/bbl RT11)                 | -9.6              | -13.5 | -0.30 | NA   | NA              | NA | NA               | \$37.9 (2012)         |
| BEP (\$/bbl)                       |                   |       |       |      | NA              | NA |                  |                       |
| Sensitivities (using RV RT)        |                   |       |       |      |                 |    |                  |                       |
| 1.5% cost markup due to BVA issues |                   | -15.9 | -0.34 |      |                 |    |                  |                       |
| Pre-FID Life-Cycle Economics       |                   | -15.2 | -0.34 | NA   |                 |    |                  |                       |

\*Cost only, no SV & HV impact

### Key Project Parameter Data (Shell Share)

| Parameter                     | Unit     | BP10 RV | Low    | Mid    | High   | Comments     |
|-------------------------------|----------|---------|--------|--------|--------|--------------|
| Capex (MOD)                   | US\$ mln | NA      | NA     | 47.7   | NA     | Pre-FID only |
| Investment Opex (MOD)         | US\$ mln | NA      | NA     | 2.5    | NA     | Pre-FID only |
| Production Volume             | mln boe  | 129.29  | 75.5   | 95.9   | 101.9  | Post FID     |
| Start Up Date                 | mmm-yy   | Jan-14  | Mar-15 | Dec-14 | May-14 | Post FID     |
| Production in first 12 months | mln boe  |         |        | 10.2   |        | Post FID     |

**Table 3: Economics Grid – Full Project**

| PV Reference Date: 1/7/2011                                                                        | NPV (\$/S \$ mln) |       | VIR  | RTEP | UTC (RT \$/boe) |      | Payout-Time (RT) | Maximum Exposure (RT) |
|----------------------------------------------------------------------------------------------------|-------------------|-------|------|------|-----------------|------|------------------|-----------------------|
| Cash flow forward from: 1/1/2011                                                                   | 0%                | 7%    | 7%   | %    | 0%              | 7%   |                  | AT                    |
| Base Case (SSAGS+ Step 1 - 3)                                                                      |                   |       |      |      |                 |      |                  |                       |
| SV (\$50/bbl RT11)                                                                                 | 356.0             | 149.9 | 0.32 | 19%  | 9.7             | 11.7 |                  |                       |
| RV (\$70/bbl RT11)                                                                                 | 558.7             | 265.1 | 0.56 | 26%  | 9.8             | 11.7 | 2017             | \$249.1 (2014)        |
| HV (\$90/bbl RT11)                                                                                 | 796.0             | 398.1 | 0.85 | 33%  | 9.8             | 11.7 |                  |                       |
| BEP (\$/bbl)                                                                                       |                   |       |      |      |                 |      |                  |                       |
| Sensitivities (using RV RT)                                                                        |                   |       |      |      |                 |      |                  |                       |
| High CAPEX (Prob <0.1)                                                                             |                   | 228.7 | 0.38 |      |                 |      |                  |                       |
| Low Reserves (Prob <0.9)                                                                           |                   | 199.1 | 0.42 |      |                 |      |                  |                       |
| High Reserves (Prob <0.1)                                                                          |                   | 280.9 | 0.60 |      |                 |      |                  |                       |
| 6mnths Delay (if there's no Pre-FID)                                                               |                   | 237.1 | 0.50 |      |                 |      |                  |                       |
| License Expiry in 2019                                                                             |                   | 130.5 | 0.28 |      |                 |      |                  |                       |
| Life-Cycle Economics                                                                               |                   | 264.7 | 0.56 | 26%  |                 |      |                  |                       |
| PIB Sensitivity_IAT                                                                                |                   | 193.3 | 0.41 |      |                 |      |                  |                       |
| Additional Uncertainty and Risk Analysis - using RV (only required for proposals > \$ 300 mln S/S) |                   |       |      |      |                 |      |                  |                       |
| NPV (P10)                                                                                          |                   | 273.7 | 0.56 |      |                 |      |                  |                       |
| NPV (P90)                                                                                          |                   | 253.0 | 0.53 |      |                 |      |                  |                       |
| Probability of NPV > 0 at RV                                                                       |                   | 100%  |      |      |                 |      |                  |                       |
| EMV at RV                                                                                          |                   | 264.7 |      |      |                 |      |                  |                       |
| Dispersion = EMV/(NPVP10-NPVP90 at RV)                                                             |                   | 12.8  |      |      |                 |      |                  |                       |

