# Group Investment Proposal (GIP)

## Summary information

| | |
|---|---|
| Business unit and company | Shell Petroleum Development Company of Nigeria Limited (SPDC) |
| 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 | H Block (comprising HD/JK Oil Development and HA/HB Gas development is currently operated under 'sole risk ' status, where the economic interests are NNPC (0%), Shell (77.14%), Total (10%) and NAOC (12.86%) |
| Business or Function | Upstream International (UI) |
| Amount | The headline size of US$189.59mln Shell Share under sole risk conditions, MOD of which US**$59.98mln** is being requested for approval in this proposal to progress HD/JK to FID by 2014 and to progress HA/HB to DG2 by December 2014. |
| Project | HD and JK Oil Development<br>HA and HB Gas Development |
| Main commitments | |

| Description | 2007 IP Proposal (100%) | 2007 IP Proposal (Shell Share) | Expenditure (Shell Share) | Proposal 100% | This Proposal 77.14% (Shell Share) | Aggregate |
|---|---|---|---|---|---|---|
| Project Management | 26.45 | 20.40 | 47.97 | 15.40 | 11.88 | 32.28 |
| Appraisal Well (HA-006) | 36.56 | 28.20 | 41.00 | 0.00 | 0.00 | 28.20 |
| Procure primary steel for wellhead jacket. | 17.63 | 13.60 | 0.00 | 0.00 | 0.00 | 13.60 |
| Concept Selection and Subsurface Studies | 10.11 | 7.80 | 0.00 | 5.50 | 4.24 | 12.04 |
| Pre-FEED | 0.00 | 0.00 | 0.00 | 3.34 | 2.58 | 2.58 |
| FEED | 12.32 | 9.50 | 13.62 | 14.23 | 10.98 | 20.48 |
| Permits & Consents, Geotech surveys & ESHIA studies, Belema land acq and sandfilling. | 0.65 | 0.50 | 10.18 | 10.62 | 8.19 | 8.69 |
| DG 2 studies on HA/HB to DG2 (2013 -2014) | 0.00 | 0.00 | 0.00 | 12.96 | 10.00 | 10.00 |
| Bonny tie-in | 0.39 | 0.30 | 0.00 | 0.00 | 0.00 | 0.30 |
| Contingency (25%, except well at 10%) | 20.48 | 15.80 | 0.00 | 15.70 | 12.11 | 27.91 |
| Pre 2006 IP (Concept design) | 43.43 | 33.50 | 16.52 | 0.00 | 0.00 | 33.50 |
| Totals | 168.02 | 129.61 | 129.29 | 77.75 | 59.98 | 189.59 |

Attachment 1: GIP Plan – expenditure spreadsheet up to FID.
Attachment 2: Approved GIP dated 07/03/2007.

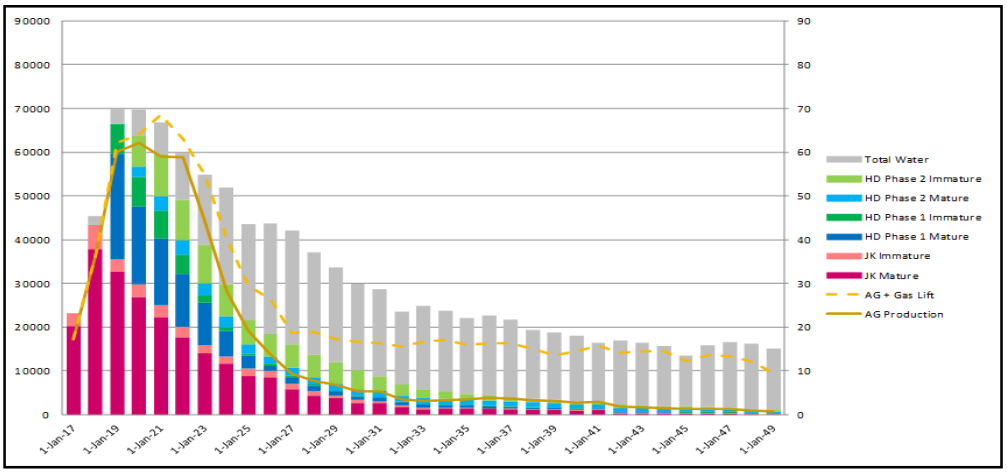
| | |
|---|---|
| Reserves/Resources | This project is aligned with SPDC's strategic goals and priorities. Recoverable volumes are expected to be as presented in the table below. |

