Proposed Revisions
DBNGP Access Arrangement

2016 – 2020 Access Arrangement Period

Actual capital expenditure 2011-15 (Stay in business)

Supporting Submission: 8 (Part 2)

PUBLIC

Date Submitted: 31/12/2014

CONFIDENTIALITY

1.1 This submission is provided to the ERA to assist it in its assessment of the proposed revisions to the DBNGP Access Arrangement.

1.2 Some information contained in the submission is confidential and commercially sensitive. The reasons for DBP's claim of confidentiality are outlined in Appendix A: to this submission.

1.3 A public *version* of this submission will be provided separately.

1.4 Accordingly, this version of the submission is provided to the ERA on the following conditions:

(a) it is to be used by the ERA solely for the purposes of assessing the proposed revisions to the DBNGP Access Arrangement;

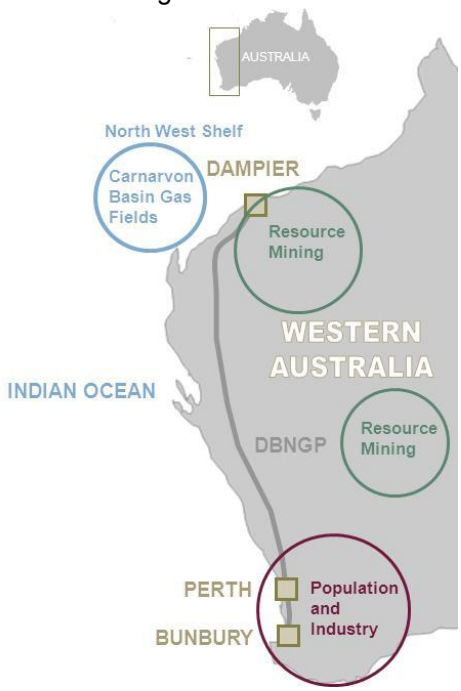
(b) it is not to be disclosed to any person other than the following without DBP's prior written approval:

(i) those staff of the ERA who are involved in assisting the ERA in its assessment process; and

(ii) those of the ERA's consultants who are involved in assisting the ERA in its assessment process and who have appropriate confidentiality undertakings in place.

DBP Transmission (DBP) is the owner and operator of the Dampier to Bunbury Natural Gas Pipeline (DBNGP), Western Australia's most important piece of energy infrastructure.

The DBNGP is WA's key gas transmission pipeline stretching almost 1600 kilometres and linking the gas fields located in the Carnarvon Basin off the Pilbara coast with population centres and industry in the south-west of the State



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1. SIB PROJECTS & EXPENDITURE ESTIMATED 2014

1.1 Table 1 below lists all stay in business (SIB) projects that were underway or forecast to be undertaken during 2014 and associated expenditure made or forecast to be made during the year. It should be noted that expenditure may not be the total extent of expenditure required for or incurred under projects that span more than one regulatory year.

1.2 DBP notes that 2014 expenditure includes 9 months of actuals and 3 months of forecast. DBP will update the estimate provided for 2014 to actuals and undertake the required verification in a submission to be filed once the half yearly financial accounts have been approved by DBP's Board and the verification process with DBP's auditors has been completed. This is currently expected to be completed by early April 2015. DBP also intends to update the Proposed Revised AA and AAI with the actual expenditure for 2014 when responding to the ERA's draft decision.

Table 1: SIB projects expenditure - 2014 ($ Nominal)

Table	Project name	Asset Category	Est. 2014
Table 2	System review project	Other	[redacted]
Table 3	Microwave towers	Other	
Table 4	MLV117 to Clifton Road meter station	Pipeline	
Table 5	Replace turbine air inlet CS7/2	Compression	
Table 6	Upgrade solar panels spur sites 1-6	Other	
Table 7	Replace DEUTZ TEM panels	Other	
Table 8	Upgrade of flow computers	Metering	
Table 9	Fire & gas at CS2, 4, 5, 6, 7, 8, 10	Compression	
Table 10	Upgrade GEA & DEA controls	Compression	
Table 11	Retrofit RCD protection at CSs	Compression	
Table 12	Mitigate noise at accommodation facilities	Compression	
Table 13	Implement working at height standards CS	Compression	
Table 14	Replace odorant transport tank	Other	
Table 15	Upgrade odorant injection facilities	Other	
Table 16	Management of change - FY12/13	Other	
Table 17	Replace batteries & battery chargers CS6&9	Other	
Table 18	Replacement of coriolis meters	Other	
Table 19	Upgrade fire & gas system at mainline & meter stations	Other	
Table 20	New fire suppression System- Jandakot Server room	Other	
Table 21	Recycle valve	Other	
Table 22	Pressure vessel inspection	Other	
Table 23	GEA Power generation at CS6 and CS7	Compression	
Table 24	Valve overhaul	Other	
Table 25	Repair corroded horizontal IG joints	Other	
Table 26	Safety critical site drawings	Other	
Table 27	Upgrade GEA F&G system at CS6	Compression	
Table 28	Field technical services tooling	Pipeline	
Table 29	Maintenance tools FY13/14	Other	
Table 30	Jandakot workshop tools	Other	
Table 31	Provision for Health & Safety projects	Other	
Table 32	Maximo upgrade	Other	

Table	Project name	Asset Category	Est. 2014
Table 33	Replace reverse osmosis at CSs	Compression	[redacted]
Table 34	GEA & DEA battery relocation	Compression	
Table 35	Excavate & inspect DGNGP as per CP Dig-up	Pipeline	
Table 36	Replace air compressor at CS1,CS3 & CS8	Compression	
Table 37	Installation of harmonics filters at CS6	Compression	
Table 38	Management of change - FY13/14	Other	
Table 39	Replace wall/roof sheets- Repeater, Comms & GEA hut	Other	
Table 40	Replace D2 with D4 wheels at CS3/3	Compression	
Table 41	10KW GEA Intelisys control Sys upgrade	Other	
Table 42	Install PCD air for boost compressor	Other	
Table 43	Replace labyrinth seals-NP units CS6&9	Compression	
Table 44	Additional hardware/software license	Other	
Table 45	Replace air conditioning at CS2, CS3 CS4	Compression	
Table 46	Painting of meter stations	Metering	
Table 47	Replace engineering doc control system	Other	
Table 48	Combined service drawings- CS2 to CS10	Other	
Table 49	Jandakot fire system upgrade	Other	
Table 50	Replace ref electrodes- mainline MLV comp	Other	
Table 51	Fuel gas pressure control system upgrade	Other	
Table 52	Install pressure monitoring devices-2 meter stations	Metering	
Table 53	Replace sacrificial anode bed- Worsley lateral	Other	
Table 54	Review critical spares holdings for turbines	Other	
Table 55	Solar control software update	Other	
Table 56	Near Maps license	Other	
Table 57	GIS enhancements	Other	
Table 58	Set point for DBNGP facilities	Other	
Table 59	CS6 CSP ESD rectification	Compression	
Table 60	Devil Creek AC supply TISO Trnsfrm	Metering	
Table 61	Visitors kiosk	Other	
Table 62	Replacement of firewall	Other	
Table 63	Overhaul 1200D tapping machine at Jandakot	Other	
Table 64	Replacement of actuators	Other	
Table 65	Replace CS10 3&4 fuel gas coriolis meters	Compression	
Table 66	Hazardous area equip rectification CSs	Compression	
Table 67	Inspection of hazardous areas	Other	
Table 68	Gas chromatograph upgrade	Other	
Table 69	Jandakot power system upgrade	Other	
Table 70	Rehabilitation monitoring	Other	
Table 71	Provision for subsequent costs	Other	
Table 72	Management of change FY14/15	Other	
Table 73	Permanent work platforms at CCVT sites	Other	
Table 74	Relocate Northern comms hut batteries	Other	
Table 75	Upgrade of coriolis meters	Other	
Table 76	Vehicle replacement FY14/15	Other	

Table	Project name	Asset Category	Est. 2014
Table 77	Restructure tooling requirements	Other	[redacted]
Table 78	Field maintenance tool replacement	Other	
Table 79	Handheld scanners	Other	
Table 80	Intelligent pigging	Pipeline	
Table 81	Relocation of GEA batteries	Compression	
Table 82	Upgrade F&G Equipment / upgrade MLV & meter station	Other	
Table 83	SCADA software upgrade	Other	
Table 84	Production of safety key site	Other	
Table 85	Replacement of air conditioning at compressor stations	Compression	
Table 86	24VDC batteries and charger replacement	Other	
Table 87	Replacement of unit control systems at CS2/2, CS4/2 & CS7/2	Compression	
Table 88	Install soft start modules to aftercoolers	Other	
Table 89	Jandakot workshop tools FY14/15	Other	
Table 90	SDO tools FY14/15	Other	
Table 91	6 X 4 tipper, tag trailer & skid steer loader	Other	
Table 92	Field technical services tools	Other	
Table 93	Maintenance tools FY14/15	Other	
Table 94	Improve load banks reliability	Other	
Table 95	Upgrade Intelisys Control System	Other	
Table 96	L7 Server room fire suppression system	Other	
Table 97	Provision of video conferencing	Other	
Table 98	Corporate ICT transition from ATCO	Other	
Table 99	Upgrade of DBP telephony system	Other	
Table 100	Relocate DMZ Business systems from Level 5 to Level 7 (Allendale)	Other	
Table 101	Relocate Tel network from Level 5 to Level 7 (Allendale)	Other	
Table 102	Relocate SCADA from Level 5 to Level 7 (Allendale)	Other	
Table 103	Annual provision for IT Items - PC/Printers/Monitors/License True up	Other	
Table 104	Intelligent Pigging- mainline, laterals s & unpig	Pipeline	
Table 105	Replace CS vent attenuators & vents at CS2,4,7	Compression	
Table 106	Lean-to for Jandakot repairs facility	Other	
Table 107	Refurbish accommodation facilities- CSs FY13/14	Compression	
Table 108	Annual provision for IT items- PC	Other	
Table 109	Provision for Health & Safety projects	Other	
Table 110	DMZ security review	Other	
Table 111	EDW technology refresh	Other	
Table 112	Implementation of DBNGP CP Dig-up programme	Pipeline	
Table 113	Rectifications of hazardous area equipment installations FY14/15	Other	
Table 114	Inspection of hazardous areas FY14/15	Other	
Table 115	Software Modification for Solar Turbine-compressor units	Other	
Table 116	Upgrade of station PLC at compressor stations	Compression	
Table 117	Purchase of trailer for meter station work	Other	
Table 118	Repair workshop painting booth	Other	
Table 119	Repair workshop entry ramp	Other	
	Total (Nominal)		**$14,910,078**

1.3 The remainder of this section provides the justification for the expenditure for each project summarised in Table 1 against the criteria in NGR 79(2).

CRS system review project

Table 2: CRS system review project

	Project details
Expenditure	[redacted]
Description	IT architectural design review of CRS implementation and functionality. Expenditure is continued from previous year.
Business need	Numerous incremental software updates to DBP's customised Customer Reporting System (CRS) had caused a number of issues requiring corrective action.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Microwave towers

Table 3: Microwave towers

	Project details
Expenditure	[redacted]
Description	FEED study to determine the structural integrity of the microwave towers at repeater sites 3, 4, 7 and 9. The outcome to determine an appropriate way to rectify and fix to current Australian Standards.
Business need	Tower structures were assessed to be reaching end of life.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement

MLV117 to Clifton Road meter station

Table 4: MLV117 to Clifton Road meter station

	Project details
Incurred expenditure	[redacted]
Description	• Upgrade and replacement of the DBNGP Southern Communications Network from MLV117. • Upgrade and replace the DC power systems at MLV 117. • Upgrade of the communications in the Kwinana industrial area to facilitate exit from the Western Power pilot cable network. • Upgrade of the communications to Compressor Station 10 to eliminate reliance on Telstra/WestNet services and also to increase capacity to this site. • Upgrade communications at Pinjar power station and exit use of Western Power communications infrastructure • Upgrade communications at Mungarra power station and exit use of Western Power communications infrastructure • Consolidate backup communications paths between Perth and Karratha (SCADA, 2-way,Telephone, Comms, Corporate) This is part of the MLV117 to Clifton road communications upgrade project continued from previous years.
Business need	• Southern Communications equipment at end of life; • DC power systems at end of life; • Required exit from the Western Power owned and operated pilot cable network; • Cost savings by consolidating 3rd party provided backup communications circuits; and • Failure to undertake this project would have resulted in loss of remote visibility and control of the DBNGP from MLV117 Della Road – MLV157 Clifton road.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Replace turbine air inlet CS7/2

Table 5: Replace turbine air inlet CS7/2

	Project details
Incurred expenditure	[redacted]
Description	Removal of the existing Stage 3A turbine inlet filter housings, and installation of the turbine air inlets at compressor station No.7 unit 2. This expenditure is for continued work on the last and remaining turbine air inlet replacement program for CS2, 4, and 7 (CS2 and 4 had been completed in previous years).
Business need	The existing Stage 3A turbine air inlet filters housings were corroding and deteriorating and required replacement in order to reduce the risk of turbine axial compressor damage and possible catastrophic failure. Expected benefits of this project were a significant reduction in the risk of failure from ingestion of corrosion and collapsed filter material.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Upgrade solar panels at spur sites 1-6

Table 6: Upgrade solar panels at spur sites 1-6

	Project details
Incurred expenditure	[redacted]
Description	Upgrade of solar panels at spur sites 1-6
Business need	Due to ageing and failure of existing solar panels the sites have become prone to power outages which created issues impacting the remote visibility via SCADA. To control this site effectively it is necessary to upgrade the solar power at this site to maintain effective control. This expenditure is continued from previous years.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Replace DUETZ TEM Panels

Table 7: Replace DUETS TEM Panels

	Project details
Expenditure	[redacted]
Description	Replacement of TEM systems at CS02, CS04, CS06 & CS09 with an InteliVision / GE GEA PLC solution. Expenditure is for the implementation work as part of a multiple year project, following the FEED study in 2011.
Business need	TEM systems at CS02, CS04, CS06 & CS09 were obsolete and no longer repairable due to unavailability of componentry.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Upgrade flow computers

Table 8: Upgrade flow computers

	Project details
Incurred expenditure	[redacted]
Description	Upgrade flow computers, RTUs, associated equipment cabinets, DC circuit wiring and associated drawings and I.S. barriers at 40 metering sites. Expenditure is for the implementation work as part of a multiple year project and continued from previous years.
Business need	• 40 flow computers were at end of life. Replacement spares are no longer available. Failure to implement this project would have resulted in loss of billing data, site visibility and several safety concerns over inadequate 240VAC wiring. • Existing electrical wiring drawings at most sites are inadequate to perform troubleshooting and engineering without site visit. • Hazardous area barriers must be upgraded to meet current Hazardous Area Requirements.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement

Fire and gas at CS2, 4, 5, 6, 7, 8 & 10

Table 9: Fire and gas at CS2, 4, 5, 6, 7, 8 & 10

	Project details
Incurred expenditure	[redacted]
Description	Replace fire and gas systems at CS 2, 4, 5, 6, 7, 8, and 10 including Station Emergency Shutdown (SESD) & Mainline Emergency Shutdown (MLESD). This project excludes the replacement of fire & gas systems of GEAs (to be replaced under different project) and fire & gas replacement system of Stage 4 units and stage 5B units (installed after 2006 and are not considered to be obsolete). Implementation will occur over a number of years and was initiated in 2011
Business need	All compressor stations are equipped with suitable fire & gas monitoring system to handle the risk to plant and personnel. There were CO_2 based fire suppression system for compressor unit buildings installed during the ACS expansion project. There were also water mist based fire suppression system for compressor enclosures installed during the Stage 4 expansion project. To handle fire and gas release, various types of sensor are used at compressor stations. All sensors are connected to Programmable Logic Control (PLC) through interfacing system. The PLC carry out voting and generate confirm fire or confirm gas detect signals to initiate further protective action. Micro-1000 and Sieger-5701 system were declared obsolete and there are no longer supported by the vendor. The project addresses the problem of obsolescence.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement

Upgrade GEA & DEA controls

Table 10: Upgrade GEA & DEA controls

	Project details
Expenditure	[redacted]
Description	Upgrade GEA and DEA controls at compressor stations 1 through to 9. This project implemented work recommended by the Front End Engineering Design (FEED) study completed for Compressor Station Power Systems in 2013. Work will enhance the controllability / operability and stability of the DBNGP Compressor Station Power Generation Systems (GEA and DEA). This project will be completed over multiple years.
Business need	This project enhanced the controllability and stability of the DBNGP Compressor Station power systems. The existing power generation system had reached the limit of useable life. Old control system hardware was obsolete and therefore needed replacement. Legacy GEA control system architecture severely restricted effective integration into the compressor station control system, leading to loss of unstable operation affecting compressor station reliability. This project enhanced maintainability with respect to ease of fault finding, operational efficiency and access to historical data and event logs. Monitoring of live operational data also enhanced access via the local site HMI, Control System Network and remotely from SCADA.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

FEED RCD protection at CS

Table 11: FEED RCD protection at CS

	Project details
Expenditure	[redacted]
Description	The purpose of this project is to review the need for the retrofit of Residual Circuit Breakers (RCD) for all compressor stations.
Business need	While DBP is not obliged to correct installations retrospectively. This issue was raised by DBP's maintenance safety committee as a concern, which initiated a FEED study. RCDs for an new electrical installation is required to comply with the Australian Wiring Rules is defined in the Electricity (Licensing) Regulations 1991 (WA) which in turn is referenced in the Electricity Act 1945 (WA). Therefore, compliance with the Australian Wiring Rules is mandatory in Western Australia. In addition, compliance with the Australian Wiring Rules is a condition of DBP's pipeline licenses and the Safety Case.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services

Mitigate noise at accommodation facilities

Table 12: Mitigate noise at accommodation facilitates

	Project details
Expenditure	[redacted]
Description	Continuation of installation and testing of noise rectification works to reduce tonal noise levels in the sleeping accommodation buildings at compressor stations. The overall project includes: Acoustic attenuation of the air inlet ducting of the following stage 4 solar turbine packages: • CS02 Unit #3 • CS03 Unit #3 • CS04 Unit #3 Acoustic attenuation of the new air inlet ducting of the following stage 3 solar turbine packages: • CS02 Unit #2 • CS04 Unit #2 Replaced exhaust mufflers on the following GEA packages: • CS02 GEA #3 • CS04 GEA #3
Business need	Tonal characteristics in noise can pose a safety hazard to the public and those working on the DBNGP. Most immediately they have an impact on comfort levels within accommodation facilities and can affect the quality of sleep effecting fatigue levels of staff work at site for extended period of time. High noise levels have been measured at two sources: • Air inlet ducting on stage 4 solar turbine packages, and • Exhaust mufflers on stage 5A GEA packages Further, the air inlets being installed on the stage 3A solar turbine packages are of the same design as those currently in use on the stage 4 packages and are therefore expected to also produce problematic tonal noise. The key benefit resulting from this project is to ensure compliance with OHS regulations and Australian Standards.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to comply with a regulatory obligation or requirement

Implement working at heights standards at CS

Table 13: Implement working at heights standards at CS

	Project details
Expenditure	[redacted]
Description	The working at heights project delivers compliance with all relevant occupational health and safety legislation, and Australian Standards. This is an ongoing project that selects a scope each year based of priority. For example, the practice of working on after coolers has been ranked highly due to the combination of significant height with confined space, and involves execution of a rescue plan from height. New platforms have been designed for DAVIT rescue equipment and these will be fabricated and installed at CS09, CS06, Dampier facilities. In addition, prefabrication of platform railing extensions and access improvements to suit WLPG and CS09 odorant storage facilities including installation will been included.
Business need	The key benefit resulting from this project is to ensure access and egress of above ground facility on the DBNGP is compliant with OHS regulations and Australian Standards. Working at Heights safe practice is also a key focus of DBP's Zero Harm Principles.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to comply with a regulatory obligation or requirement

Replace odorant transport tank

Table 14: Replace odorant transport tank

	Project details
Expenditure	[redacted]
Description	Dispose of the current odorant transport equipment and engineer a certified vessel utilising approved and appropriate transfer equipment minimising working at height issues and manual handling risk. Implementation of systems with backup and interlocks to ensure operator error will not result in odour release. Safety and spill equipment also to be installed in transport. Expenditure is continued from the previous year.
Business need	Odorant transfers are made from bulk storage facilities at CS9 and WLPG to onsite injection facilities along the DBNGP. The equipment used required a full engineering review, redesign and modifications/replacement to ensure equipment is fit for purpose without the identified risks associated with personal injury and environmental impact, thereby ensuring compliance with DBP's Safety Case.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to comply with a regulatory obligation or requirement

Upgrade odorant injection facilities

Table 15: Upgrade odorant injection facilities

	Project details
Expenditure	[redacted]
Description	This project was a continuation from previous year. This expenditure involved site installation and commissioning of the new odorant injection systems for four meter stations: • Forrestdale • Welshpool • Harrow Street • Caversham
Business need	Replacing this equipment was required to remain compliant with Australian Standards. The new design determined by a HAZOP (DBP's internal risk assessment process) also incorporated additional valving arrangements to ensure exposure to odorant, a dangerous substance at concentration, is minimised.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to comply with a regulatory obligation or requirement

Management of change FY12/13

Table 16: Management of change FY12/13

	Project details
Incurred expenditure	[redacted]
Description	Management of change projects are minor in nature with expenditure less than $50,000.
Business need	During the normal operation of the DBNGP, various design changes are required to: • Sustain business; • Alleviate unsafe condition; • Increase reliability; • Make equipment more reliable; • Increase efficiency; and/or • Reduce costs.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Replace batteries and battery chargers CS 6 & 9

Table 17: Replace batteries and battery chargers CS6 & 9

	Project details
Expenditure	[redacted]
Description	Replace the 110VDC battery chargers and battery banks for all compressor stations. 110VDC battery chargers sets requirements: • Each battery charger sets consist of 1x 110VDC charger cabinets, 1x battery maintenance point (BMP) panels. • Total required battery chargers = 14x sets • 110VDC battery banks sets requirements: • Each battery bank sets consist of 54x gel type batteries (340Ah Capacity). • Total required battery banks = 14x sets Scope of work • Engineering consultants to provide support for design • Vendors to supply 110VDC battery changers and battery banks sets for CS#1, 2, 3, 4, 5, 7 and 8 • Electrical contractors to install 110VDC battery changers and battery banks • Consultants and electrical contractors to test and commissioning installation • As build drawings Expenditure is a continuation from the project in 2013.
Business need	• Obsolete equipment with no support; • Spare parts were no longer available; • Faults on these systems were increasing; and • Two battery chargers already isolated due to failure.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Replacement of coriolis meters

Table 18: Replacement of coriolis meters

	Project details
Expenditure	[redacted]
Description	Sixteen coriolis meters have transmitters that were at end of life and were no longer supported by the vendor. Expenditure is a continuation from the project in 2013
Business need	• Existing flow transmitters were failing • Spares were unavailable • The flow elements were superseded 5 prior • Project schedule as part of the long term equipment replacement strategy • This solution was chosen for the following reasons: • The upgrade was a stop gap measure that only upgrades the electronics and core processor. The flow element is still >12 years old and will fail at some time • The price difference between only other coriolis option E&H was minimal. The proposed meters were already proven on the DBGNP.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Upgrade fire and gas at mainline and meter stations

Table 19: Upgrade fire and gas at mainline and meter stations

	Project details
Incurred expenditure	[redacted]
Description	Old fire and gas controllers were replaced with new Sieger 57 type controllers as per previous CS06 and CS09 retrofit carried out during GEA reliability in 2009/10 financial year. The aim was to minimise changes and re-use existing GEA F&G sensors and also use the existing EGA Programmable Logic Control (PLC) code for coding annunciator display and SCADA. This work is a continuation of the fire and gas work extending from the compressor station to the mainline and meter stations project in 2013.
Business need	• Required to meet prescribed safety requirements. • Replacement of ageing and obsolete equipment that are no longer supported by the vendor • Compliance to Asset Management Plan and Safety Case
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement

New fire suppression system - Jandakot server room

Table 20: New fire and suppression system - Jandakot sever room

	Project details
Expenditure	[redacted]
Description	Install a fire suppression system into the Jandakot Server room.
Business need	Due to the critical function of the IT assets in the Jandakot server room (which acts as DBP's ICT DRP backup site), it was necessary to protect the equipment from a fire before it threatens surrounding equipment. Expenditure relates to the installation works that followed the project in 2013.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement

Recycle valve

Table 21: Recycle valve

	Project details
Expenditure	[redacted]
Description	This project is for the overhaul of valves. This expenditure is for the purchase of replacement stud bolts.
Business need	Major valves need to be overhauled due to ageing and to adhere to DBP's asset management plan requirements (and therefore the safety case).
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred. • to comply with a regulatory obligation or requirement

Pressure vessel inspection

Table 22: Pressure vessel inspection

	Project details
Expenditure	[redacted]
Description	This project saw the replacement of pressure vessels at the following sites: • Mungarra Meter Station Water Bath Heater HS/2 (Tube bundle only) • Mungarra Meter Station Water Bath Heater HO/2 (Tube bundle only) • CS08 Unit 1 Fuel Gas Water Bath Heater (Tube bundle only) • CS01 Unit 1 Fuel Gas Water Bath Heater, and (Tube bundle only) • CS08 Station Recycle Valve Accumulator Vessel
Business need	AS3788 pressure equipment inspections have identified vessels requiring repair or replacement due to material loss in pressure containing areas.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to comply with a regulatory obligation or requirement • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

GEA Power generation at CS6 & CS7

Table 23: GEA Power generation at CS6 & CS7

	Project details
Expenditure	[redacted]
Description	This project involves the following modifications to the GEA power generation system at the following compressor stations: CS6 • Install load bank monitoring system • Segregate main distribution board special services (MDBSS) bus CS7 • hardware modification to GEA#2 to allow low load operation
Business need	• Earth leakage at CS6 required the segregation of the MDBSS bus. • Load bank monitoring improves power generation efficiency • Improve power generation efficiency with the ability to operate on low loads.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Valve overhaul

Table 24: Valve overhaul

	Project details
Expenditure	[redacted]
Description	This project is for the overhaul of valves and expenditure specifically relates to the purchase of replacement stud bolts.
Business need	Major valves need to be overhauled due to ageing.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Repair corroded horizontal IG joints

Table 25: Proposal for repair of corroded horizontal IG joints

	Project details
Expenditure	[redacted]
Description	Due to excessive corrosion on the meter station inlets insulation flanges at Pinjarra & Wagerup, there was a need to repair flanges to improve their integrity. On the most recent inspection by DBP's corrosion engineer both sites indicated significant corrosion in the horizontal insulation gaskets (IG) joints at both delivery lines. The flange gap was full of corrosion product and detached paint flakes. DBP assessed the safest solution was to renovate corroded joints and maintain IG in the line, hot tap and bypass for uninterrupted gas supply to both delivery lines. The project includes detailed FEED study to design a system of filtration downstream of hot tap to eliminate swarf entering shipper installations.
Business need	Renovation of the flange joints was the only solution that maintained the integrity of the delivery point and prevented future gas leak. There was no practical solution to seal the flange joint externally using mechanical clamp without compromising the cathodic protection system. No action may have resulted in an unplanned shutdown and unavailability of supply.
NGR 79(2) ground	In accordance with NGR 79 (2)(c) the capital expenditure is necessary: • to maintain and improve the safety of services. • to maintain the integrity of services.

Safety critical site drawings

Table 26: Safety critical site drawings

	Project details
Expenditure	[redacted]
Description	Improvement to the following safety critical DBNGP key site drawings • Piping layout • Piping and instrument diagram • Electrical schematics for power distribution, emergency shutdown, gas service valve control and equipment located in hazardous areas • Hazardous area layout Expenditure relates to work continued from previous year.
Business need	Safety and operational critical drawings: • These drawings are key drawings upon which work planning, safe working isolations and corrective action works are based. If the drawings are not clear or are misleading, this can contribute to error and delay. For example, a piping layout drawing requiring referral to a separate drawing showing a fragment modified by a project could lead to inadvertent overlooking of the project modification or a point of isolation. • Project modifications being shown on separate drawings showing only a fragment has been a widely used technique to save drafting costs dating back to the mid-1980's. As-built drawings from projects and management of change modifications are sometimes still on backlog to be updated. Search meta data is not available for many of these drawings so the drawings are difficult to find in Intranet searches, particularly if the drawings span multiple numbering systems.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Upgrade GEA F&G system at CS6

Table 27: Upgrade GEA F&G system at CS6

	Project details
Expenditure	[redacted]
Description	The existing F&G monitoring system at CS6 will be replaced with the current system from the same manufacturer. Expenditure form this project has continued from 2013.
Business need	• Very limited spare support from the manufacturer due to obsolescence. • Reliable F&G monitoring will ensure integrity of assets.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Field technical services tooling

Table 28: Tools and equipment for field tech services

	Project details
Expenditure	[redacted]
Description	The purchase of specialist tools for Rotating Plant Mechanical, Gas Measurement, and Rotating Plant Control Systems teams within the Maintenance division. Cost are for the following: • Ralston Fitting Adapter; 3/8 Inch Tube • nVision 100 Bar Module Part No 100BAR • Ralston Fitting Adapter; 1/4 Inch Male • Ralston Fitting Adapter; 1/4 Inch Tube • TwistGuard Test Leads (Fluke Mfg. Co. In)
Business need	Procurement of specialised equipment and tooling to facilitate the Field Technical Services Group's function supporting and investigating various tasks that involve diagnostic and project on the DBNGP.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Maintenance tools FY13/14

Table 29: Tools and equipment for maintenance

	Project details
Expenditure	[redacted]
Description	Purchase tooling to ensure maintenance activities can be completed efficiently and effectively. Cost are for the following: • detector altair multi gas • crystal eng. i.s. dual range pressure ca • ralston nitropak calibration pressure so • 300mm steel rule • rigid tube bender 1/2 • drill bit set • fluke general purpose lance tip temperature • aviation snips • vice grips 10" • sidchrome adjustable wrench 300mm • rigid tube cutter #150 1 1/8 • pliers long nose • chest tool 10-draw b/ring slide jbs • fluke 725ex i.s. multifunction process c • intrinsically safe trms industrial multi • fluke 9040 phase rotation indicator • fluke 773 milliamp process clamp meter • demand flow regulator • cylinder gas calibration 50% vol methane • 475 hart© communicator, iec-ex intrinsic
Business need	Required to allow staff to access appropriate equipment required to perform normal maintenance duties on the DBNGP.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Jandakot workshop tools

Table 30: Jandakot workshop tools

	Project details
Expenditure	[redacted]
Description	Purchase tooling to ensure maintenance activities can be completed efficiently and effectively. Cost are for the following: • regulator nitrogen 1000kpa type50 310345 • file thread restorer sae(unf)/unc 015601 • wrench torque ind adj norbar 3ar 3/4 dr • punch wad 22mm 7/8" • spray paint equipment anest iwata 600ml • cutter pipe h/duty jbs masters 10-61mm o • regulator nitrogen 1000kpa type50 310345 • cutter tube compact jbs masters 3-30mm • bosch cordless impact gun 1/2" drive 18v • wheel heavy duty pipe cutting f229 ridgi • ch block 1.5t 3.0m hol m3
Business need	Required to allow staff to access appropriate equipment required to perform normal maintenance duties on the DBNGP.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Provision for health & safety projects

Table 31: Provision for health and safety projects

	Project details
Expenditure	[redacted]
Description	This project provides sufficient capital funding for improvement projects that are being developed by the HSE representatives across DBP to manage actions arising out of DBP's annual Safety Survey. As the projects are still being assessed and developed by the DBP Safety Committees, it is prudent that a holding provision is set aside that will be made available to support individual projects when they are defined sufficiently for implementation.
Business need	Business needs will be driven specifically by each improvement project directly linked to issues raised in the Safety Survey including success factors that will be monitored to ensure funds are properly utilised. The improvement programmes are categorised under: Response to Safety, Continuous Improvement, Safety Leadership, Psychological Safety and Engagement Each improvement projects, if any under this allocation will have detailed business justifications.
NGR 79(2) ground	In accordance with NGR 79 (2)(c) the capital expenditure is necessary: • to maintain and improve the safety of services. • to maintain the integrity of services. • to comply with a regulatory obligation or requirement.