### Economics Assumptions

- Oil PSV includes Forcados offset –

- \$0.82/bbl, \$1.36bbl and \$1.87bbl @ SV, RV and HV respectively
- 2010 Domgas PSV based on Nigeria Gas Master Plan (NGMP) as advised by gas commercial
- Oil and condensate were assumed to be taxable under PPT
- Gas assumed to be taxable under CITA with AGFA (Associated Gas Framework Agreement) incentive
- OPEX derived from Activity based cost Model & SCD cost was provided by project team
- GHV of 1000 btu/scf for gas to Domgas.
- Flare penalty of \$3.5/Mscf, non-tax deductible.
- NDDC levy of 3% total expenditure.
- Education tax of 2% assessable profit.
- Abandonment cost is estimated at 10% of total project RT CAPEX.

#### **PIB assumptions:**

- NHT depreciation schedule is 4x20%, 19% for qualifying expenditure.
- CIT depreciation schedule is 3x25%, 24%, for qualifying expenditure.
- Royalty rates based on product (value) prices and production rates per PML (assumed equal to a field).
- Education tax calculated as 2% of its assessable profit and it is not deductible for CIT, but deductible for NHT.
- NDDC levy calculated as 3% of expenditure
- Withholding tax is applicable at a rate of 7.5% for IAT version but not for the alternate version
- Flaring penalty is calculated at \$3.5mln/Btu MOD flat and it is not tax deductible for both CIT and NHT
- 20% of overseas cost is non-deductible for determination of NHT taxable income
- NHT rate is 50% for onshore and shallow water, and 30% for frontier acreages and Deep Water.
- CIT is 30% of taxable income and is not deductible from NHT
- Southern Swamp node is made up of existing fields hence no production allowances are applicable.

### ***Section 3: Risks, Opportunities and Alternatives***

The key risks and opportunities identified in the project are as follows:

#### **Under-delivery of gas in the medium to long term (T)**

The under-performance of identified gas wells or demand for higher-than-planned gas supply plan of 100MMscfd will reduce the plateau of Dodo North NAG source and result in low capacity utilization in the longer term – this will impact on SPDC's corporate reputation.

*Mitigation:* Work has been initiated to identify additional gas resources to be matured for possible acceleration to back-up Dodo North (for example the Opukushi gas cap blow down (F3 & F5) and Opukushi Deep development requiring appraisal).

#### **Continued production without AG solutions in place post 2010 (T, P)**

As a result of the uncertainties around the flares down date, continued production of Southern Swamp fields without AG utilization post 2010 may result in the reduction of AG volumes to be produced & monetized by the SSAGS+ project, reducing value post project..

*Mitigation:* There are other in-field oil development opportunities within the node (e.g. remaining 30 wells in the original SSIOGP) that will be investigated as acceleration candidates in order to increase AG production and add value. Additional NAG sources have also been identified and assessed as backfill to dwindling NAG/AG production, including the huge potential in Tolugbene exploration.

#### **Security & Social Risks (P, E)**

The project is located in the swamp of the Nigeria Delta; community interfaces, HSE and security issues are particularly significant in these areas, highlighted by cases of hostage taking, and armed attacks and sabotage of the export pipeline systems. So also is the risk of community agitations outside agreed GMOU terms that could lead to SCD related cost growth

*Mitigation:* The amnesty programme of the federal government has helped to calm the situation down although uncertainty still pervades. The security Information Network Centre (SINC) will monitor Delta threat traffic and provide timely early warning to the project executors on a ``need to know and act`` basis. All work will be done under an approved security plan through the Head of Security operations – West. Community interface will be managed through the Global Memorandum of Understanding (GMOU) to be deployed in alignment with project schedule. Also, allowance has been made for funding of social investment programmes and local participation under the GMOU. Offsite fabrication work will be maximized and done at safe and secure location thereby limiting site activities to a minimum

### **NCD Act Implementation (E, C, P)**

Low in country material manufacturing capacity (i.e. inability to meet material specification locally for projects) or the lack of waivers from the NCD board could result in project cost and schedule overrun, similarly there will be an increase in contract cost due to NCD implementation (1% of contract sum to NCDF and 10% potential premium). This risk is linked to possible delays due to compliance with NCD Act.