| SPDC Classification | Oil UR* no cut-off, no risking (MMstb) | | | Gas UR* no cut-off, no risking (Bscf) | | | BOE UR* no cut-off, no risking (MMboe) | | |
|---|---|---|---|---|---|---|---|---|---|
| | High | **Mid** | Low | High | **Mid** | Low | High | **Mid** | Low |
| HD Mature | 71.4 | **52.2** | 37.5 | 76.5 | **55.4** | 42.4 | 84.6 | **61.7** | 44.8 |
| HD Immature | 76.0 | **44.8** | 22.8 | 45.2 | **27.1** | 10.2 | 83.8 | **49.5** | 24.5 |
| HD Undiscovered | - | **-** | - | - | **-** | - | - | **-** | - |
| JK Mature ** | NA | **85.6** | NA | NA | **82.3** | NA | NA | **99.8** | NA |
| JK Immature ** | NA | **11.8** | NA | NA | **9.7** | NA | NA | **13.4** | NA |
| JK Undiscovered | - | **-** | - | - | **-** | - | - | **-** | - |
| **TOTAL** | 244.8 | **194.4** | 157.7 | 213.7 | **174.5** | 144.5 | 281.6 | **224.4** | 182.6 |

* Based on 2011 nodal runs for the Belema Concept
** JK base case only

Production

The expected base case production forecast is as shown below.




Source and form of financing

This investment will be financed with sole risk JV funding until the Shallow Water License is Renewed and funding arrangement firmed up. Shell share capital expenditure will be met by SPDC's own cash flow and existing shareholder facility. A provisional sum of **US$14mln (100 %)** was earmarked for 2012 expenditure of which US$ 10mln was expended.

Summary cash flow

Cost Only evaluation. Cash flow plot not applicable.

Summary economics

| Summary Economics (RV-RT12) | NPV7% (USD mln) | RTEP (%) | VIR7% |
|---|---|---|---|
| Pre-FID Base | -8.3 | N/A | N/A |
| Pre-FID High Opex | -10.4 | N/A | N/A |
| Full Project - Base Case | 267.3 | 14 | 0.20 |

# Detailed information including management summary:

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

### 1.1 Management Summary

The H-Block shallow offshore acreage comprises the HD, HA and HB fields in OML 77 and the JK field in OML 74 south of the Niger Delta. The HA and HB fields (NAG fields) are in the identify/Assess (Pre-DG2) stage of development, while the HD and JK (Oil) development is currently in define phase. The HD and JK fields have circa 680 mmbbls STOIIP of which approximately 244 mmbbls is recoverable by

current development plans. The lease equity for the H Block acreage is: SHELL 77.14%; TOTAL 10%; NAOC 12.86%, with Shell Petroleum Development Company of Nigeria Limited (SPDC) as operator.

This Revised Pre-FID IP seeks organizational approval for funding of US$59.98mln Shell Share under sole risk bringing total Revised IP value to US$189.59mln Shell Share (245.77mln 100%JV) for the execution of 2012 – 2014 **HD/JK activities to FID** by 2014 and to progress HA/HB to DG2 by December 2014.
The 2012 -2014 activities covered in this Pre-FID GIP comprise:

- HD and JK: Pre-FEED/FEED (Wellhead Platforms, Topsides, pipelines, CPF and associated offshore and swamp infrastructure), land acquisition and sand filling of proposed Belema FLB.
- HA and HB: Pre-DG2 studies.

### 1.2 HD/JK Project Background

Feasibility study for HD was approved for the first time in January 2004, on the basis of which a FDP for Integrated Oil/Gas Development (with offshore processing facilities located at HD) was developed. FEED studies commenced in May 2006 but stalled in 2007 on account of funding constraints and unfavourable project economics and security. An Onshore processing concept based on 'Oil First NAG later' strategy coded Crocodile was initiated and worked on until the start of 2010. The viability of the Crocodile project (developing the JK and HD oil first via onshore processing facilities) received DG2 endorsement in May 2008. Work on the Select phase was stopped at the instance of SPDC management in December 2008.