Maximo upgrade

Table 32: Maximo upgrade

	Project details
Expenditure	[redacted]
Description	Technical upgrade to Maximo including the software and hardware. Expenditure relates to work commenced in 2013.
Business need	This Maximo upgrade is required due to the following: • Recent Disaster Recovery (DR) exercises have found that a number of issues need to be rectified. • The need to upgrade the Maximo servers installed 5 years ago. • The Maximo Version 6.2.3 will no longer be supported by IBM. • The current operating system is Windows 2003 and will be upgraded to Windows 2012
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Replace RO units at CS

Table 33: Replace RO units at CS

	Project details
Expenditure	[redacted]
Description	Overhaul of existing reverse osmosis (RO) unit at CS1 and installation of a new unit at CS2. Expenditure relates to a project continued from 2013
Business need	RO units provide potable water to the DBP personnel at each site. Existing units are 20 years old and obsolete with repair costs rising. New units include InteliSys control which allow for remote monitoring via SCADA systems.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to comply with a regulatory obligation or requirement

GEA & DEA battery relocation

Table 34: GEA & DEA battery relocation

	Project details
Expenditure	[redacted]
Description	The following scope of works is for 1x GEA. Each site has 2-3 GEA and 1 DEA. There will be a total for 23x GEAs and DEA that require batteries to be relocated. • Supply 2x batteries per GEA / DEA • Supply 1x carbon fibre box • Supply 1x heavy duty aluminium stand for battery box • Supply all cables and material to complete works • Remove the old batteries and/or box from the engine room • Install new battery stand external and adjacent to the GEA/DEA enclosure • Fit and Install batteries to battery box on to the stand • Install and terminate engine and changing cables to the batteries • Where required install cable trays and conduits to secure new cables Expenditure is for implementation work following the initial work in 2013.
Business need	A recent investigation of an incident involving exploding batteries at GEA installations resulted in the need to install additional physical barrier to reduce the risk of battery explosions and fire.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Excavate & inspect DBNGP as per CP dig up

Table 35: Excavate and inspect DBNGP as per CP dip up

	Project details
Expenditure	[redacted]
Description	This work is to carry out the approved cathodic protection dig up programme to excavate and inspect the DBNGP for coating and pipe damage and for signs of Stress Corrosion Cracking.
Business need	Dig-ups are required in order to determine the condition of the pipeline and coating by direct inspection as per AS 2885. Monitoring for stress-corrosion cracking cannot be achieved in any other way except by exposing the pipe.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement

Replace air conditioning at CS1, CS5, CS8

Table 36: Replace air conditioning at CS1, CS5, CS8

	Project details
Expenditure	[redacted]
Description	Annual replacement of air conditioner units, targeting units that are faulty and have reached end of useful life. Air conditioners are critical equipment for controlling room temperatures for the following reasons: • At temperature certain equipment become less reliable • Management of fatigue for the DBP Personnel
Business need	Air conditioning units are essential to allow equipment to operate within the manufacturer's specified temperature range. Operating continuously at high temperatures can lead to premature failure or intermittent trips of critical infrastructure on the DBNGP. For instance, some equipment rooms have heat detectors that will shut GEAs down on high enclosure temperature. In addition, air conditioners at accommodation buildings maintain suitable living conditions.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Installation of harmonics filters at CS6

Table 37: Installation of harmonics filters at CS6

	Project details
Expenditure	[redacted]
Description	Purchase and install active power quality filter which will rectify 3rd order harmonic issues on the power system at CS06. This is a continuation from the project in 2013.
Business need	The harmonics issues have been causing spurious tripping of the MDB-SS feeder which at the time supplies the auxiliary power for all 3 GEAs onsite and cause the station to go black. Harmonics also cause the situation where the site power generation requirements increase resulting in extra fuel gas being consumed.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Management of change

Table 38: Management of change

	Project details
Expenditure	[redacted]
Description	Management of change projects are minor in nature with expenditure in the range of $1000 to $50,000. Work includes: • CS9 GEA protection modifications • Compressor station piping modifications at CS9 • Other minor operational change request
Business need	During the normal operation of the DBNGP, various design changes are required to: • Sustain business; • Alleviate unsafe condition; • Increase reliability; • Make equipment more reliable; • Increase efficiency; and/or • Reduce costs.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Replace wall/roof sheets- comms / GEA hut

Table 39: Replace wall/roof sheets- comms / GEA hut

	Project details
Expenditure	[redacted]
Description	Replacement wall and roof sheeting by building contractor for repeater huts at R42 due to corrosion of original sheets. Plus the installation of a ladder safety attachment point to GEA hut roof for maintenance on solar panels, exhaust outlets, vents and fan cowlings. Expenditure is continued from the project initiated in 2013.
Business need	Due to ageing and continued operation, the roof and wall sheets of the hut at repeater sites have severe corrosion that need to be replaced to protect equipment from water egress that has the potential to damage GEA alternators.
NGR 79(2) ground	In accordance with NGR 79 (2)(c) the capital expenditure is necessary: • to maintain and improve the safety of services. • to maintain the integrity of services.

Replace D2 with D4 wheels at CS3/3

Table 40: Replace D2 with D4 wheels at CS3/3

	Project details
Expenditure	[redacted]
Description	Compressor wheel replacement at CS2/3 and 6/3. Expenditure related to wheel replacement work continuing from 2013.
Business need	During bundle inspection in November 2010 investigating rubbing of the compressor rotors, cracks were identified in D2 impellers. Solar's initial advice was that impellor cracks were a known problem and were non-destructive i.e. the damage limited itself to the impeller vane leading edges and would not impact operation and often goes undetected until overhaul. However, the failure of a D2 wheel in a domestic US installation saw Solar structurally redesign and replace the D2 with a "D4" wheel to completely eliminate the risk of cracks or loss of material. Solar has agreed to provide three additional D4 wheels (free of cost) that would cover any eventualities as future inspections are conducted.
NGR 79(2) ground	In accordance with NGR 79 (2)(c) the capital expenditure is necessary: • to maintain and improve the safety of services. • to maintain the integrity of services. • to maintain DBP's capacity to meet levels of demand for services existing at the time the capital expenditure is incurred.

10Kw GEA Intelisys control system upgrade

Table 41: 10Kw GEA Intelisys control system upgrade

	Project details
Expenditure	[redacted]
Description	Replace the unsupported existing relay based control board and auxiliary equipment that has been in service for over 30 years and has become extremely unreliable in the last few years with an Intelisys Controller, type AMF25. In addition to replacing the relay based control board the existing SLC500 PLC which is no longer supported. The new system will be based on an Intelisys controller which DBP has standardised on its existing GEA's at Compressor Stations. The AMF 25 controller is specifically designed for automatic mains failure (AMF) and has been successfully tested on a 10kW GEA at the Jandakot depot. The GEA control design will be based on a generic design for both CCVT and mains powered sites. The AMF 25 controller provides an ethernet connection which will be attached to the control system network and provide a secured WEB based access for maintenance staff. The AMF 25 like all Intelisys controllers has an internal history recording system to allow maintenance staff to review logged history and will be available via the control system network This expenditure is for the ongoing project.
Business need	The existing relay based generator control boards are unavailable and cause generator failures due to the lifting of copper tracks and general old age. Boards have been in service for over 30 years along with the associated meters and relays. The existing SLC500 PLC are also unsupported.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Install PCD air for boost compressor

Table 42: Install PCD air for boost compressor

	Project details
Expenditure	[redacted]
Description	Modification of the air delivery system of the compressor unit in order to utilise PCD air for boost compressor buffer air and seal air during engine operation. This project is continued from work initiated in 2013.
Business need	This project will enhance and modify the boost compressor air delivery system by: • Utilisation of PCD air during engine operation will reduce operations costs for the site air compressors • The use of cleaner PCD air will reduce the risk of carry over oil and liquid contamination from the air compressors and provide improved dry gas seal life.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Replace labyrinth seals - NP units CS6&9

Table 43: Replace labyrinth seals - NP unit CS6&9

	Project details
Expenditure	[redacted]
Description	Installation of Coba Seals to replace labyrinth seals on Nuovo Pignone PCL603 centrifugal compressor at CS6 and CS9. This is a minor expenditure for the design review and assessment.
Business need	Coba Seals were procured in FY 2013/ 14 to replace labyrinth type separation seals on Nuovo Pignone PCL 603 compressor.
NGR 79(2) ground	In accordance with NGR 79 (2)(c) the capital expenditure is necessary: • to maintain and improve the safety of services. • to maintain the integrity of services.

Additional hardware/software licence

Table 44: Additional hardware/software license

	Project details
Expenditure	[redacted]
Description	Purchase of additional PC's and software.
Business need	Replace damaged or misplaced equipment or service additional requirements.
NGR 79(2) ground	In accordance with NGR 78(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Replace air conditioning at CS2, CS3, CS4

Table 45: Replace air conditioning at CS2, CS3, CS4

	Project details
Expenditure	[redacted]
Description	Annual replacement of air conditioner units, targeting units that are faulty and have reached end of useful life. Air conditioners are critical equipment for controlling room temperatures for the following reasons: • At temperature certain equipment become less reliable • Management of fatigue for the DBP Personnel
Business need	Air conditioning units are essential to allow equipment to operate within the manufacturer's specified temperature range. Operating continuously at high temperatures can lead to premature failure or intermittent trips of critical infrastructure on the DBNGP. For instance, some equipment rooms have heat detectors that will shut GEAs down on high enclosure temperature. In addition, air conditioners at accommodation buildings maintain suitable living conditions.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Painting of meter stations

Table 46: Painting of meter stations

	Project details
Expenditure	[redacted]
Description	Painting of 3 to 4 sites per annum based on corrosion assessment: • Barter road meter station • Worsley meter station runs 1 & 2 • Nangetty road meter station, MLV93 and Mungarra power station off-take. This work continues from previous years.
Business need	A site coating assessment was carried out in 2010 which found that there were a number of sites that are over 20 years old and were showing considerable coating and corrosions damage due to constant icing (pre-heater) and generally atmospheric exposure.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement

Replace engineering document control

Table 47: Replace engineering document control

	Project details
Expenditure	[redacted]
Description	FEED study assessing the requirements for storage and retrieval of engineering documentation.
Business need	DBP has identified the need to conduct a process of review on the existing document control system for engineering related documentation to ensure that up to date document and information are available for engineering and operational staff.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Combined service drawings - CS2 to CS10

Table 48: Combined service drawings - CS2 to CS10

	Project details
Expenditure	[redacted]
Description	This project will produce and issue current combined services drawings for compressor stations CS2, 4, 6, 7, 8, 9 &10. The combined services drawings will show all recorded site services (power, communications, control, piping and earthing) on the one drawing with a particular emphasis on underground services. This expenditure is for continued work following the initial work in 2013.
Business need	Primarily a s safety initiative to ensure that; • All underground services drawings are up to date. • All underground services are properly and correctly identified and located. • All underground services are recorded on a single combined drawing to eliminate incidents during excavation work. Proper and up to date drawings will enable the Permit to Work holder to carry out the work safely.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to comply with a regulatory obligation or requirement

Jandakot fire system upgrade

Table 49: Jandakot fire system upgrade

	Project details
Expenditure	[redacted]
Description	Fire system rectification works to bring Jandakot depot facility align with current standards: • Connection of the warehouse to the existing Fire Indicator Panel (FIP) located at the front of the administration building • Connection of the training room to the existing FIP at the administration building • Replace the existing fire alarm bells distributed around site with code compliant audible warning alarms. • Replace the existing thermal detectors on site for photo optical detectors • Provide tactical fire plan.
Business need	Current fire alarms could not be heard in other buildings within the Jandakot facility. To bring the fire system to current building code and standards
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement

Replace ref electrodes - mainline MLV comp

Table 50: Replace ref electrodes - mainline MLV comp

	Project details
Expenditure	[redacted]
Description	Replace the current steel rod reference electrodes at the MLV compound F-boxes with copper-copper sulphate reference electrodes, to improve the visibility of the cathodic protection system.
Business need	The current steel rod references were not precise and only indicated abrupt potential changes without giving an absolute potential measurement. It is not currently possible to have a SCADA alarm indicating when a section of the DBNGP is outside of the Cathodic Protection criterion. This prevents prompt detection and rectification of Cathodic Protection dropouts and compromises safety and ability to meet AS 2885 obligations.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement

Fuel gas pressure control system upgrade

Table 51: Fuel gas pressure control system upgrade

	Project details
Expenditure	[redacted]
Description	This project is to replace the pneumatic controllers on fuel gas skids with electronic transmitters and the pneumatic positioners of the control valves will be replaced with digital positioners. The affected sites include CS1 Unit 1, CS3 Unit 1, CS5 Unit 1 & 2, and CS8 Unit 1 & 2.
Business need	• Present pneumatic controllers are very difficult to maintain due to their high price and limited availability of technicians capable of performing maintenance. • It is not possible to control fuel pressure within the desired band of 200 KPA. As a result, there have been occasional trips of the units due to high T5 temperature. • The proposed conversion will provide tighter control on valve and improved diagnostic / condition monitoring. • The use of digital controllers are in line with current industry practice.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Install pressure monitoring devices - 2 meter stations

Table 52: Install pressure monitoring devices - 2 meter stations

	Project details
Expenditure	[redacted]
Description	Installation of new pressure transmitter and associated cabling at outlet of Harvey meter station and outlet of Pinjarra Town meter station.
Business need	Current installation (being upstream of the odorant injection system) does not provide a true pressure reading due to the DP across the odorant injection system.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Replace sacrificial anode bed - Worsley lateral

Table 53: Replace sacrificial anode bed - Worsley lateral

	Project details
Expenditure	[redacted]
Description	Replace the two sets of magnesium sacrificial anode beds on the SW Cogen Lateral with new anodes.
Business need	The SW Cogen lateral has two sets of ten buried magnesium anodes that reinforce the cathodic protection at a watercourse and a lake, sites WX34.004 and WX53.755. The much lower soil resistivity in these areas can prevent the impressed current cathodic protection from achieving protection potential on its own in these areas. The 2012 Annual Survey reported six of the ten anodes at WX34.004 to have failed and the remaining four likely to fail in the short term.
NGR 79(2) ground	In accordance with NGR 79 (2)(c) the capital expenditure is necessary: • to maintain and improve the safety of services. • to maintain the integrity of services.