*Mitigation:* A detailed NCD compliance matrix will be worked out along with early engagement with NCDMB to highlight areas of gaps in compliance and seek waivers. An early engagement with NCDMB on FEED works indicates that the board is amenable to granting waivers for the project where there is a compelling business case. Indeed the board has asked SPDC to come forward with an overall NCD compliance plan for the project with the idea of seeking waivers where gaps exist. It is also important to highlight that there is presently no in-country capacity of line pipes of <20" as well as for Compression modules and Twister system, which are the subject of the pre-FID procurement cost.

### **2011 General Elections (P)**

This event could lead to a potentially significant shift in the government policy towards DOMGAS projects, but this is considered very unlikely.

Prior to and immediately after an election there is always a possibility for a slowdown in government activities. This risk could result in delayed JV partner approvals, with consequent schedule overrun.

*Mitigation:* Realism has been built into the contingencies in the project schedule so as to account for this risk. If necessary, Interim Contracts will be awarded pending NAPIMS approvals.

### **Completion of FEED within six months (T, C)**

Completion of FEED is key to tendering of the main EPC contracts, which in turn feeds into VAR4/DG4 before FID. Due to limitation of time, FEED completion outside of 6 months will push FID forward by up to 3 – 6 months with consequent delay in 1st Gas.

*Mitigation:* Shell FEED Office Port Harcourt will draw additional resources from UMP in Aberdeen to leverage on the strength available within Shell to deliver IIT specification within the constrained duration.

### **Key Opportunities**

The following key opportunities have been classified using the TECOP criteria.

### **Exploration scope and Future development (T/C)**

Significant discovered and undiscovered potential that lies within the node, out of which some opportunities have been identified as one potentially strategic source of gas to back-fill Dodo North NAG production and extend supply plateau. This includes Opukushi gas cap, F3 and F5 containing 1 Tcf (UR of 650 Bcf), Opukushi deep subject to further appraisal and Tolugbene exploration with potential of 3Tcf.



Other exploration synergies with SSAGS development project that are being evaluated include the Reduction in unit finding cost through deepening of development wells to exploration targets (Opuk-6 & 6ST).

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#### **Alternatives Considered**

- 1) Continue to produce the fields and pay flaring penalty till end of field life: *Rejected*: This is not recommended viewed against the environmental concerns, imminent stiffer penalties, the impact on company reputation and the Group commitment towards Flares Out.
- 2) Shut-in and abandon the fields: *Rejected*: Significant proven recoverable volumes and production will be lost, and high cost will be used on abandonment.
- 3) 3<sup>rd</sup> Party Alternative Solutions: Given the strategic nature of the southern swamp field, the search for the third party AG solution has been discountenanced. The fields have therefore been withdrawn from the market accordingly.

#### **Section 4: Carbon Management**

The purpose of this project is to limit green house gas emissions to the environment. It is estimated during preliminary assessment towards Clean Development Mechanism (CDM) registration that the project will generate circa 0.5MT of CO<sub>2</sub> over its lifetime. Registering the project under CDM initiatives will enable it to have access to additional income stream through carbon credits.

#### **Section 5: Corporate Structure, and Governance**

This project fits within the existing SPDC corporate structure and governance. Consequently, it will comply and respect all relevant and existing governance.

#### **Section 6: Functional Support and Consistency with Group and Business Standards**

This proposal complies with Group Business Principles, policies and standards. Full functional support covering SCD is provided for in the full project scope. Additionally, there will be a focus on Nigerian Content Development (NCD) as already indicated above. Relevant Functions have provided functional support for this Investment Proposal.

#### **Section 7: Project Management, Monitoring and Review**

The Major Projects Team under UIG/T/PD is managing the project. The Project Controls and Assurance Plan (PCAP) is compliant with the ORP having project specific DRB, DE and BOM in place. A Project Control and Assurance Plan (PCAP) has been approved to define the applicable controls for DEFINE phase.

#### **Section 8: Budget Provision**

The project is in BP10 base plan as well as in approved JV 2011 programme. .