In 2009, further studies carried out on basis of refurbishment of used FPSO (Shell Anasuria) or leasing an existing FPSO did not yield better economics. In 2010 SPDC management kicked off a JK/HD concept review with the aim to reduce Facilities CAPEX and Wells DRILLEX. The key objective was to articulate robust low cost development concept to deliver early oil from H-Block based on fresh ideas. The previous subsurface work (static and dynamic modelling) as contained in existing JK and HD Field Development Plans was largely used as the basis for the new development concepts, although new subsurface work focused on ensuring volumes forecasts are properly generated from a newly constructed Integrated Production Systems Model. The study approach for surface facilities evaluated new concepts either not studied during crocodile or considered competitive enough for further review. In particular, offshore evacuation concepts were evaluated in greater detail as these were thought to have better security of supply and hence more attractive for project financing.

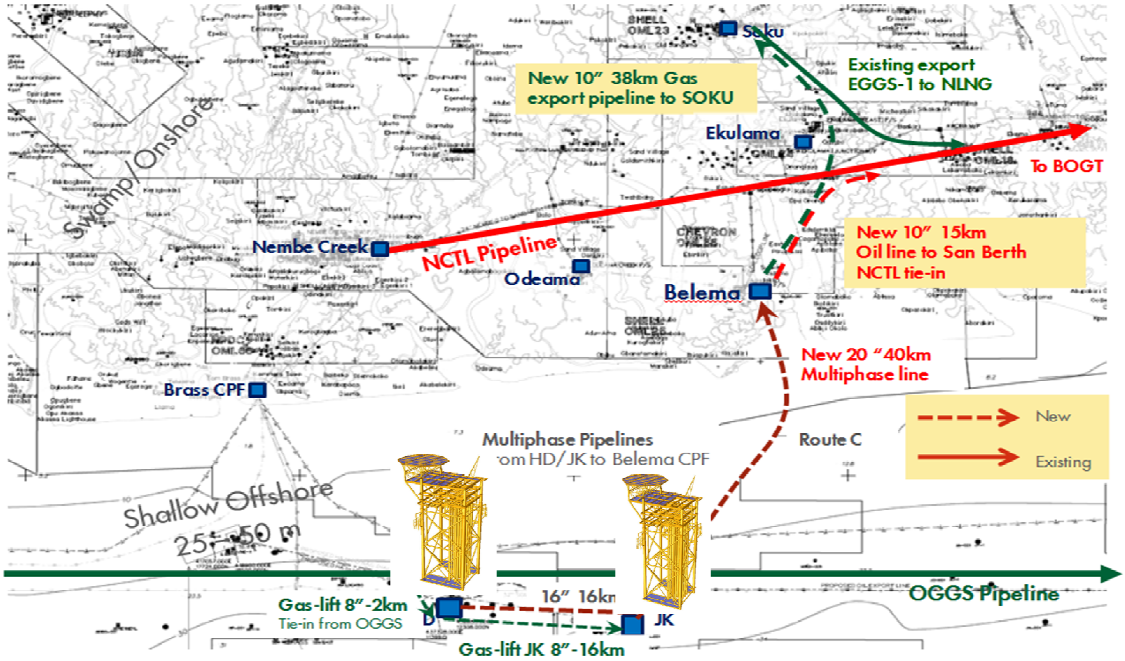
The result of the foregoing studies is the development of JK and HD field by means of two dedicated Normally Unmanned (NU) wellhead jackets (WHP) producing via one commingled free flowing multiphase line to a central onshore processing facility located at Belema. This concept will make use of the existing Belema gas plant facilities as much as possible to reduce CAPEX and OPEX.

### 1.3 HD/JK Project Scope

The development strategy for H-Block project is based on drilling and completion of 10 oil wells from the JK field and 17 oil wells + 1 appraisal well. The wells will be drilled by means of two dedicated unmanned wellhead jackets (WHP). The scope of the project is as summarized below:

(a) Two (2) Unmanned Wellhead Platforms at JK & HD fields comprise the Jacket and the Topsides to support the drilling and production of 27 wells (10 at HD & 17 at JK).
The substructure will include:

- Conductors within the Platform substructure
- Pipeline riser and supports
- Corrosion management devices
- Escape ladder and landing




The topsides will have four levels:

- Helideck which provides primary means of access for personnel to the Platform and will be at a sufficient height above the Production Deck to allow wire line activities on the wellheads to be undertaken without interfering with helicopter operations.
- Upper Deck which provides access to pig launcher and platform crane, and includes removable hatches to provide access to each wellhead tree. Space is provided on this deck to accommodate wire lining equipment required for down-hole well management.
- Production deck which contains Wellheads, flow lines, equipment room and shelter, electrical transformer, and safety and other equipment.
- Cellar Deck which is partial deck below the Production Deck, with ladder down to a sea escape landing and then to the sea. Also provides access to the pipeline isolation valve.