Review critical spares holdings for turbines

Table 54: Review critical spares holdings for turbines

	Project details
Expenditure	[redacted]
Description	This project is for the yearly review of critical spares held by DBP for turbines.
Business need	DBP maintains critical spares for the operation and maintenance of gas turbines. Lack of critical spares holding has caused turbines to be not available for operational use.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Solar control software update

Table 55: Solar control software update

	Project details
Expenditure	[redacted]
Description	This project implemented new software changes to the solar turbines control software as per Service Bulletin issued by Solar Turbines.
Business need	Solar issues control software updates on a regular basis through their Service Bulletins in order to improve the operation of gas turbines. It is critical for DBP to apply updates and changes to ensure efficient and safe operation of the gas turbines.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

NearMaps license

Table 56: NearMaps license

	Project details
Expenditure	[redacted]
Description	This project is to purchase NearMaps land aerial imagery. This expenditure is for the yearly subscription fee.
Business need	NearMaps high resolution aerial imagery allows for the identification of encroachments and unauthorized use of the DBNGP corridor.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to comply with a regulatory obligation or requirement • to maintain the integrity of services

GIS enhancements

Table 57: GIS enhancements

	Project details
Expenditure	[redacted]
Description	This project saw the purchase of datasets from Western Power, ATCO and the Department of Environment required when replacing GPS equipment that have reached end of useable life.
Business need	Datasets add to the information base in the GIS system and are required to aid decision making and locate infrastructure in close proximity to the DBNGP.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Set points for DBNGP facilities

Table 58: Set points for DBNGP facilities

	Project details
Expenditure	[redacted]
Description	This project saw the review of all pressure relief and pressure regulation set points at DBNGP facilities including: • Documentation of Delivery Point set pressure for each process line regulator / control valve (excluding instrument gas systems); • Documentation of Delivery point PSV set pressure for each vessel and process line PSV (excluding instrument gas systems); and • Documentation of each outlet point MAOP including the downstream users pipe MAOP.
Business need	This work was required under the DBNGP Safety Case and was deemed to be a mandatory requirement prescribed by DMP to ensure all pressure protection systems were fit for purpose.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement

CS6 CSP ESD rectification

Table 59: CS6 CSP ESD rectification

	Project details
Expenditure	[redacted]
Description	Restore the functionality of the emergency Shutdown (ESD) Remote Control at CS6 and CS9. This includes modification to the PLC and allows DBNGP control room to initiate ESD at CS6 and CS9 in case of an emergency.
Business need	ESD Remote Control functionality is critical for the safe operation of the DBNGP. Functionality was not operational following the removal of the D20 converters during a SCADA master station upgrade.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement

Devil Creek AC supply TISO

Table 60: Devil Creek AC supply TISO

	Project details
Expenditure	[redacted]
Description	Installation of a Main Earth Neutral (MEN) connection at the main switchboard in Devil Creek inlet station.
Business need	Required to comply with AS3000:2007 which requires an MEN connection at every electrical installation. The current circuit had been isolated and tagged in the absence of the MEN connection.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement

Visitor kiosk

Table 61: Visitor kiosk

	Project details
Expenditure	[redacted]
Description	Installation of a self-service visitor check in kiosk in the Esplanade corporate office building to allow secure entry to DBP premises.
Business need	This is required as part of the re-organisation of the tenancy within the esplanade building. DBP no long has access to an ATCO shared reception service on Level 6 and therefore required a means for visitors to check in and notification system to enable DBP staff to receive external visitors while maintaining the security of the premises.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Replacement of firewall

Table 62: Replacement of firewall

	Project details
Expenditure	[redacted]
Description	This project is to replace the firewall for the DBNGP SCADA system.
Business need	This project is required due to the failure of the existing firewall hardware. Firewall hardware is critical to the security and integrity of the DBNGP SCADA system.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Overhaul of the tapping machine at Jandakot

Table 63: Overhaul of the tapping machine at Jandakot

	Project details
Expenditure	[redacted]
Description	Overhaul tapping machine at Jandakot as part of the subsequent cost allocation.
Business need	Due to ageing and usage of the hot tapping machine it is necessary to overhaul and refurbish the machine for future use. This hot tapping machine is required as part of the DBNGP emergency response plan.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement

Replacement of actuators

Table 64: Replacement of actuators

	Project details
Expenditure	[redacted]
Description	This project will convert hydraulic driven actuators into electric driven actuators at CS6 and CS9 for the GE-NP units. The project has been spread over four years with procurement of hardware in 1st and 3rd year and installation in 2nd and 4th year. The first installation will be carried out at CS09.
Business need	• Very difficult to maintain hydraulic system and actuator. • Experienced many failures to start incidents due to problem in actuators. • Operational reliability at CS09 is vital for gas delivery to the metro area.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Replace CS10 3&4 fuel gas coriolis meters

Table 65: Replace CS10 3&4 fuel gas coriolis meters

	Project details
Expenditure	[redacted]
Description	This project is to replace the obsolete transmitters on the fuel gas coriolis meters at CS10. This expenditure is for the initial set up of the project.
Business need	This project was required for the following reasons: • Existing flow transmitters were failing • Spares are unavailable
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Hazardous area equip rectification - CS

Table 66: Hazardous area equip rectification - CS

	Project details
Expenditure	[redacted]
Description	As a part of DBP's obligations under AS 2381 and AS 60079, DBP is required to conduct visual inspection of all equipment installed in the hazardous areas every 4 years. The inspection is carried out by third party contractor. The contractor prepares a report of any non-conformity found on the equipment. Under the scope of this project, all the non-conformity is rectified to meet the requirement of hazardous area installation standards. The scope covers rectification of hazardous area equipment installed at compressor stations CS03, CS04, CS07, CS08 and CS10.
Business need	Required under AS 2381 and AS 60079 as well as DBNGP Safety Case.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to comply with a regulatory obligation or requirement.

Inspection of hazardous areas

Table 67: Inspection of hazardous areas

	Project details
Incurred expenditure	[redacted]
Description	As a part of DBP's obligations under AS 2381 and AS 60079, DBP will conduct visual inspection of all equipment installed in the hazardous areas every 4 years. The inspection is carried out by third party contractor. The contractor prepares a report of any non-conformity found on the equipment. Under the scope of this project, all the non-conformity will be rectified to meet the requirement of hazardous area installation standards under a separate project. The scope of the project includes inspections at meter stations north of CS10 and MLV sites.
Business need	Required under AS 2381 and AS 60079 as well as DBNGP Safety Case.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to comply with a regulatory obligation or requirement.

Gas chromatograph upgrade

Table 68: Gas chromatograph upgrade

	Project details
Expenditure	[redacted]
Description	Seven ABB C6+ BTU8100 gas chromatographs (GC) have reached end of life. Each ABB C6+ BTU8000 will be replaced with the current technology and DBNGP approved ABB C6+ NGC8206 Gas Chromatograph. There is limited support for the ABB C6+ BTU8100 as of March 2012. Several modules (required should they fail in installed units) are no longer available for purchase. This upgrade is budgeted to be completed over a 3 year period. This expenditure is for the two Kwinana Junction GC units.
Business need	Spare parts for currently installed equipment are unavailable for purchase and there is limited stock on hand. DBP is contractually required to perform the gas quality measurement. The seven units identified are required as part of the design basis for system wide gas quality downloads.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Jandakot power system upgrade

Table 69: Jandakot power system upgrade

	Project details
Expenditure	[redacted]
Description	Upgrade existing electrical power system/distribution for Maintenance Repair facility at Jandakot (Heavy Workshop).
Business need	Existing switchboard and electrical distribution for repair workshop is inadequate to support the use of equipment required to complete repairs. Switchboard upgrade will facilitate full use of current equipment and resources to complete in house repairs of DBP assets minimising expensive outsourcing for required repairs. Switchboard upgrade will improve safety by providing power to equipment that minimises risk by utilising specialised equipment
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Rehabilitation monitoring

Table 70: Rehabilitation monitoring

	Project details
Expenditure	[redacted]
Description	Rehabilitation monitoring works consistent with the requirements of the Rehabilitation Management Plan (RMP).
Business need	The RMP contains prescriptive criteria for vegetation density and diversity and requires that annual monitoring must be undertaken to assess performance against these criteria. Monitoring must continue until such a time as the rehabilitation is deemed satisfactory by the CEO of Environmental Protection Authority.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to comply with a regulatory obligation or requirement

Subsequent costs

Table 71: Subsequent costs

	Project details
Expenditure	[redacted]
Description	The Subsequent cost category, consistent with the requirements of AASB116 Property Plant and Equipment (PP&E), captures expenditure incurred as a condition of continuing to operate an item of PP&E. Regular day-to-day servicing expenditure is recognised through profit and loss (operating expenditure) as consumed and generally described as repairs and maintenance. However, major overhauls that effectively extend the life of an asset are classified as a subsequent cost of the assets continued use the costs of which are recognised as part the asset value.
Business need	The proposed forecast expenditure will allow DBP to carryout activities that are required to continue to operate assets recognised as property, plant and equipment. Activities may include performing regular inspections for faults and the replacement of certain parts they can be recognised as a cost item of property, plant and equipment.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Management of change

Table 72: Management of change

	Project details
Expenditure	[redacted]
Description	Management of change projects are minor in nature with expenditure in the range of $1000 to $50,000.
Business need	During the normal operation of the DBNGP, various design changes are required to: • Sustain business; • Alleviate unsafe condition; • Increase reliability; • Make equipment more reliable; • Increase efficiency; and/or • Reduce costs.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Permanent work platforms at CCVT sites

Table 73: Permanent work platforms at CCVT sites

	Project details
Expenditure	[redacted]
Description	Manufacture and install permanent access to the 4kw CCVT roof on type “A” MLV sites. New CCVT units were installed as part of the previous upgrade project. The new units have been installed from MLV008 to MLV079. The scope of this project is to measure, design, prefabricate and install access method and platform, including handrails in the elevated working area on the roof of the CCVT. There are 19 sites in total which is broken down into a two stage project, 9 sites in the first year, and 10 in the following year
Business need	This access is therefore currently limited to an “as needed” basis until this project can be completed. The current method of access for maintenance purposes involves a Working at heights certificate, a 2 man crew, additional planning and additional equipment. The ongoing labour requirements will be halved with adequate access. Over a 5 year business case assessment of the equipment, based on annual planned maintenance and current rates of corrective maintenance, the savings made will result in a payback period of approximately 4 years.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to comply with a regulatory obligation or requirement

Relocate Northern comms hut batteries

Table 74: Relocate northern comms hut batteries

	Project details
Expenditure	[redacted]
Description	Project to replace and relocate of the communications repeater batteries from an external cabinet to new environmentally controlled cabinets located inside the communications hut.
Business need	Currently the northern section repeater sites batteries are experiencing catastrophic failures and currently provide little to no backup power in times of a primary power failure. These batteries are located in external cabinet and have suffered due to the excessive temperatures to the point where they have swelled and split. Batteries have been in service since 2007 and are beyond end of life. Batteries are also difficult to maintain as almost all sites require a ladder to access the banks representing HS&E risks to maintenance staff. Battery capacity has deteriorated significantly over the last 5 years. Mains power failures at repeater sites have increased instances of Microwave system failure. A number of sites now last minutes rather than the required 24 hours.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Upgrade of coriolis meters

Table 75: Upgrade of coriolis meters

	Project details
Expenditure	[redacted]
Description	Sixteen coriolis meters have transmitters that are at end of life and are no longer supported by the vendor.
Business need	This project is required for the following reasons: • Existing flow transmitters are failing • Spares are unavailable for a replacement transmitter.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Vehicle replacement FY14/15

Table 76: Vehicle replacement FY14/15

	Project details
Expenditure	[redacted]
Description	Replacement of DBNGP vehicles and equipment: • Toyota Hilux SR5 Ext Cab • Canopy (Bosston) • GVM Upgrade • Fitout (Coastal) • Toyota Prado GXL • Toyota Landcruiser 79 GXL Dual Cab • Toyota Hilux SR5 Ext Cab • Toyota Landcruiser 79 GXL Cab Chassis • Toyota Landcruiser 79 GXL Cab Chassis
Business need	DBP's replaces vehicles that have excessive mileage and at excessive age. Both age and high mileage result in increased maintenance costs. Reliable vehicles are essential to ensure the safety of personnel and their ability to perform required duties effectively and efficiently.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Restructure tooling requirements

Table 77: Restructure tooling requirements

	Project details
Expenditure	[redacted]
Description	Purchase additional tooling for maintenance staff.
Business need	As a result of the restructuring of the Maintenance division, additional tools are required for staff with new or changed function and geographical location along the DBNGP. Also, certain existing Maintenance vehicles were not equipped to carry out maintenance remote from DBNGP Compressor Station Facilities. This project will equip these vehicles with suitable tools to enable remote maintenance of assets to be carried out in an efficient and effective manner.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Field maintenance tool replacement

Table 78: Field maintenance tool replacement

	Project details
Incurred expenditure	[redacted]
Description	This project involves replacing existing obsolete Field Maintenance Tools (FMTs), Computerised Interface Tools used to interface to the DBNGP field based equipment (PLCs, flow computers, valve controllers, battery chargers, fire & gas systems) for routine maintenance and fault diagnostics.
Business need	The hardware and operating systems for the existing Dell ATG D630 Field Maintenance Tools (Execution Teams) are no longer supported by the vendor.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Handheld scanners

Table 79: handheld scanners

	Project details
Expenditure	[redacted]
Description	Purchase and implementation of a handheld scanning solution to inventory management and supply reducing time and effort in processing and managing the inventory. It will also improve accuracy, through removing manual processing. Purchase of the hand-held scanning hardware and Maximo mobile solution software will allow integration with Maximo for stores processes.
Business need	The introduction of bar code scanning to inventory management and supply process will save a considerable amount of labour hours relative to the current manual processes that is in place. The technology will allow the introduction of cycle counting which will increase data integrity and negate the need to do annual stock take which will further reduce time and costs. The estimated saving of labour calculated using 2013 data for issuing, receiving and stocktake equates to a total of 76.2 days labour saving per year. Payback period on initial investment was assessed to be nine months.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services

Intelligent pigging

Table 80: Intelligent pigging

	Project details
Expenditure	[redacted]
Description	Intelligent pigging of the DBNGP and associated laterals including Dampier facilities to Wagerup West, Wagerup West to Worsley, Southern Loop, Russell Road lateral and Rockingham laterals. Scope includes the preparation of the pipeline and alignment of all MLVs and testing of launchers and receivers, pig signals and confirmation of all off takes, LOR plugs and EOL status with the loop tie ins. The project included the calling of tender for an Inline Inspection (ILI) contractor complete with cleaning scope. It is envisaged that there will be detailed modelling work to determine the most optimum time for pigging and pre-planning with the selected contractor. This expenditure is part of the ongoing pigging programme
Business need	DBP is required to perform pipeline pigging under its pipeline licenses and Safety Case.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement

Relocation of GEA batteries

Table 81: Relocation of GEA batteries

	Project details
Expenditure	[redacted]
Description	The purpose of this project is to relocate all Gas Engine Alternators (GEA) & Diesel Engine Alternator (DEA) starter batteries from inside the engine room to the external for the GEA building and DEA enclosures. The work will be carried out for CS04, CS05, CS06, CS09 and CS10. Scope of Work The following scope of works is for GEA and DEA. Each site has 2-3 GEA and 1 DEA. There will be a combined total for 13x GEAs and DEAs that requires the batteries to be relocated. Supply hardware: • Supply 2-4x Batteries per GEA / DEA (as required) • Supply 1x Battery Stand • Supply 1x Concrete block per battery stand (where required) • Supply all cables and material to complete works Works • Install concrete block adjacent to DEA • Remove the old batteries and/or box from the engine room • Install new battery stand external and adjacent to the GEA/DEA enclosure, or on concrete block • Fit and Install batteries to battery box on to the stand • Install and terminate engine and changing cables to the batteries • Where required install cable trays and conduits to secure new cables • Test and commission installation
Business need	• A recent investigation of GEA exploding batteries recommended a physical barrier to reduce the risk of battery explosions and fire. • Batteries that have higher tolerances with operational temperatures i.e. above 45-500C where possible were required. • Batteries needed to be moved to cooler and vented area. • Changing out batteries will improve power system reliability.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Upgrade fire and gas at mainline, MLV and meter stations

Table 82: Upgrade fire and gas at mainline, MLV and meter stations

	Project details
Expenditure	[redacted]
Description	Old fire and gas controllers were replaced with new Sieger 57 type controllers as per previous CS06 and CS09 retrofit carried out during GEA reliability in 2009/10 financial year. The aim was to minimise changes and re-use existing GEA F&G sensors and also use the existing EGA Programmable Logic Control (PLC) code for coding annunciator display and SCADA. This work is continued fire and gas work extending from the compressor station to the mainline and meter stations.
Business need	Required to meet prescribed safety requirements. This project can be justified on the following grounds: • Replacement of ageing and obsolete equipment that are no longer supported by the vendor • Review and implement latest revised safety standard • Compliance to Asset Management Plan and Safety Case
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement

SCADA upgrade

Table 83: SCADA upgrade

	Project details
Expenditure	[redacted]
Description	Upgrade to existing DBP SCADA system from a 32-bit platform running OASyS on a Windows 2003 operating system to a 64-bit platform running OASyS on a Windows 2008 operating system.
Business need	• All future updates and patches are to be completed on 64 -bit platform. • 32 -bit platform patches are no longer available. • Security patches are no longer being produced by Schneider or Microsoft for 32 -bit platform • At the completion of this project, the new 64 bit operating system will enable DBP to access latest updates from the long term subscription with Schneider.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Production of safety key site