#### **Section 9: Group Financial Reporting Impact**

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



| US\$ Million              | Prior Years | 2011         | 2012         | 2013        | 2014        | 2015        | Post 2015   |
|---------------------------|-------------|--------------|--------------|-------------|-------------|-------------|-------------|
| <b>Total Commitment</b>   | <b>2.14</b> | <b>13.43</b> | <b>36.72</b> | <b>0.00</b> | <b>0.00</b> | <b>0.00</b> | <b>0.00</b> |
| <b>Cash Flow</b>          |             |              |              |             |             |             |             |
| SCD Expenditure           | 0.34        | 0.05         |              |             |             |             |             |
| Pre-FID Expenditure       | 1.80        | 2.43         |              |             |             |             |             |
| Capital Expenditure       |             | 10.95        | 36.72        |             |             |             |             |
| Operating Expenditure     |             | 2.08         | 1.10         |             |             |             |             |
| Cash flow From Operations |             | (3.46)       | 4.86         | 6.77        |             |             |             |
| Cash Surplus/(Deficit)    |             | (14.41)      | (31.86)      | 6.77        |             |             |             |
| <b>Profit and Loss</b>    |             |              |              |             |             |             |             |
| NIBIAT +/-                |             | (2.52)       | 1.08         |             |             |             |             |
| <b>Balance Sheet</b>      |             |              |              |             |             |             |             |
| Avg Capital Employed      |             | 5.94         | 28.36        | 41.44       | 38.06       | 38.06       | 38.06       |

### ***Section 10: Disclosure***

Material disclosures, if any, will be done in line with the Group and SPDC Disclosure policies and guidelines.

### ***Section 11: Financing***

This investment is expected to be financed with JV partners funding (within the IPP/Domgas budget), and Shell Share of capital expenditure will be met by SPDC's own cash flow.

### ***Section 12: Taxation***

There are no unusual taxation features at this stage

### ***Section 13: Key Parameters***

The following is the main aspect of this proposal:

- Approval for \$174.3 mln, MOD, 50/50 100% JV (i.e. \$52.3mln Shell Share) for the early works including procurement of long lead items towards execution of AG Solutions for the Opukushi, Benisede, Ogbotobo and Tunu nodes.

### ***Section 14: Signatures***

This Proposal is submitted to UIG/P for approval.

Finance Approval

Organisational Support:

.....  
Bernard Bos W SPDC FUI/F

.....  
Ian Craig SEPA UIG,

Date.... /.... /...

Date.... /.... /....

*Initiator: Toyin Olagunju, SPDC-UIG/T/P*

## Appendices:

Appendix-I – Regional Finance Controller's Approval for pre-FID funding plan

**From:** Anolu, JONATHAN M SPDC-FUI/LF

**Sent:** 01 February 2011 08:47

**To:** Olagunju, Toyin AA SPDC-UIG/T/PD

**Cc:** Okunade, Mojeed O SPDC-FUI/FB; Siddiqi, Ali A SPDC-FUI/LF

**Subject:** RE: SSAGS pre-FID IP\_justification.docx

Toyin,

If FID is planned within 12 months from now and with the justification for alternative use of the materials, we can book the pre-FID line pipes as Capex

Regards

Jonathan

**From:** Olagunju, Toyin AA SPDC-UIG/T/PD

**Sent:** 31 January 2011 17:47

**To:** Anolu, JONATHAN M SPDC-FUI/LF

**Cc:** Okunade, Mojeed O SPDC-FUI/FB

**Subject:** Re: SSAGS pre-FID IP\_justification.docx

Jonathan,

We plan to take FID within 12mths of the pre-FID , before end Q1 2012. Should you need it to be within 2011, we will have to look at our sequence of activities again.

Rgds,

Toyin

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Sent using BlackBerry

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**From:** Anolu, JONATHAN M SPDC-FUI/LF

**To:** Olagunju, Toyin AA SPDC-UIG/T/PD

**Cc:** Okunade, Mojeed O SPDC-FUI/FB

**Sent:** Mon Jan 31 17:18:31 2011

**Subject:** RE: SSAGS pre-FID IP\_justification.docx

Toyin,

Thanks for the detailed write up where you have demonstrated alternative use of the materials should FID not be taken. Can you give an indication as to when you expect FID to be taken? If we have acceptable time frame for taking FID, there may be no need for another meeting.

Regards

Jonathan

Toyin

**Figure1: Commitment Exposure Curve.**