(b) Approximately 66 km of offshore pipelines comprising:

- 8" x 18 km gas pipeline from Shell's existing 32" Offshore Gas Gathering System (OGGS) through HD Platform to JK Platform for gaslifting the 27 wells at the HD & JK fields.
- 16" x 16 km multiphase pipeline from HD Platform (to co-mingle the production from HD field with JK fields at JK Platform.
- 20" x 40 km multiphase pipeline from the JK Platform to Belema hydrocarbon Central Processing Facility (CPF) location (pig receiver battery limit).

(c) About 70Km of composite Power/fibre optic cable from Belema power generation/distribution plant to the 2 WHPs for power supply, control and telecommunications will be installed.

(d) A New Central Processing facility (CPF) made up of 2 x 40, 000bbl/d flowstation with facilities and controls capable of handling gross liquid production / continuously assures efficient slug management.

(e) A new AG compression system, including integration with existing AGG plant at Belema, capable of delivering quality AG to NLNG via Soku AG plant.

(f) Approximately +/-61 km of oil & gas swamp export pipelines comprising:

- 10" X 15 km swamp pipeline tie-in to a 30" header at San Berth manifold on the existing Nembe Creek Trunk-line (NCTL) for export of hydrocarbon liquids from Belema CPF to Bonny Terminal.
- 10" x 38 Km gas pipeline from Belema CPF to Soku Gas plant for export gas to NLNG via Soku.

(g) Utilities systems (power generation/distribution, Flare system, Fire protection system, Instrument air, Potable water, telecommunications, etc).

(h). Miscellaneous Infrastructures - Central Control Building/facilities, Jetty, Workshop, Warehouse, Restaurant, Recreational facilities, Fence (perimeter, security and process plant), Landscaping, Security house, Surveillance equipment/systems, etc.

(i). A field Logistics Base capable of housing about 100 personnel at Belema.

Value Drivers:
The following are key value drivers for the H-Block project:

- Reduce Capex and Opex
- Accelerate Schedule (1st HC production)
- Grow SPDC Production (oil and gas supply)
- Maximize Ultimate Recovery

### 1.4 Current Project Status

**HD/JK**: The HD & JK Oil development is currently in the define phase (post DG 3). Opportunity reframing and Contracting Strategy workshops were held in May 2012. Pre-FEED to address FEL gaps and IPA recommendations has been completed. FEED commenced in October 2012 to complete by May 2013.

**HA/HB:** The HA/HB NAG Development is currently in the Identify/Assess phase (Pre-DG2)

### 1.5 Previous Proposals (Shell Share)

Previous pre-FID investment proposals (IP) were approved totaling **US$129.60 mln** Shell share, Sole risk to carry the H Block project through concept definition to FID. Total spend to date however is **US$129.29 mln** Shell Share sole risk indicating an under spend of **$0.31 mln** below previously approved GIP amount.

On the basis of the aforementioned project status, there is need for additional funding as per this Pre-FID request to accommodate current HD-JK projected Pre-FID and HA-HB projected Pre-DG2 expenditure (up to May 2014 FID date).

Schedule for some of the key project activities for HD/JK up to FID are shown below:

| Activity | Schedule | | |
|---|---|---|---|
| | Target Date | P50 Date | P90 Date |
| DG3 | 20/03/12 | 20/09/12 | 20/03/13 |
| Complete FEED | 01/05/13 | 01/11/13 | 01/05/14 |
| Complete Sandfilling of Belema | 10/10/13 | 10/04/13 | 10/07/14 |
| VAR 4 | 11/10/13 | 11/04/13 | 11/07/14 |
| FID | 19/05/14 | 19/11/14 | 19/02/15 |

**Other Relevant Information**:

HD/JK FID and OSD dates May-14 and Dec-18 respectively are based on the following conditions:

- Renewal of Shallow water license by Q1, 2013.
- Resolution of funding for the Project execution by Q4, 2013.
- Availability of funding for activities up to FID.

The 2012 - 2014 cost estimates for HD/JK are based on rates in applicable valid call-off contracts to be used for the Pre-FID activities. SCiN Port-Harcourt FEED office will handle the FEED for the onshore assets and the pipelines while P& T Aberdeen will handle the Well Head Platforms. The resources required by both SCiN FEED office and P&T Aberdeen are in place.