Table 84: Production of safety key site

	Project details
Expenditure	[redacted]
Description	Improvement to the following safety critical DBNGP key site drawings • Piping Layout • Piping and Instrument Diagram • Electrical Schematics for Power Distribution, Emergency Shutdown, Gas Service Valve Control and Equipment Located in Hazardous Areas • Hazardous Area Layout Expenditure is related to work from previous year.
Business need	Most Safety and Operational Critical Drawings: • These drawings are key drawings upon which work planning, safe working isolations and corrective action works are based. If the drawings are not clear or are misleading, this can contribute to error and delay. For example, a piping layout drawing requiring referral to a separate drawing showing a fragment modified by a project could lead to inadvertent overlooking of the project modification or a point of isolation. • Project modifications being shown on separate drawings showing only a fragment has been a widely used technique to save drafting costs dating back to the mid-1980's. As-built drawings from projects and management of change modifications are sometimes still on backlog to be updated. Search meta data is not available for many of these drawings so the drawings are difficult to find in Intranet searches, particularly if the drawings span multiple numbering systems.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Replacement of air conditioning at compressor stations

Table 85: Replacement of air conditioning at compressor stations

	Project details
Expenditure	[redacted]
Description	Annual replacement of air conditioner units, targeting units that are faulty and have reached end of useful life. Air conditioners are critical equipment for controlling room temperatures for the following reasons: • At temperature certain electrical equipment becomes less reliable • Management of fatigue for the DBP Personnel
Business need	Air conditioning units are essential in allowing equipment to operate within the manufacturer's specified temperature range. Operating continuously at high temperatures can lead to premature failure or intermittent trips of critical infrastructure on the DBNGP. For instance, some equipment rooms have heat detectors that will shut GEAs down on high enclosure temperature. In addition, air conditioners at accommodation buildings are required to maintain suitable living conditions.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

24VDC batteries and charger replacement

Table 86: 24VDC batteries and charger replacement

	Project details
Expenditure	[redacted]
Description	Replace all 24VDC batteries and associated chargers
Business need	• Obsolete equipment with no support • Spare parts are no longer available • Faults on these systems are increasing • Currently there three battery chargers isolated due to failures • Batteries are at the limits of their designed lifespan
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Replacement of unit control system at CS2/2, CS4/2 & CS7/2

Table 87: Replacement of unit control system at CS2/2, CS4/2 & CS7/2

	Project details
Expenditure	[redacted]
Description	• Replacement of existing Allen Bradley PLC 5/80 based control system to AB PLC ControLogix based control system supplied by Solar. • Replacement of existing actuator of IGV, Bleed and Fuel valve with electrically operated PECC actuators. • Standardisation of Control System and Philosophy in line with Stage 4 and ACS Control system Upgrade project
Business need	The existing control system is Allen Bradley PLC 5/80 based system. This system was installed and commissioned during Stage 3 Expansion phase (1998). The present Control System PLC and software is considered by Solar Turbines to be obsolete and is not supported. This capital expenditure will ensure that obsolete hardware will be changed in timely manner without affecting the reliable and safe operation of unit. Also Solar has introduced their control optimisation in their new ControLogix based control system which is not compatible with the existing control system. This replacement will remove this obsolete system and provide reliability and backup fault-finding with the new ControLogix based control system
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Install soft start to aftercoolers

Table 88: Install soft start to aftercoolers

	Project details
Expenditure	[redacted]
Description	This project involved the refurbishment /modification of all 50 aftercooler fan drawers (currently direct online type) at all 10 compressor stations. Project is to be delivered over two years. This expenditure is ongoing as part of multi-year project initiated in previous years.
Business need	Allows soft start capable drawers for lower inrush current aftercooler fan starts.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Jandakot workshop tools

Table 89: Jandakot workshop tools

	Project details
Expenditure	[redacted]
Description	Purchase tooling to ensure maintenance activities can be completed efficiently and effectively. Costs are for the following: • Nupla gympie 2kg p/n 05310093 • Engineers square 300mm p/n 07009800 • Alemlube reel retractor std 8mmid x 9mtr • Belt Linisher BG8/915 p/n 06674768 • SPELPC2-200: RATCHET CASS IMPERIAL 2328N • Electric die grinder 6mm-1/4" 7000 rpm • SPELPC8-212: RATCHET CASS IMPERIAL 10941 • SPELPC2: 19-60MM HEX DR BODY - 2414 NM M • SPELPC8:41-105MM HEX DR BODY -11774NM MA • Inverter 170A & T/Box Weldskill W1002901 • Crystal Eng. nVision 300 Bar Pressure mo • Ralston Nitropak Calibration Pressure So • Crystal Eng. CPF to NPT Hose and Fitting • Crystal Eng. nVision Current and Voltage • Chrome Die nut MC-10 x 1.50 code BOR4830 • Mitotoyo inside micrometer 2-40" code MT • Manual Panbrake 1220 x 1.2 code T4IPB-4 • HSS tap NPT 3/8" code BOR3052-3/8B • 10 Tonne hydraulic press - bench type co
Business need	Required to allow staff to access appropriate equipment required to perform normal maintenance duties on the DBNGP.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

SDO tools FY14/15

Table 90: SDO tools FY14/15

	Project details
Expenditure	[redacted]
Description	Purchase tooling to ensure maintenance activities can be completed efficiently and effectively. Costs are for the following: • Yokogawa CA71 Pulse Generator • Crystal Eng. nVision Reference Recorder • OmniSTAR GNSS Subscription • Magnetic Mount • SECO Quick Release Adapter • SECO Quick Release Mount • Trimble Nomad/Juno Series GPS range pole • TerraSync Professional Software • Trimble Nomad 900GLC handheld (camera) • GPS Pathfinder ProXRT Receiver with GLON
Business need	Required to allow staff to access appropriate equipment required to perform normal maintenance duties on the DBNGP.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

6x4 tipper, tag trailer & skid steer loader

Table 91: 6x4 tipper, tag trailer and skid steer loader

	Project details
Expenditure	[redacted]
Description	Purchase of civil equipment including 6x4 tipper, tag trailer and skid steer loader.
Business need	Excessive transport hire arrangements, down time and costs associated with repairs to: • 1984 JCB Backhoe with Front End Loader. • Second hand MAN Prime Mover that is in regular repair The new equipment selected is versatile and ideal for the maintenance work that is required to complete work on the DBNGP.
NGR 79(2) ground	In accordance with NGR 79 (2)(c) the capital expenditure is necessary: • to maintain the integrity of services. • to comply with a regulatory obligation or requirement.

Field technical services tools

Table 92: Field technical services tools

	Project details
Expenditure	[redacted]
Description	The purchase of specialist tools for Rotating Plant Mechanical, Gas Measurement, and Rotating Plant Control Systems teams within the Maintenance division.
Business need	Procurement of specialised equipment and tooling to facilitate the Field Technical Services Group's function to support and investigate various tasks that involve diagnostics and project work directly related to DBNGP asset and personnel.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Maintenance tools FY14/15

Table 93: Maintenance tools FY14/15

	Project details
Expenditure	[redacted]
Description	Purchase tooling to ensure maintenance activities can be completed efficiently and effectively. Costs are for the following: • Intrinsically Safe Mobile Phones • 725Ex Fluke 725Ex I.S. Multifunction Pro • Fluke 28 II Ex Intrinsically Safe TRMS I • 773 Fluke 773 Milliamp Process Clamp Met • Ex-Handy 08.2-A SC Y 3G (850/2100MHz) Modem • Fluke 28 II Ex Intrinsically Safe TRMS
Business need	Required to allow staff to access appropriate equipment required to perform normal maintenance duties on the DBNGP.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Improve load banks reliability

Table 94: Improve load banks reliability

	Project details
Expenditure	[redacted]
Description	This purpose of this project is to improve the load banks reliability at all compressor stations. The load banks are currently inefficiently operated, and are prematurely failing as a result. Load banks have load steps ranging from 10 to 13. Currently for normal operations, steps 1-4 operates 90%, steps 5-8 operates 9%, and steps 9 onwards only operate 1% of the time. The new proposed controls would effectively distribute the operations to all load steps evenly, and therefore extend the life of each load step, and reduce failures to load banks. Scope of Work • Program Load Bank PLC required operation with SCADA integration • FAT PLC program • SAT PLC program
Business need	• Reduce Load Bank Failures • Extend Load Bank Life • Enhance the monitoring of Load Bank operations
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Upgrade Intellisys control system

Table 95: Upgrade intellisys control system

	Project details
Expenditure	[redacted]
Description	This project is to replace the obsolete relay based control board and auxiliary equipment on the 10kW GEA with the latest Intellisys controller type AMF25. This project will also provide standardisation of GEA controllers to all DBP installations including compressor stations.
Business need	• The existing relay based control boards are obsolete and no longer supported by the vendor. • The failure rate for the existing controllers was excessive. For instance, there were 30 priority 3 and 2 incidents during 2012 relating to GEAs at MLV sites that required unplanned attendance from pipeline field staff. Implementing this change will provide standardisation to DBP GEA controls systems.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

L7 server room fire suppression system

Table 96: L7 sever room fire suppression system

	Project details
Expenditure	[redacted]
Description	Installation of a fire suppression system into the newly created level 7 server room.
Business need	Due to the ICT transition from ATCO I-tek DBP will be vacating the data centre on level 5 at Allendale and moving to a new server room on level 7. An unforseen risk was discovered once the level 7 server room had been agreed upon that if a fire where to happen on level 7 the existing sprinklers would be set off that are installed in the server room causing possible damage to SCADA, telephony, microwave and business systems causing a major outage and loss of parts of remote visibility of the pipeline. The IT&T assets are very sensitive and serve a critical function. A fire suppression system is necessary in the Esplanade server room to protect the equipment from fire and also extinguish it before it threatens other surrounding equipment and people
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement

Provision of video conferencing - CS

Table 97: Provision of video conferencing - CS

	Project details
Expenditure	[redacted]
Description	Currently there are video conferencing (VC) facilities at CS1, CS3, CS5, CS9, Esplanade (x2) and Jandakot. This project will deliver video conferencing to the additional remote sites that do not have VC installed (CS2, CS4, CS6, CS7 and CS8). The VC equipment will connect to exiting electronic notice board screens at each of the sites. Expenditure is for the initial project set up and assessment.
Business need	The existing VC equipment was installed in 2011/12 and has reduced travel requirements. A continued drive to use this technology instead of face to face should continue this trend
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Corporate ICT transition from ATCO

Table 98: Corporate ICT transition from ATCO

	Project details
Expenditure	[redacted]
Description	This project is to implement the transition of the Corporate ICT service from ATCO to Zettaserve.
Business need	• significantly reduced ongoing operation and support costs • obtain 100% separation from ATCO's ICT network and infrastructure • improve ICT systems security and integrity • dedicated support from Zettaserve.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Upgrade of DBP telephony system

Table 99: Upgrade of DBP telephony system

	Project details
Expenditure	[redacted]
Description	To upgrade/replace the telephony at the Jandakot maintenance depot as well as the compressor stations (CS1-9).
Business need	Currently the Jandakot telephone system is at end of life and has no capacity for expansion. This system is intrinsically linked with the system at gate 1 (ATCO) with the voicemail also residing at gate 1. This interdependency results in any missed directed faxes or telephone calls. The existing Jandakot PABX cannot be separated as it shares facilities/infrastructure with gate 1 and would not function if this connection was broken. This is a legacy system from the SECWA and needs to be addressed. Also with the ACTO expansion at gate 1, DBP is at an increased risk of outages/failures as the PABX at gate 1 will need upgrading/augmentation due to the increased number of ATCO staff located at this site. The upgrade to the pipeline telephone system (CS1-9) is required to optimise with the systems installed as part of the recently completed TSCC telephone upgrade and to align the pipeline with the new system.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services

Relocate DMZ business system from Level 5 to Level 7 (Allendale)

Table 100: Relocate DMZ business system from Level 5 to Level 7 (Allendale)

	Project details
Expenditure	[redacted]
Description	A DMZ (De Militarised Zone) was created in 2009 to separate via a security mechanism, employees who are required to access the DBNGP SCADA environment via the DBP Corporate network. In 2013 / 2014 a project was decided to relocate the DMZ from Level 5 to Level 7 the esplanade, hence instigating a change to the environment. This project is aimed at reviewing the existing security mechanisms as well as repairing the failed equipment that is crucial in ongoing monitoring of the DMZ to verify the intention of the 2009 Tenix vulnerability assessment is still being adhered to
Business need	The SCADA DMZ has had its integrity compromised in two ways which include: • The monitoring equipment has failed and no longer providing alerts • The DMZ will be relocated and will experience change during the process The intention of the DMZ is to provide segregation and control between the Corporate and SCADA networks and the integrity of this environment requires the attention to verify it is in and functioning as originally designed.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Relocate telecomms from Level 5 to Level 7 (Allendale)

Table 101: Relocate telecomms from Level 5 to Level 7 (Allendale)

	Project details
Expenditure	[redacted]
Description	Transition of the Corporate ICT service from ATCO to Zettaserve. The scope of work includes physically relocating all telecommunications infrastructure from ATCO's Level 5 to dedicated communications room in DBP's Level 7.
Business need	• significantly reduced ongoing operation and support costs • obtain 100% separation from ATCO's ICT network and infrastructure • improve ICT systems security and integrity • Infrastructure will be located within DBP premises. • dedicated support from Zettaserve.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Relocate SCADA from Level 5 to Level 7 (Allendale)

Table 102: Relocate SCADA from Level 5 to Level 7 (Allendale)

	Project details
Expenditure	[redacted]
Description	Transition of the Corporate ICT service from ATCO to Zettaserve. The scope of work includes physically relocating all SCADA related infrastructure (Master Station and servers) from ATCO's Level 5 to dedicated communications room in DBP's Level 7.
Business need	• significantly reduced ongoing operation and support costs • obtain 100% separation from ATCO's ICT network and infrastructure • improve ICT systems security and integrity • Master Station and server infrastructure will be located within DBP premises. • dedicated support from Zettaserve.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Annual provision for IT items

Table 103: Annual provision of IT items

	Project details
Expenditure	[redacted]
Description	DBP has a licensing agreement with Microsoft covering standard desktop software and server operating system software requiring the payment of an annual true-up charge.
Business need	Desktop computers, laptops and service are essential tools in the provision and maintenance of service delivery on the DBNGP.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Intelligent pigging - mainline, laterals and un-pig

Table 104: Intelligent pigging - mainline, laterals and un-pig

	Project details
Expenditure	[redacted]
Description	Intelligent pigging of the DBNGP and associated laterals including Dampier facilities to Wagerup West, Wagerup West to Worsley, Southern Loop, Russell Road lateral and Rockingham laterals. Scope includes the preparation of the pipeline and alignment of all MLVs and testing of launchers and receivers, pig signals and confirmation of all off takes, LOR plugs and EOL status with the loop tie ins. The project included the calling of tender for an Inline Inspection (ILI) contractor complete with cleaning scope. It is envisaged that there will be detailed modelling work to determine the most optimum time for pigging and pre-planning with the selected contractor. This expenditure is part of the ongoing pigging programme
Business need	DBP is required to perform pipeline pigging under its pipeline licenses and Safety Case.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement

Replace CS vent attenuators and vents at CS2, 4 & 7

Table 105: Replace CS vent attenuators and vents at CS2, 4 & 7

	Project details
Incurred expenditure	[redacted]
Description	The existing vent attenuators at CS 2, 4 & 7 require inspection, clean-up and repair to eliminate risk of release of foreign material during venting. This expenditure is part of ongoing project started in 2011.
Business need	Vent attenuators at CS 2, 4 & 7 fitted during the Stage 3 expansion and have deteriorate to the stage that they may pose a risk to personnel by projection of metallic and soft materials during venting.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Lean-to Jandakot repairs facility

Table 106: Lean-to Jandakot repairs facility

	Project details
Expenditure	[redacted]
Description	This project is for the construction of 7m x 6m lean-to (shelter / roof) adjacent to repairs workshop. This expenditure is required to finalise the project commenced in 2013
Business need	This work is provides a safe working environment minimising the risk posed from activities that create fumes, dust, sparks, flashes. This minimises HSE risk when undertaking these activities and provides protection from the elements during hot or inclement weather events.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services

Refurbish accommodation at CS FY13/14

Table 107: Refurbish accommodation at CS FY 14/15

	Project details
Incurred expenditure	[redacted]
Description	This project is for the replacement and refurbishment of the accommodation facilities located at CS4 and CS5 needed to maintain standard. Expenditure is continued from 2013.
Business need	Due to ageing and continued operation of the accommodation facilities over a number of years, it is necessary to replace and refurbish worn out accommodation units at come compressor stations. This is to ensure the facilities continue meet the building code and are a suitable environment for employees to live in.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to comply with a regulatory obligation or requirement

Annual provision for IT items

Table 108: Annual provision of IT items

	Project details
Expenditure	[redacted]
Description	Implementation of 1/3 PC replacement programme.
Business need	DBP's PC and laptop replacement policy is that equipment is replaced every 3 years to ensure equipment is reliable and fit for purpose. .
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Provision for health & safety projects

Table 109: Provision for health and safety projects

	Project details
Expenditure	[redacted]
Description	This project provides sufficient capital funding for improvement projects that are being developed by the HSE representatives across DBP to manage actions arising out of DBP's annual Safety Survey. As the projects are still being assessed and developed by the DBP Safety Committees, it is prudent that a holding provision is set aside that will be made available to support individual projects when they are defined sufficiently for implementation.
Business need	Business needs will be driven specifically by each improvement project directly linked to issues raised in the Safety Survey including success factors that will be monitored to ensure funds are properly utilised. The improvement programmes are categorised under: Response to Safety, Continuous Improvement, Safety Leadership, Psychological Safety and Engagement
NGR 79(2) ground	In accordance with NGR 79 (2)(c) the capital expenditure is necessary: • to maintain and improve the safety of services. • to maintain the integrity of services. • to comply with a regulatory obligation or requirement.

DMZ security review

Table 110: DMZ security review

	Project details
Expenditure	[redacted]
Description	A DMZ (De Militarised Zone) was created in 2009 to separate via a security mechanism, employees who are required to access the DBNGP SCADA environment via the DBP Corporate network. In 2013 / 2014 a project was decided to relocate the DMZ from Level 5 to Level 7 the esplanade, hence instigating a change to the environment. This project is aimed at reviewing the existing security mechanisms as well as repairing the failed equipment that is crucial in ongoing monitoring of the DMZ to verify the intention of the 2009 Tenix vulnerability assessment is still being adhered to Expenditure is the estimated cost to complete.
Business need	The SCADA DMZ has had its integrity compromised in two ways which include: • The monitoring equipment has failed and no longer providing alerts • The DMZ will be relocated and will experience change during the process The intention of the DMZ is to provide segregation and control between the Corporate and SCADA networks
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

EDW technology refresh

Table 111: EDW technology refresh

	Project details
Expenditure	[redacted]
Description	A DMZ (De Militarised Zone) was created in 2009 to separate via a security mechanism, employees who are required to access the DBNGP SCADA environment via the DBP Corporate network. The DMZ contains a server at the Esplanade and a server at Jandakot known as the EDW that contains information including: • SCADA data to be transferred to CRS • AutoCAD databases of the DBNGP • Securatrak RWS data including the failure to call in alerting • The Engineering Document Search engine • The Planning database • The CRS Archive database The project will refresh the hardware and operating system of both Jandakot in 2014/2015 and Esplanade EDW in 2015/2016. The project will also identify information that will be more appropriately stored within the corporate network and relocate this information to keep the intention of this DMZ to strictly SCADA usage. Scope of work: • Procure and install updated EDW hardware for Jandakot and the Esplanade • Migrate the existing systems onto the fresh hardware • Redeploy non SCADA specific systems to a corporate environment This expenditure is the estimated cost to complete.
Business need	The SCADA DMZ has had its integrity compromised in two ways which include: • The monitoring equipment has failed and no longer providing alerts • The DMZ will be relocated and will experience change during the process The intention of the DMZ is to provide segregation and control between the Corporate and SCADA networks and the integrity of this environment requires the attention to verify it is in and functioning as originally designed.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Implementation of DBNGP CP dig-up programme

Table 112: Implementation of DBNGP CP dig-up programme

	Project details
Incurred expenditure	[redacted]
Description	Cathodic protection dig up programme to excavate and inspect the DBNGP for coating and pipe damage and for signs of Stress Corrosion Cracking Expenditure is the estimated cost to complete.
Business need	Dig-ups are required in order to determine the condition of the pipeline and coating by direct inspection as per AS 2885. Monitoring for stress-corrosion cracking cannot be achieved in any other way except by exposing the pipe.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement

Rectification of Hazardous area equip

Table 113: Rectification of Hazardous area equip

	Project details
Incurred expenditure	[redacted]
Description	As a part of DBP's obligations under AS 2381 and AS 60079 DBP is required to conduct visual inspection of all equipment installed in the hazardous areas every 4 years. The inspection is carried out by third party contractor. The contractor prepares a report of any non-conformity found on the equipment. Under the scope of this project, all the non-conformity will be rectified to meet the requirement of hazardous area installation standards. The scope covers rectification of hazardous area equipment installed at compressor stations CS03, CS04, CS07, CS08 and CS10. This expenditure is the estimated cost to complete
Business need	Required under AS 2381 and AS 60079.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to comply with a regulatory obligation or requirement.

Inspection of hazardous areas FY14/15

Table 114: Inspection of hazardous areas

	Project details
Expenditure	[redacted]
Description	As a part of DBP's obligations under AS 2381 and AS 60079 DBP will conduct visual inspection of all equipment installed in the hazardous areas every 4 years. The inspection is carried out by third party contractor. The contractor prepares a report of any non-conformity found on the equipment. Under the scope of this project, all the non-conformity will be rectified to meet the requirement of hazardous area installation standards under a separate project. The scope of the project includes inspections at meter stations north of CS10 and MLV sites. Expenditure is the estimated cost to complete.
Business need	Required under AS 2381 and AS 60079.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to comply with a regulatory obligation or requirement.

Software Modification for Solar Turbine-compressor units

Table 115: Software Modification for Solar Turbine-compressor units

	Project details
Expenditure	[redacted]
Description	Modify the solar turbine compressor units software, including; • Update to latest revision as issued by Solar Turbines • Implement new software changes as per Service Bulletin issued by Solar Turbines. • Improvement in system reliability
Business need	Due to change in the operating condition compressor software requires modification to overcome the operation constraints, optimise the operation, improve the reliability and ensure the integrity of assets. More importantly to apply critical updates and changes as per Solar Turbines Service Bulletin. All changes are assessed and approved by Solar Turbines and implemented with their assistance.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Upgrade station PLC at compressor stations

Table 116: Upgrade station PLC at compressor stations

	Project details
Expenditure	[redacted]
Description	The CS01, CS03, CS05 and CS08 compressor station were built in 1990 under the ACS expansion stage. At that time programmable logic control (PLC) was installed at each station to monitor the station parameters including station valve status, station emergency shutdown (SESD) and mainline emergency shutdown (MLESD) status. The current architecture involves dual redundant PLC5 system of Allen Bradley. It involves two identical racks- one on duty and other on hot stand by. This system looks after any station control including valve operation and monitoring of any non-unit specific hardware. This system I/O (input/output) is handled by using several remote racks all on read-only (RIO) network. Three of these racks are 1771 chassis with a mix of digital and analogue I/O modules. The current PLC and all I/O are declared obsolete by the vendor and there is no vendor support so far as spare and repairs are concerned. In this project station PLC of CS03, CS05 and CS08 will be replaced with the latest proven PLC family from Allen Bradley (Contrologix family). The existing functionality will be transferred to new PLC and also peripheral devices will be modified if required to interface with the new PLC. The whole project has been staged over the span of three years. Station PLC at CS08 will be replaced ion 2014.
Business need	Obsolete system and in absence of station PLC, TSCC (gas control) will not be able to initiate SESD and MLESD in the event of emergency.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Purchase of trailer for meter station work

Table 117: Purchase of trailer for meter station work

	Project details
Expenditure	[redacted]
Description	Purchase of two off road specification tandem axle licenced vehicle trailers with cages rated to the aggregate weight of 2000kg.
Business need	• Replace trailer 1TAI528 with a trailer fit for purpose. • Existing trailer is a light duty trailer that has body damage and tailgate latches that no longer functional. Spares for this style tail gate latch are no longer available. • An additional trailer for use in the Northwest will allow the safe transport of gas bottles to the increasing number of gas chromatograph sites outside of compressor station compounds such as MLV7 (Karratha), Devil Creek, Gorgon, Macedon, Apache and Ashburton. • Reliability of an off-road spec trailer is necessary particularly in the North West.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services

Repair workshop painting booth

Table 118: Repair workshop painting booth

	Project details
Expenditure	[redacted]
Description	Provision of painting booth for the repairs workshop.
Business need	Project allows DBP to undertake the repainting of repaired items in-house rather than send out externally. Cost saving - transportation to and from painting vendor, waiting time from vendor, vendor costs.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Repair workshop entry ramp

Table 119: Repair workshop entry ramp

	Project details
Expenditure	[redacted]
Description	Workshop external lean-to floor levelling and decreasing of workshop entry ramp angle to a safe level.
Business need	Under the lean-too of the heavy workshop, the current asphalt ground has a 0-130mm slope. This is required to be levelled out to be able to install equipment. The north ramp into the heavy workshop is too steep for forklifts to negotiate safely when carrying a load. Proposal is to reduce the angle of the ramp to a level which makes it safe to negotiate with a fork lift whilst carrying a heavy load. It should also be noted that the Jandakot facility now has 7 ton fork lift capability
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services

2. SIB PROJECTS & EXPENDITURE ESTIMATED 2015

2.1 The following table lists all stay in business (SIB) projects that were underway or forecast to be undertaken during 2015 and associated expenditure forecast to be made during that regulatory year. It should be noted that expenditure may not be the total extent of expenditure required for or incurred under projects that span more than one year.

Table 120: SIB projects expenditure - 2015 ($ Nominal)

Table	Project Title	Asset Category	Est. 2015
Table 121	Gas chromatograph upgrade	Metering	[redacted]
Table 122	Repair of corroded horizontal IG joints	Metering	
Table 123	Upgrade odorant injection facilities	Metering	
Table 124	Installation of working at heights access facilities	Compression	
Table 125	Permanent work platforms at CCVT sites	Pipeline	
Table 126	Mitigation of accommodation noise	Compression	
Table 127	Provision for Health & Safety projects	Other	
Table 128	Installation of RCD protection devices	Compression	
Table 129	Upgrade of southern communications network from MLV117 to Clifton Road	Pipeline	
Table 130	Relocation of Northern communication hut batteries	Pipeline	
Table 131	Upgrade of flow computers	Metering	
Table 132	Provision for subsequent costs	Metering	
Table 133	Upgrade of coriolis meters	Metering	
Table 134	Provision for subsequent costs (EOP)	Other	
Table 135	Provision for subsequent costs (Compression)	Compression	
Table 136	Provision for subsequent costs (Pipeline)	Pipeline	
Table 137	Provision for projects initiated under management of change process	Other	
Table 138	Annual allocation for vehicle fleet replacement programme	Other	
Table 139	Intelligent pigging	Pipeline	
Table 140	Upgrade of station and unit F&G monitoring system (including SESD and MLESD standardisation)	Compression	
Table 141	Relocation of GEA batteries to a safe location	Compression	
Table 142	Implementation of DBNGP CP Dig-up programme	Pipeline	
Table 143	Refurbishment of below and above ground pipework	Compression	
Table 144	Painting of meter stations	Metering	
Table 145	Implementation of new financial management system	Other	
Table 146	Rectifications of hazardous area equipment installations	Compression	
Table 147	Inspection of hazardous areas	Compression	
Table 148	Software modification for Solar Turbine-compressor units on DBNGP	Compression	
Table 149	Solar & GE Windows XP based HMI upgrade	Compression	
Table 150	Upgrade of station PLC at compressor stations	Compression	
Table 151	Upgrade of fire and gas equipment at MLV and meter stations	Pipeline	
Table 152	Annual provision for IT items - PC/Printers/Monitors/License True up	Other	
Table 153	SCADA software upgrade	Pipeline	
Table 154	Customer reporting system (CRS) development	Other	
Table 155	Production of safety key site drawings	Compression	

Table	Project Title	Asset Category	Est. 2015
Table 156	Replacement of reverse osmosis units	Compression	[redacted]
Table 157	Replacement of wall and roof sheeting for communications and GEA huts at repeater sites	Pipeline	
Table 158	Inspection of Nuovo Pignone unit hot gas path at CS6	Compression	
Table 159	Replacement of air conditioning at compressor stations	Compression	
Table 160	24VDC batteries and charger replacement	Compression	
Table 161	Replacement of 110V DC batteries and battery chargers	Compression	
Table 162	Upgrade of GEA & DEA controls at CS1 to 8	Compression	
Table 163	CS1-CS9 Power systems rationalisation	Compression	
Table 164	Replacement of unit control systems at CS2/2, CS4/2 and CS7/2	Compression	
Table 165	Replacement of concrete supports	Compression	
Table 166	Jandakot workshop tools	Other	
Table 167	SDO Tools	Other	
Table 168	6 X 4 tipper, tag trailer & skid steer loader	Other	
Table 169	Installation of soft start modifications to aftercooler	Compression	
Table 170	Field technical services tools	Other	
Table 171	Maintenance tools	Other	
Table 172	Refurbishment of accommodation facilities	Compression	
Table 173	Upgrade of communications Maitland meter station	Pipeline	
Table 174	Upgrade of communications system at Mungarra meter station	Metering	
Table 175	Upgrade of communications system at Pinjar meter station	Metering	
Table 176	Load banks cable replacement	Compression	
Table 177	Upgrade of solar panels at spur sites 1 to 6	Pipeline	
Table 178	Replacement of Stage 3A turbine air inlet filters at CS4/2	Compression	
Table 179	Replacement of air compressors at compressor stations	Compression	
Table 180	CS10/3 Exhaust expansion joint replacement	Compression	
Table 181	Procurement, installation and commissioning of 4KW CCVT at MLV8	Pipeline	
Table 182	Upgrade of Intelisys control system for 10KW GEA units	Pipeline	
Table 183	Replacement of labyrinth seals with mechanical seals on all Nuova Pignone units at CS6 and CS9	Compression	
Table 184	Upgrade of gas turbine fuel gas pressure control system (from pneumatic to electronic control).	Compression	
Table 185	Installation of Solar dynamic vibration data visibility programme	Compression	
Table 186	Provision of condition monitoring data visibility	Compression	
Table 187	Office 2013	Other	
Table 188	Workstation Managed Operating Environment (MOE)	Other	
Table 189	Windows 8.1 desktop upgrade	Other	
Table 190	HSE Intranet page enhancements	Other	
Table 191	Purchase of additional hardware and software for field interface equipment	Other	
Table 192	Jandakot upgrade completion	Other	
Table 193	Modification of instrument Gas supply to the MLVL actuators	Pipeline	
Table 194	Decommission removal of Jandakot gas engine alternator	Other	
Table 195	Electrical isolation of all LM500	Compression	
Table 196	Installation of diesel fuel filters at bulk diesel storage tanks	Compression	
Table 197	Installation of air conditioning in PAV huts	Pipeline	

Table	Project Title	Asset Category	Est. 2015
Table 198	Installation of remote monitoring & diagnostics for Nuovo Pignone units	Compression	[redacted]
Table 199	Alarm management for compressor stations	Compression	
Table 200	Conversion of logic master program into Proficy of remaining GE PLC	Compression	
Table 201	Purchase of 8-10T flatbed 4WD truck with 10T Hiab crane	Other	
Table 202	Nuovo Pignone boost compressor maintenance container	Compression	
Table 203	Purchase of manitou for compressor facility	Compression	
Table 204	Upgrade of video conferencing to incorporate external parties	Other	
Table 205	Provision of video conferencing at CS2, CS4, CS6, CS7, CS8	Other	
Table 206	Mipela GeoSolutions: X-Info suite onsite implementation	Other	
Table 207	Repair workshop instrument clean room	Other	
Table 208	Jandakot maintenance repair workshop - upgrade power facilities	Other	
Table 209	Replacement of sacrificial anode bed on Worsley lateral	Pipeline	
Table 210	Repair workshop entry ramp	Other	
Table 211	FEED - Upgrade of water bath heater pipework	Compression	
	Total (Nominal)		**$20,297,697**