**Pre-FID Funding Requirement (Shell Share, Sole Risk)**

| Activity | 2012 | 2013 | 2014 |
|---|---|---|---|
| | US$ | US$ | US$ |
| Subsurface Management support | 771,400 | 2,699,900 | 771,400 |
| Platform FEED Preparatory Works (Pre-FEED) | 274,125 | 0 | 0 |
| Pre FEED | 2,304,172 | 0 | 0 |
| Multi -phase Pipel ine Flow Assurance | 54,415 | 54,415 | 0 |
| Pipeline & Riser Technical Assurance | 75,635 | 75,635 | 0 |
| MCI & Welding Support | 93,069 | 155,116 | 0 |
| FEED (Offshore and Swamp) | 1,928,500 | 3,642,690 | 0 |
| FEED (HD & JK Platforms) | 2,082,780 | 2,816,536 | 0 |
| Data Gathering (surveys, Metocean data, Geotechnics, etc) | 93,863 | 1,620,000 | 0 |
| Site Preparation Sandfilling) | 0 | 6,171,200 | 0 |
| Project Management | 3,085,600 | 3,857,000 | 4,936,960 |
| Permits & Consents (EIA, PTS, etc) | | 231,420 | 77,140 |
| Total HD & JK Pre-FID | 10,763,559 | 21,323,912 | 5,785,500 |
| HA & HB (Pre- DG2 Studies) | | 5,000,000 | 5,000,000 |
| Contingency | 2,771,897 | 6,560,556 | 2,777,547 |
| **Grand Total** | **13,535,456** | **32,884,468** | **13,563,047** |

## *Section 2: Value Proposition and financial context*

The HD and JK Oil Development is driven by business objectives that are fully aligned with the SPDC Business Priorities and Nigerian aspirations through the following:

- Harness/commercialise discovered oil resources in the JK and HD fields in an expedient manner.
- Secure shallow water licenses (OML 77, 74) and safeguard against future revocation.
- Fill the gap in the SPDC medium and long term oil and gas production and
- Provide infrastructure for the "greater / modular H Block development" and future development of the large undiscovered oil potential in nearby prospects (HD undiscovered etc.) and the large undiscovered gas potential, particularly in western OML 77.

These objectives are aligned to the SPDC's oil growth strategy of maximizing production from existing assets and further new development activities. The selected concept of developing "JK and HD oil first" through the Belema facilities and NAG later represents a 'ready-to-go' new development opportunity with the potential of producing to 80-100 kbbl/d oil (peak rate), over time developing about 200 MMboe of discovered resources.

## Summary Economics

The Pre-FID economic evaluation was carried out as a cost-only evaluation on a forward looking basis using the LE cost estimates. The entire cost of $59.98mln is treated as Opex. Details of economics results which are stated at Shell Share of 77.14% are shown in Table 2 below.

The following sensitivities were carried out on the **pre-FID base** case to show the impact of the various scenarios on the value of the project.

- High Opex.
- 1.5% cost markup due to Benchmark Verified and Approved (BVA) issues with NNPC.

Further analysis was carried out to ascertain the value of the project's full scope when the project takes FID using the LE cost estimates and the incremental production forecast. BP12 project data was used as the base case for the evaluation as shown in Table 3 below.

The following sensitivities were also carried out on the **full project scope** base case to show their impact on the project value.

- High and low CAPEX.
- High and Low Production
- One year Production delay
- Project with ring fence (i.e. project without tax incentives).
- 1.5% cost markup provision due to dispute by NNPC on Benchmark Verified and Approved (BVA) issues.

**Table 2: H and J Block Pre-FID Economic Grid (Shell Share)**

| PV Reference Date: 1/7/2012 | NPV (S/S $ mln) | | VIR | RTEP | UTC (RT $/boe) | | Payout-Time (RT) | Maximum Exposure (RT- AT) |
|---|---|---|---|---|---|---|---|---|
| Cash flow forward from: 1/1/2012 | 0% | 7% | 7% | % | 0% | 7% | (yyyy) | $mln (yyyy) |
| **Base Case** | | | | | | | | |
| RV-RT ($70/bbl & $1.74/mmbtu RT12) * | -8.9 | -8.3 | NA | NA | NA | NA | NA | 8.9 (2014) |
| **Sensitivities (using RV)** | | | | | | | | |
| High Opex (+25%) | | -10.4 | NA | | | | NA | 11.1( 2014) |
| 1.5% cost markup due to BVA issues | | -12.5 | NA | | | | | |