2.2 The remainder of this section details why the expenditure summarised in Table 1 is justifiable under NGR 79(2).

Gas chromatograph upgrade

Table 121: Gas chromatograph upgrade

	Project details
Expenditure	[redacted]
Description	Seven ABB C6+ BTU8000 will be replaced with the current technology ABB C6+ NGC8206 gas chromatograph (GC). Forecast expenditure is for the GC at MLV7
Business need	• ABB C6+ BTU8100 gas chromatographs have reached end of life; • Spare parts for currently installed equipment are unavailable for purchase; • The seven units identified are required as part of the design basis for system wide gas quality data requirements.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Repair of corroded horizontal IG joints

Table 122: Repair of corroded horizontal IG joints

	Project details
Expenditure	[redacted]
Description	Due to excessive corrosion on the meter station inlets insulation flanges at Pinjarra & Wagerup there was a need to repair flanges to improve their integrity. On the most recent inspection by DBP's corrosion engineer both sites indicated significant corrosion in the horizontal insulation gaskets (IG) joints at both delivery lines. The flange gap was also full of corrosion product and detached paint flakes. DBP assessed the safest solution was to renovate corroded joints and maintain IG in the line, hot tap and bypass for uninterrupted gas supply to both delivery lines. The project will include detailed FEED study to design a system of filtration downstream of hot tap to eliminate swarf entering shipper installations. The scope includes the following steps: Step 1 • Install hot tap fittings, one on each delivery line: 14" X 6" for Boilers pipeline and 12" x 6" for Calciner pipeline. • Hot tap both fittings using 6" standard cutter using 6" full bore hot tap valves. • Install prefabricated 6" #600 interconnect spool (approx. 865 mm long). Step 2 • Commission and activate the interconnect to maintain uninterrupted flow to both delivery points • Prepare and grease both downstream isolation valves (HV601A and HV601B) • Prepare upstream isolation valves (one run at time) Step 3 • Commence isolation using downstream valves (one run at the time) • Confirm flow conditions and metering • Confirm isolations and purge Step 4 • Remove 90 deg elbow and inspect and repair faces of both flanges • Reinstate, changing the location of the IG • Complete restoration and pressurise the section • Repeat Step 3 and 4 for the second delivery line Step 5 • Relocate CP cable to downstream of the new IG Step 6 • Protect horizontal flanges with Denso products and repair any damage to coating • This forecast expenditure is for Alcoa Pinjarra meter station.
Business need	Renovation of the flange joints was the only solution that maintained the integrity of the delivery point and prevented future gas leak. There was no practical solution to seal the flange joint externally using mechanical clamp without compromising the CP system. No action may have resulted in an unplanned shutdown and unavailability of supply.
NGR 79(2) ground	In accordance with NGR 79 (2)(c) the capital expenditure is necessary: • to maintain and improve the safety of services. • to maintain the integrity of services.

Upgrade odorant injection facilities

Table 123: Upgrade odorant injection facilities

	Project details
Incurred expenditure	[redacted]
Description	The scope incorporates some sites continued from previous year due to redesign of the large WLPG odorant injection system. This project will cover the WLPG Inlet and Outlet sites, as well as Della Road and Clifton Road.
Business need	Replacing this equipment was required to remain compliant with Australian Standards. The new design determined by a HAZOP (DBP's internal risk assessment process) also incorporated additional valving arrangements to ensure exposure to odorant, which is a dangerous substance at concentration, is minimised.
NGR 79(2) ground	In accordance with NGR 78(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to comply with a regulatory obligation or requirement

Implement working at heights policy access facilities

Table 124: Implement working at heights access facilities

	Project details
Expenditure	[redacted]
Description	The working at heights project will deliver compliance with all relevant occupational health and safety legislation, and Australian Standards. This is an ongoing project that selects a scope each year on a basis of priority. For example, the practice of working on after coolers has been ranked highly due to the combination of significant height with confined space, and involves execution of a rescue plan from height. New platforms have been designed for DAVIT rescue equipment and these will be fabricated and installed at CS09, CS06, Dampier facilities. In addition, prefabrication of platform railing extensions and access improvements to suit WLPG and CS09 Odorant storage facilities including installation will been included.
Business need	The key benefit resulting from this project is to ensure access and egress of above ground facility on the DBNGP is compliant with OHS regulations and Australian Standards. Working at Heights safe practice is also a key focus of DBP's Zero Harm Principles.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to comply with a regulatory obligation or requirement

Permanent work platforms at CCVT sites

Table 125: Permanent work platforms at CCVT sites

	Project details
Expenditure	[redacted]
Description	Manufacture and install permanent access to the 4kw CCVT roof on type "A" MLV sites. New CCVT units were installed as part of the previous upgrade project; however access for maintenance was not incorporated into the design. The new units have been installed from MLV008 to MLV079. Units have incurred several failures and the cost of erecting scaffolding of this height is significant. Access to the roof is also required annually for routine maintenance, which is only safely performed with costly scaffolding via a third party. The expense of both options is significant for these remote sites. The scope of this project is to measure, design, prefabricate and install access method and platform, including handrails in the elevated working area on the roof of the CCVT. There are 19 sites in total which is broken down into a two stage project, 9 sites in the first year, and 10 in the following year
Business need	Access is currently limited to an "as needed" basis until this project can be completed. Current access involves a Working at heights certificate, a 2 man crew, additional planning and additional equipment. The ongoing labour requirements for these works will be halved with adequate access. Over a 5 year business case assessment of the equipment, based on annual planned maintenance and current rates of corrective maintenance, the savings made will result in a payback period of approximately 4 years.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement

Mitigate noise at accommodation facilities

Table 126: Mitigate noise at accommodation facilitates

	Project details
Expenditure	[redacted]
Description	Continuation of installation and testing of noise rectification works to reduce tonal noise levels in the sleeping accommodation buildings at compressor stations. The overall project includes: Acoustic attenuation of the air inlet ducting of the following stage 4 solar turbine packages: • CS02 Unit #3 • CS03 Unit #3 • CS04 Unit #3 Acoustic attenuation of the new air inlet ducting of the following stage 3 solar turbine packages: • CS02 Unit #2 • CS04 Unit #2 Replaced exhaust mufflers on the following GEA packages: • CS02 GEA #3 • CS04 GEA #3
Business need	Tonal characteristics in noise can pose a safety hazard to the public and those working on the DBNGP. Most immediately they have an impact on comfort levels within accommodation facilities and can affect the quality of sleep effecting fatigue levels of staff work at the site for extended period of time. High noise levels have been measured at two sources: • Air inlet ducting on stage 4 solar turbine packages, and • Exhaust mufflers on stage 5A GEA packages Further, the air inlets installed on the stage 3A solar turbine packages are of the same design as those currently in use on the stage 4 packages and are therefore expected to also produce problematic tonal noise.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services

Provision for health & safety projects

Table 127: Provision for health and safety projects

	Project details
Expenditure	[redacted]
Description	This project provides sufficient capital funding for improvement projects that are being developed by the HSE representatives across DBP's business to manage actions arising out of DBP's annual Safety Survey. As the projects are still being assessed and developed by the DBP Safety Committees, it is prudent that a holding provision is set aside that will be made available to support individual projects when they are defined sufficiently for implementation.
Business need	Business needs will be driven specifically by each improvement project directly linked to issues raised in the Safety Survey including success factors that will be monitored to ensure funds are properly utilised. The improvement programs are categorised under: Response to Safety, Continuous Improvement, Safety Leadership, Psychological Safety and Engagement
NGR 79(2) ground	In accordance with NGR 79 (2)(c) the capital expenditure is necessary: • to maintain and improve the safety of services. • to maintain the integrity of services. • to comply with a regulatory obligation or requirement.

RCD protection at CS

Table 128: RCD protection at CS

	Project details
Expenditure	[redacted]
Description	The purpose of this project was to review the need for the retrofit of Residual Circuit Breakers (RCD) for all compressor stations.
Business need	While DBP is not obliged to correct installations retrospectively, this issue was raised by DBP's maintenance safety committee as a concern, which initiated a FEED study. RCDs for an new electrical installation is required to comply with the Australian Wiring Rules is defined in the Electricity (Licensing) Regulations 1991 (WA) which in turn is referenced in the Electricity Act 1945 (WA). Therefore, compliance with the Australian Wiring Rules is mandatory in Western Australia. In addition, compliance with the Australian Wiring Rules is a condition of DBP's pipeline licenses and the Safety Case.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services

Upgrade of Southern comms network from MLV117 to Clifton Rd

Table 129: Upgrade of Southern comms network from MLV117 to Clifton Rd

	Project details
Incurred 2011	[redacted]
Description	• Upgrade and replacement of the DBNGP southern communications network from MLV117-MLV157 due to existing communications equipment systems reaching end of life; • Upgrade and replacement of DC power systems at MLV117-MLV157 due to existing power systems reaching end of life; • Upgrading communications in the Kwinana industrial area to facilitate the exit from the Western Power pilot cable network; and • Upgrade of communications to compressor station 10 to eliminate reliance on Telstra/Westnet services and also to increase capacity to this site. This forecast expenditure is the estimated cost to complete for this project continued from 2011.
Business need	• Southern communications equipment was at end of life • DC power systems were at end of life • Radio licenses needed to operate the networks were to be revoked by the ACMA during 2011. The existing communications equipment could not be modified to function under new licensing conditions. • Requirement to exit for the western power owned and operated pilot cable network. • Failure to undertake this project would have resulted in the loss of visibility ad control of the DBNGP from MLV117 Della Road to MLV157 Clifton Road.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Relocate Northern comms hut batteries

Table 130: Relocate northern comms hut batteries

	Project details
Expenditure	[redacted]
Description	Project to replace and relocate of the communications repeater batteries from an external cabinet to new environmentally controlled cabinets located inside the communications hut.
Business need	Currently the northern section repeater sites batteries are experiencing catastrophic failures and currently provide little to no backup power in times of a primary power failure. These batteries are located in external cabinet and have suffered due to the excessive temperatures to the point where they have swelled and split. Batteries have been in service since 2007 and are beyond end of life. Batteries are also difficult to maintain as almost all site require a ladder to access the banks representing a HS&E risk to maintenance staff. Battery capacity has deteriorated significantly over the last 5 years. Mains power failures at repeater sites have increased instances of Microwave system failure. A number of sites now last minutes rather than 24 hours.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Upgrade flow computers

Table 131: Upgrade flow computers

	Project details
Incurred expenditure	[redacted]
Description	Upgrade flow computers, RTUs, associated equipment cabinets, DC circuit wiring and associated drawings and I.S. barriers at 40 metering sites.
Business need	• 40 flow computers were at the end of life. Replacement spares are no longer available. Failure to implement this project would have resulted in loss of billing data, site visibility and several safety concerns over inadequate 240VAC wiring. • Existing electrical wiring drawings at most sites were inadequate to perform troubleshooting and engineering without site visit. • Hazardous area barriers must be upgraded as this level of change requires the installation to be configured as per current Hazardous Area Requirements.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Subsequent costs for Meter Station

Table 132: Subsequent costs

	Project details
Expenditure	[redacted]
Description	The Subsequent cost category, consistent with the requirements of AASB116 Property Plant and Equipment (PP&E), captures expenditure incurred as a condition of continuing to operate an item of PP&E. Regular day-to-day servicing expenditure is recognised through profit and loss (operating expenditure) as consumed and generally described as repairs and maintenance. However, major overhauls that effectively extend the life of an asset are classified as a subsequent cost of the assets continued use the costs of which are recognised as part the asset value. It is anticipated that the following maintenance expenses will be required: • 10 x gas turbine meter recertification • 6 x Mokveld valves and other miscellaneous valves overhauled • Pressure vessel inspections
Business need	The proposed forecast expenditure will allow DBP to carryout activities that are required to continue to operate assets recognised as property, plant and equipment. Activities may include performing regular inspections for faults and the replacement of certain parts they can be recognised as a cost item of property, plant and equipment. • The inability to verify our Custody Transfer Meters will lead to greater errors in relation to gas billing. • Valve and regulator maintenance is necessary to ensure gas is delivered to our customers within the Contractual Specification and within Spec Break requirements. • Pressure vessel inspections are a necessary requirement of DBNGP Pipeline Licence. Failure to comply with pressure vessel inspection requirements may result in oversight of vessel integrity issues and Licence concerns.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Upgrade of coriolis meters

Table 133: Upgrade of coriolis meters

	Project details
Expenditure	[redacted]
Description	Sixteen coriolis meters have transmitters that are at end of life and are no longer supported. The existing transmitters are no longer available for purchase.
Business need	This project is required for the following reasons: • Existing flow transmitters are failing • Spares are unavailable for a replacement transmitter.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Subsequent costs (EOP)

Table 134: Subsequent costs (EOP)

	Project details
Expenditure	[redacted]
Description	The Subsequent cost category, consistent with the requirements of AASB116 Property Plant and Equipment (PP&E), captures expenditure incurred as a condition of continuing to operate an item of PP&E. Regular day-to-day servicing expenditure is recognised through profit and loss (operating expenditure) as consumed and generally described as repairs and maintenance. However, major overhauls that effectively extend the life of an asset are classified as a subsequent cost of the assets continued use the costs of which are recognised as part the asset value. The details of works to be conducted are as follows: • Review of critical spares holding for Turbines • Solar control yearly software updates / review and implementation by Solar FSR • As-building of drawings as found during normal operation • Near maps licence • GIS Operational enhancements • Mainline Pressure Vessel Inspections
Business need	The proposed forecast expenditure will allow DBP to carryout activities that are required to continue to operate assets recognised as property, plant and equipment. Activities may include performing regular inspections for faults and the replacement of certain parts they can be recognised as a cost item of property, plant and equipment. • Lack of critical spares holding has caused turbines to be not available for operational use. • Constant changes and refinement of control software required to ensure reliable units. • As-building of existing infrastructure constantly required • License required as nearmaps are used on the DBNGP GIS system. • Constant GIS patch and data enhancements required during normal operation. Database expanded and new information added. • AS3788 requires that pressure equipment, including pressure vessels, shall be inspected for integrity on a 4 yearly nominal frequency. Vessels at CS03, CS07 and CS09 are overdue for these inspections.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Subsequent costs (compression)

Table 135: Subsequent costs (compression)

	Project details
Expenditure	[redacted]
Description	The Subsequent cost category, consistent with the requirements of AASB116 Property Plant and Equipment (PP&E), captures expenditure incurred as a condition of continuing to operate an item of PP&E. Regular day-to-day servicing expenditure is recognised through profit and loss (operating expenditure) as consumed and generally described as repairs and maintenance. However, major overhauls that effectively extend the life of an asset are classified as a subsequent cost of the assets continued use the costs of which are recognised as part the asset value. This ongoing project is to provide for Compressor Station Subsequent Costs It is anticipated that the following maintenance expenses will be required: • 10 x recycle valves • 2 x dry gas seals • 3x pressure vessels @ CS3, CS7 and CS9 • Scrubber and heater cleaning @ CS1, CS3 and CS5 • White goods • Air conditioners • Replacement of 2 x actuators - station or units • Replacement of 2 x boost compressor seals • Replacement of 2 x valves - station or Units
Business need	The proposed forecast expenditure will allow DBP to carryout activities that are required to continue to operate assets recognised as property, plant and equipment. Activities may include performing regular inspections for faults and the replacement of certain parts they can be recognised as a cost item of property, plant and equipment. • Recycle Valves - Continuation of the planned maintenance to overhaul the recycle valves. • Dry Gas Seals - As part of the PM from the Maximo. • Scrubber and Heater Cleaning @ CS1, CS3 and CS5 - This is the continuation program • White Goods - replace white goods at Compressor Stations. • Air Conditioners - Allowance for aging air conditioners as they are required to be replaced. • Replacement of 2 x Actuators (Station or Units) - A program has now been in place for the last couple of years to replace the leaking valves on units which in turn gives better GUF results. • Replacement of Boost Compressor Seals - Allowance to replace the dry gas seals on the boost compressor. • Replacement of 2 x Valves (Station or Units) - A programme has been now in place for the last couple of years to replace the leaking valves on units which in term gives us better GUF results.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Subsequent costs (pipeline)

Table 136: Subsequent costs (pipeline)

	Project details
Expenditure	[redacted]
Description	The Subsequent cost category, consistent with the requirements of AASB116 Property Plant and Equipment (PP&E), captures expenditure incurred as a condition of continuing to operate an item of PP&E. Regular day-to-day servicing expenditure is recognised through profit and loss (operating expenditure) as consumed and generally described as repairs and maintenance. However, major overhauls that effectively extend the life of an asset are classified as a subsequent cost of the assets continued use the costs of which are recognised as part the asset value. This ongoing Project is to provide for Pipeline Station Subsequent Costs. It is anticipated that the following maintenance expenses will be required: • 6 x CCVT canister replacements • 6 x 10kW GEA overhauls
Business need	The proposed forecast expenditure will allow DBP to carryout activities that are required to continue to operate assets recognised as property, plant and equipment. Activities may include performing regular inspections for faults and the replacement of certain parts they can be recognised as a cost item of property, plant and equipment. • Allowance for CCVT canisters requiring major overhaul due to running hours accumulated. • Allowance for 10kW GEAs requiring overhauls.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Provision of projects initiated under management of change

Table 137: Provision of projects initiated under MOC process

Expenditure	[redacted]
Description	Management of change projects are minor in nature with expenditure in the range of $1000 to $50,000.
Business need	During the normal operation of the DBNGP, various design changes are required to: • Sustain business; • Alleviate unsafe condition; • Increase reliability; • Make equipment more reliable; • Increase efficiency; and/or • Reduce costs.
NGR 79(2) ground	In accordance with NGR 79 (2)(c) the capital expenditure is necessary: • to maintain and improve the safety of services. • to maintain the integrity of services. • to comply with a regulatory obligation or requirement. • to maintain DBP's capacity to meet levels of demand for services existing at the time the capital expenditure is incurred.