* SV and HV same as RV

| Parameter | Unit | BP12 Provision | Low | Mid | High | Comments |
|---|---|---|---|---|---|---|
| **Capex (MOD)** | US$ mln | | | | | |
| **Opex (MOD)_Project** | US$ mln | 34.0 | NA | 60.0 | 75.0 | PB12 is based on Shell Exlusive, while Pre-FID Opex includes 2012, HA and HB |
| **Production Volume** | mln boe | | | | | |
| **Start Up Date** | mm/yy | | | | | |
| **Production in first 12 months** | mln boe | | | | | |

**Table 3: H and J Block Full Project Scope Economic Grid (Shell Share)**

| PV Reference Date: 1/7/2012 | NPV (S/S $ mln) | | VIR | RTEP | UTC (RT $/boe) | | Payout-Time (RT) | Maximum Exposure (RT- AT) |
|---|---|---|---|---|---|---|---|---|
| Cash flow forward from: 1/1/2012 | 0% | 7% | 7% | % | 0% | 7% | (yyyy) | $mln (yyyy) |
| **Base Case** | | | | | | | | |
| SV-RT ($50/bbl & $1.30/mmbtu RT12) | 577.9 | **99.8** | **0.07** | | | | | |
| RV-RT ($70/bbl & $1.74/mmbtu RT12) | 961.6 | **267.3** | **0.20** | 14 | 16.9 | 22.8 | 2021 | 962.3 (2017) |
| HV-RT ($90/bbl & $2.10/mmbtu RT12) | 1340.8 | **432.4** | **0.31** | | | | | |
| Oil BEP (RT $/bbl)* | | | | | | | | |
| **Sensitivities (using RV)** | | | | | | | | |
| High CAPEX (+25%) | | **191.4** | **0.11** | | | | 2021 | 1202.8 (2017) |
| Low CAPEX (-15%) | | **312.7** | **0.27** | | | | 2021 | 817.9 (2017) |
| High Reserves (P10) | | **585.7** | **0.41** | | | | 2021 | 986.3 (2017) |
| Low Reserves (P90) | | **216.0** | **0.15** | | | | 2021 | 986.3 (2017) |
| 1-Yr Production Schedule Delay | | **241.4** | **0.16** | | | | 2021 | 981.5 (2016) |
| Project with Ring Fencing | | **97.5** | **0.07** | | | | 2021 | 1604.6 (2018) |
| 1.5% cost markup due to BVA issues | | **190.3** | **0.09** | | | | | |

## Economics Assumptions

Pre-FID Investment

- Pre-FID evaluation is treated as a cost only.
- Pre-FID Cost treated as Opex.
- NDDC levy 3% of total expenditure.

Full Project Scope

- Oil PSVs of $50/bbl @SV-RT12, $70/bbl @RV-RT12 (Base) and $90/bbl @HV-RT12 with appropriate Bonny offset applied.
- 2012 NLNG PSV was used.
- Oil was taxed under PPT (PPT tax rate of 85%).
- Gas was taxed under CITA with AGFA incentives.
- SPDC Generic fixed and variable OPEX assumptions were applied for the full project scope.
    - Oil fixed - 3.0% of cum. oil CAPEX
    - Gas fixed - 3.5% of cum. gas CAPEX
    - $1.92/boe assumed as variable OPEX.
- NDDC levy of 3% total expenditure.
- Education tax of 2% assessable profit.
- 2.5% of the MOD CAPEX assumed as SCD.
- GHV of 1150 BTU/Scf used.
- Gas flare penalty of $3.5 /Mscf was applied and is not tax deductible

- Abandonment cost is estimated at 10% of total project RT CAPEX.

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

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

**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, especially, pipeline systems.

*Mitigation:*

The amnesty programme of the federal government has helped to calm the security situation although uncertainty still pervades. The Security Information Network Centre (SINC) will monitor threat traffic and provide timely early warning to the project team on a `need to know and act` basis. All work will be done according to the approved security plan under the oversight of the Head of Security Operations. Community interfaces will be managed through the Global Memorandum of Understanding (GMoU) mechanism to be deployed in alignment with the project schedule. An allowance has been made in the project budget for funding of social investment programmes (including a community interdependency power supply project). Offsite fabrication work will be maximized and done at a safe and secure location thereby limiting site activities to a minimum.

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

The requirement to comply with the Nigerian Content Directive (NCD) Act could result in project cost and schedule overrun due to limited in-country material manufacturing capacity and capability.

*Mitigation:*

A detailed NCD compliance Plan will been worked out and approved by the Nigerian Content Development and Monitoring Board (herein after referred to as Board). This plan will highlight areas of gaps in compliance with the NCD Act, with the intent to seek waivers from the Board for out-of-country procurement. An early engagement with the Board in 2012 indicates that it is amenable to granting waivers for the project where there is a compelling business case.

Discontinuation of Project after Partial IP:
This pre-FID Investment Proposal is required principally for activities on the critical path viz: Pre-FEED, FEED for HD & JK facilities, associated infrastructure and pipelines, land acquisition, sand filling work. Although the project has not yet reached a full investment decision, project economics show that the project is attractive for the preferred option.

*Mitigation:*
Replication, and standardisation to facilitate adoption of deliverables by other projects in similar environment.

NNPC back-in and funding challenge:
NNPC may have difficulties funding its share of the costs when sole risk is terminated (equities revert back to 30% for Shell, 10% for Total, 5% for Agip and 55% for NNPC. NNPC could attempt to overturn sunk decisions leading to delays and gridlocks.

*Mitigation*:
Set appropriate conditions during the negotiations of the terms for NNPC's re-entry.

Scope Creep/ Escalation in Project Cost
*Mitigation*:

The proposal to commence FEED/detailed design immediately is to avoid Scope Creep after the contract is tendered and elongation of project Schedule.

Delayed renewal of Shallow Water Licence:
The SWL for H-Block is currently being renegotiated for renewal. The SWL is on the critical path to the commencement of detailed partners and regulators engagement on the project. The non-renewal of these licenses on time and or on favourable terms will delay DPR's approval of the FDP and FMENV's approval of EIA with resultant delays to FID and first oil date.

*Mitigation:*
SPDC commercial team is currently engaging the NAPIMS and DPR. Current project schedule assumes this will complete by end Q3, 2013.

Subsurface Uncertainties:

- HD subsurface technical definition risks (and risks to the HD drilling due to the data gathering and interpretation that will be going on whilst drilling is happening).
- Uncertainty in structural interpretation, GRV / HCIIP.
- Compartmentalization in HD field: Current subsurface data in HD indicates a number of potentially sealing faults which could increase the number of isolated compartments within the reservoirs.

*Mitigation:*
Building of Base, Low and High dynamic realisations using Base, Low and High structural interpretations, inclusion of HD appraisal and pilot holes in the project scope.

Foot-Print/Environment Risks:
Long pipeline route and encroachment on pipe line ROW, Squatter communities, desecration of cultural heritage, incursion into world heritage/RAMSAR sites, loss of land by communities, reputation loss with environmental NGOs.

*Mitigation:*
Minimization of land-take, implementation of lessons from TNPL-Use deep burial with concrete slabs and anti-tampering devices (On Line Real Time) to reduce tampering. Compliance with DPR regulation on pipeline sitting, incorporation of community in surveillance activities, payment of fair compensation after negotiation with affected communities, compliance with international conventions on bio-diversity and development/implementation of resettlement action plan (RAP).

Militant Attacks:
Following recent security and kidnap challenges in the Niger Delta, there is likelihood or possibilities of attacks in the near shore shallow water location and at the Swamp plant, during execution and operational phases of the project.

*Mitigation:*
Robust and functional Security plan to address identified risks, training for security details to understand the mindset and behaviour of hostage takers, provision for state of the art security apparatus (cctv etc), provision for youth welfare and youth development to reduce youth restiveness.

Slugging in 40km multi-phase pipeline:
Flowing hydrocarbon through long distance pipeline will experience frictional loss and heat loss to ambient along pipeline and could lead to unavoidable non-stable operation such as slugging flow. Large slug could form as result of improper operation of ramp-up activities. Severe slugging could also occur during if pigging activities are not properly managed

*Mitigation:*

A detailed flow assurance engineering will be carried out during the FEED, the slug-catcher will be designed to handle both two-phase separation and slug management at the CPF.

**Key Opportunities**

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

**Opportunity to provide electricity to communities (P)**

There exists an opportunity to provide free electrification for the communities in the Belema area as part of a strategic sustainable development drive that would create a positive social impact. This would have to be considered on a nodal level to assess local or partial electrification.

**Opportunity to source lift gas from OGGS (T)**

Lift gas for the wells has been estimated to start in year 2019 for JK followed by some HD wells. Lift gas will be taken from OGGS pipeline via an available subsea tie-in nearby HD (2 km away).

**Alternatives Considered**

Some surface facilities options were considered including:

Decision on Flowline and Bulkline Pressure Protection options: i.e Fully rated or Pressure + High Integrity Pressure Protection System (HIPPS) was considered. The Fully Rated option was selected for operational purposes, it will be easier to maintain the fully rated flowlines, than installing a HIPPS system which will require additional instrumentation; power supply and air supply vessels. Also an important safety consideration in this choice is the prevention of loss of containment due to flowline or bulkline overpressure situations which can result in impact to human life and the environment.

Bulk/Flowline Materials considered for use: Duplex Stainless Steel, Carbon Steel + Corrosion Inhibition, Carbon Steel + pH Control or GRP Lined carbon steel. Carbon steel with corrosion allowance, in addition corrosion inhibition (injection facilities at the platform) was selected on account of the predicted internal corrosion rate and estimation of the service life corrosion for the oil lines.

***Section 4: Carbon management***

The only source of HC emission into the air on this project is via leak of HC from normal operation, e.g. leaks from relief valves which are routed to the flare and is infrequent, and leaks from flanges. However the right level of tightening will be applied to flanges to ensure that this does not occur. Also, flaring shall not be routine, as surge vessel gas will be collected and pilot gas will be of such little quantity as to be insignificant. All liquid emissions shall be routed to a closed drain header and from thence pumped back into the export system, to avoid contact with the environment.

***Section 5: Corporate structure, and governance***

This project fits within the existing SPDC corporate structure and 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. Functional support for this proposal is provided by the Finance, Supply Chain Management, Legal, Treasury and Tax functions.

***Section 7: Project management, monitoring and review***

The Major Projects Team under UIG/T/PHE is managing the project. The Project assurance plan is compliant with the ORP stipulations. FID is planned for May 2014.

***Section 8: Budget provision***

The HD & JK Oil Development is in SPDC's BP'12

***Section 9: Group financial reporting impact***

There are no unusual accounting issues related to this GIP. Expenditure related to the project will be accounted for in line with Group Policy. The financial impact of this proposal on Shell Group Financials is as indicated in the table below:

| US $ Million | 2012 | 2013 | 2014 | 2015 | 2016 | Post 2016 |
|---|---|---|---|---|---|---|
| **Total Commitment** | 13.54 | 32.88 | 13.56 | | | |
| **Cash Flow** | | | | | | |
| SCD Expenditure | | | | | | |
| Pre-FID Expenditure | 13.54 | 32.88 | 13.56 | | | |
| Capital Expenditure | | | | | | |
| Operating Expenditure | 0.4 | 0.99 | 0.41 | | | |
| Cash flow From Operations | -2.75 | -5.98 | 0.2 | -0.57 | | |
| Cash Surplus/(Deficit) | -2.75 | -5.98 | 0.2 | -0.57 | | |
| **Profit and Loss** | | | | | | |
| NIBIAT +/- | -2.05 | -4.98 | -2.06 | | | |
| Balance Sheet | | | | | | |
| Avg Capital Employed | 5.35 | 16.19 | 25.56 | 34.72 | 45 | 275 |

***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 will be financed by funds provided by JV Sole Risk partners in the SPDC venture until NNPC re-entry and return to normal SPDC Joint Venture arrangement. Shell Share of capital expenditure will be met by SPDC's own cash flow.

***Section 12: Taxation***

The incremental value and cost generated by this funding request will be taxed together with SPDC total income in accordance with applicable fiscal regime.

***Section 13: Key Parameters***

The commitments that this proposal will cover are as follows (Shell Share, Sole Risk):

- US$ 16.12 mln Project Management (HD/JK)
- US$ 2.58 mln Pre-FEED (HD/JK)
- US$ 10.98 mln FEED (HD/JK)
- US$ 8.19mln Permits & Consents, Data Acq surveys, land acq, Belema sandfilling (HD/JK)

- US$ 10.00 mln DG2 studies on HA/HB to DG2 (2013 - 2014)
- US$12.11 mln Contingency

This will bring the aggregate expenditure on pre-FID to **US$189.59mln** Shell Share, Sole Risk.

### *Section 14: Signatures*

This Proposal is submitted to SPDC MD for approval.

Supported by:

.....
Bernard Bos (FUI/F)
Date .../... /...

For shareholder approval:

.....
Ian Craig ( UIG/P)
Date .../.... /....

*Initiator:* _____
Toyin Olagunju (UIG/T/P)
Date …/…/…..

Attachment 1: GIP Plan - Expenditure sp

Previously Approved GIP.pdf