Annual allocation for vehicle fleet replacement programme

Table 138: Vehicle replacement

	Project details
Expenditure	[redacted]
Description	Replacement of DBNGP vehicles. The following vehicles and equipment have been identified for replacement: • Toyota Landcruiser 79 GXL Cab Chassis • Canopy (Bosston) • Fitout (Coastal) • GVM Upgrade • Toyota Landcruiser 79 GXL Cab Chassis • Toyota Landcruiser 79 GXL Cab Chassis
Business need	DBP's replaces vehicles that have excessive mileage and at excessive age. Both age and high mileage result in increased maintenance costs. Reliable vehicles are essential to ensure the safety of personnel and their ability to perform required duties effectively and efficiently.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Intelligent pigging

Table 139: Intelligent pigging

	Project details
Expenditure	[redacted]
Description	Intelligent pigging of the DBNGP and associated laterals including Dampier facilities to Wagerup West, Wagerup West to Worsley, Southern Loop, Russell Road lateral and Rockingham laterals. Scope includes the preparation of the pipeline and alignment of all MLVs and testing of launchers and receivers, pig signals and confirmation of all off takes, LOR plugs and EOL status with the loop tie ins. The project included the calling of tender for an Inline Inspection (ILI) contractor complete with cleaning scope. It is envisaged that there will be detailed modelling work to determine the most optimum time for pigging and pre-planning with the selected contractor. This forecast expenditure is part of the ongoing pigging programme.
Business need	DBP is required to perform pipeline pigging under its pipeline licenses and Safety Case.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement

Upgrade of station and unit F&G monitoring system

Table 140: Upgrade of station and unit F&G monitoring system

	Project details
Expenditure	[redacted]
Description	The scope includes the upgrade of fire and gas monitoring at CS2, CS4, CS6, and CS10. Each compressor station on DBNGP is built with supporting facilities like control room, scrubber, after-cooler fans, GEAs, pig launcher & receiver, control room building, workshop building, accommodation building, compressor building and fuel gas pressure reduction skid. All are equipped with suitable fire & gas monitoring systems to handle the risk to plant and personnel. They are CO_2 based fire suppression systems for compressor unit buildings and water mist based fire suppression system for compressor enclosures. To handle the risk of fire and gas release, various types of sensors are used at compressor stations. All sensors are connected to programmable logic control (PLC) through the interfacing system. The Micro-1000 and Sieger-5701 system have been declared obsolete and there is no support from vendor for parts and /or repairs. The scope of this project also includes the implementation of a standardised use of Station Emergency Shut Down (SESD) and Mainline Emergency Shut Down (MLESD). It excludes the replacement of fire & gas systems at GEAs (to be replaced under different project) and fire & gas replacement system of Stage 4 units and stage 5B units, installed in 2006 which are not obsolete.
Business need	The existing system is obsolete. There is no vendor support and also impossible to repair in house. At present some of the sensors are isolated in need of spares.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement

Relocation of GEA batteries

Table 141: Relocation of GEA batteries to a safe location

	Project details
Expenditure	[redacted]
Description	The purpose of this project is to relocate all Gas Engine Alternators (GEA) & Diesel Engine Alternator (DEA) starter batteries from inside the engine room to the external for the GEA building and DEA enclosures. The proposed work is will be for CS04, CS05, CS06, CS09 and CS10. Scope of Work The following scope of works is for GEA and DEA. Each site has 2-3 GEA and 1 DEA. There will be a combined total for 13x GEAs and DEAs that requires the batteries to be relocated. Supply hardware: • Supply 2-4x Batteries per GEA / DEA (as required) • Supply 1x Battery Stand • Supply 1x Concrete block per battery stand (where required) • Supply all cables and material to complete works Works • Install concrete block adjacent to DEA • Remove the old batteries and/or box from the engine room • Install new battery stand external and adjacent to the GEA/DEA enclosure, or on concrete block • Fit and Install batteries to battery box on to the stand • Install and terminate engine and changing cables to the batteries • Where required install cable trays and conduits to secure new cables • Test and commission installation
Business need	A recent investigation of GEA exploding batteries recommended: • a physical barrier to reduce the risk of battery explosions and fire. • Batteries that have higher tolerances with operational temperatures i.e. above 45-500C where possible were required. • Batteries needed to be moved to cooler and vented area. • Changing out batteries will improve power system reliability.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Implementation of DBNGP CP dig-up programme

Table 142: Implementation of DBNGP CP dig-up programme

	Project details
Incurred expenditure	[redacted]
Description	Cathodic protection dig up programme to excavate and inspect the DBNGP for coating and pipe damage and for signs of Stress Corrosion Cracking. This expenditure is the estimated cost to complete.
Business need	Dig-ups are required in order to determine the condition of the pipeline and coating by direct inspection as per AS 2885. Monitoring for stress-corrosion cracking cannot be achieved in any other way except by exposing the pipe.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement

Refurbishment of below and above ground pipework

Table 143: Refurbishment of below and above ground pipework

	Project details
Expenditure	[redacted]
Description	Excavate and inspect the underground pipework at CS1 including the blasting of UHB epoxy coating and replacement with high-build Interzone 954 epoxy. This is an ongoing SIB project.
Business need	This is part of an ongoing plan to refurbish the coatings on underground compressor station pipework. The ultra-high-build epoxy is known to be failing i.e. it prevents the cathodic protection from being effective.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement

Painting of meter stations

Table 144: Painting of meter stations

	Project details
Expenditure	[redacted]
Description	Painting of 3 to 4 sites per annum based on corrosion assessment.
Business need	A site coating assessment was carried out in 2010 which found that there are a number of sites that are over 20 years old and are showing considerable coating and corrosions damage due to constant icing (pre-heater) and generally atmospheric exposure.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Implementation of new financial management system

Table 145: Implementation of new financial management system

	Project details
Expenditure	[redacted]
Description	Implement a new Enterprise Resource Planning (ERP) solution to replace the current system in SAP (providing financial reporting, payroll processing and project management). The new ERP solution will replace the existing services provided by SAP and will include additional functionality including: • Advanced financial reporting. • Detailed budgeting forecasting tools. • Business intelligence reporting, including dashboard reporting with access to multiple DBP databases (including historical SAP data, Maximo, CRS, SCADA and Visual Risk). • Improved project management reporting, including integration to MS Project. • Payroll & HR kiosking – including user friendly payroll system, employee self-service functionality. • Better integration into existing DBP systems (Maximo, CRS)
Business need	As a consequence of transition away from ATCO I-tek for the provision of IT services DBP will need to find a replacement solution for the current SAP system. A transitional arrangement was put in place with ATCO i-tek for the interim 12 month period. Reviews conducted by external consultants (Ajilon and SMS Management & Technology), identified that DBP should replace the current SAP environment with a fit for purpose ERP solution that meets DBP reporting requirements and eliminates the need for existing manual processes. In addition to delivering a superior ERP system the recommended proposal is also assessed to come at a lower upfront and ongoing cost than the alternative option of upgrading the existing SAP system. The recommended proposal is also estimated to have a payback period of <3 years, based on management's assessment of likely future cost savings and other earnings benefits
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to comply with a regulatory obligation or requirement

Rectification of hazardous area equipment

Table 146: Rectification of hazardous area equipment

	Project details
Incurred expenditure	[redacted]
Description	As a part of DBP's obligations under AS 2381 and AS 60079 DBP is required to conduct visual inspection of all equipment installed in the hazardous area every 4 years. The inspection is carried out by third party contractor. The contractor prepares a report of any non-conformity found on the equipment. Under the scope of this project, all the non-conformity will be rectified to meet the requirement of hazardous area installation standards. The scope covers rectification of hazardous area equipment installed at compressor stations CS03, CS04, CS07, CS08 and CS10.
Business need	Required under AS 2381 and AS 60079.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to comply with a regulatory obligation or requirement.

Inspection of hazardous areas

Table 147: Inspection of hazardous areas

	Project details
Expenditure	[redacted]
Description	As a part of DBP's obligation under AS 2381 and AS 60079 DBP will conduct visual inspection of all equipment installed in the hazardous areas every 4 years. The inspection is carried out by third party contractor. The contractor prepares a report of any non-conformity found on the equipment. Under the scope of this project, all the non-conformity will be rectified to meet the requirement of hazardous area installation standards under a separate project. The scope of the project includes inspections at meter stations north of CS10 and MLV sites.
Business need	Required under AS 2381 and AS 60079.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to comply with a regulatory obligation or requirement.

Software modification for Solar Turbine Compressor Units on DBNGP

Table 148: Software modification for Solar Turbine Compressor Units on DBNGP

	Project details
Expenditure	[redacted]
Description	This project is to modify the solar turbine compressor units software; • Update to latest revision as issued by Solar Turbines • Implement new software changes as per Service Bulletin issued by Solar Turbines. • Improvement in system reliability
Business need	Due to change in the operating condition compressor software requires modification to overcome the operation constraints, optimise the operation, improve the reliability and ensure the integrity of assets. More importantly to apply critical updates and changes as per Solar Turbines Service Bulletin. All changes are assessed and approved by Solar Turbines and implemented with their assistance.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Solar & GE Windows XP based HMI upgrade

Table 149: Solar & GE Windows XP based HMI upgrade

	Project details
Expenditure	[redacted]
Description	Upgrading Solar and GE HMI systems to Windows 7 replacing the existing Windows XP operating system and the existing hardware platforms.
Business need	• The current Solar HMI Gas Turbine HMI systems operate on Windows XP which will no longer be supported by Microsoft after the first quarter 2014. This lack of support could place systems at risk. • The latest platform, Solar HMI also meet the new ANSI/ISA-18.2-2009 “Management of Alarm Systems for the Process Industry” mandatory standards.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to comply with a regulatory obligation or requirement • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Upgrade station PLC at compressor stations

Table 150: Upgrade station PLC at compressor stations

	Project details
Expenditure	[redacted]
Description	Replace the Station PLC at CS03, CS05 and CS08 with the latest proven PLC family The project has been spread over three financial years. The scope is to replace the existing Station PLC at CS08 with the latest proven PLC family from Allen Bradley (Contrologix family). The existing functionality will be transferred to the new PLC and also peripheral devices will be modified if required to interface with the new PLC.
Business need	Obsolete system and in absence of station PLC, TSCC (gas control) will not be able to initiate SESD and MLESD in the event emergency.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Upgrade fire & gas equipment at MLV and meter station

Table 151: Upgrade fire & gas equipment at MLV and meter stations

	Project details
Expenditure	[redacted]
Description	This ongoing project is to upgrade existing CMOS or ODG fire and gas (F&G) systems at all DBNGP MLVs and meter stations. New F&G philosophy for PAV sites was developed and implementation is in progress on those sites. In the coming years it is proposed to change F&G systems at all MLV and meter stations as per the standard philosophy.
Business need	• The existing system is at end of life (over 25 years old) and replacement parts are no longer available. • The cost to send an item away for repair is very expensive and still does not guarantee reliability. • Valuable man hours are being wasted on reactive work due to faulty equipment, • Unnecessary travel is created due to staff having to react and respond to faults continuously occurring in these systems • The safety of staff and equipment is compromised with unreliable equipment. • A new fire and gas systems will greatly reduce the cost of maintenance
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to comply with a regulatory obligation or requirement

Annual provision for IT items

Table 152: Annual provision of IT items

	Project details
Expenditure	[redacted]
Description	DBP has a licensing agreement with Microsoft covering standard desktop software and server operating system software requiring the payment of an annual true-up charge. • Continue the 1/3 PC replacement program to ensure all PC's are fit for purpose and under warranty. • Printers >5yr are end of economic life. Replace monochrome laser printers more than five (5) years old. Six units will be replaced. • DBP has signed a licensing agreement covering standard desktop software and Server Operating System software. There is a contractual obligation to pay the true-up charge. • Replacement Data Projectors for Great Southern/Jarrah/Gascoyne meeting rooms
Business need	Desktop computers, laptops and service are essential tools in the provision and maintenance of service delivery on the DBNGP.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

SCADA upgrade

Table 153: SCADA upgrade

	Project details
Expenditure	[redacted]
Description	This project is to upgrade the existing DBP SCADA system from a 32-bit platform running OASyS on a Windows 2003 operating system to a 64-bit platform running OASyS on a Windows 2008 operating system. This expenditure is part of the continuing project in Table 83.
Business need	• All new updates and patches are to be completed on 64 -bit platform. • 32 -bit platform patches are no longer available. • Security patches are no longer being produced by Schneider or Microsoft for 32 -bit platform • At the completion of this project, the new 64 bit operating system will enable DBP to access latest updates from the long term subscription with Schneider.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Customer reporting system (CRS) development

Table 154: Customer reporting system (CRS) development

	Project details
Expenditure	[redacted]
Description	Add new functionality modifications to Customer Reporting System (CRS) as follows: • Improve capacity trading work flow. • Implement any system modifications resulting from improvement review of commercial processes still to be determined. • Carry out defined modifications to the Billing System which will allow DBP to generate revenue from newly identified streams.
Business need	CRS is highly customised software package that interfaces with the DBNGP SCADA system and allows DBP to perform its billing and other reporting obligations. It is also an online portal for shippers on the DBNGP to make daily gas nominations and obtain important system information. It is important that is maintained and evolved to meet requirements of DBP and its stakeholders.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services

Production of safety key site

Table 155: Production of safety key site

	Project details
Expenditure	[redacted]
Description	Improvement to the following safety critical DBNGP key site drawings • Piping layout • Piping and instrument diagram • Electrical schematics for power distribution, emergency shutdown, gas service valve control and equipment located in hazardous areas • Hazardous area layout This expenditure is for implementation work and is continued from previous year.
Business need	Safety and operational critical drawings: • These drawings are key drawings upon which work planning, safe working isolations and corrective action works are based. If the drawings are not clear or are misleading, this can contribute to error and delay. For example, a piping layout drawing requiring referral to a separate drawing showing a fragment modified by a project could lead to inadvertent overlooking of the project modification or a point of isolation. • Project modifications being shown on separate drawings showing only a fragment has been a widely used technique to save drafting costs dating back to the mid-1980's. As-built drawings from projects and management of change modifications are sometimes still on backlog to be updated. Search meta data is not available for many of these drawings so the drawings are difficult to find in Intranet searches, particularly if the drawings span multiple numbering systems like.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Replace RO units at CS

Table 156: Replace RO units at CS

	Project details
Expenditure	[redacted]
Description	Overhaul of the existing reverse osmosis (RO) unit at CS1 and installation of a new unit at CS2.
Business need	RO units provide the site for water to the DBP personnel. Existing units are 20 years old and obsolete with repair costs rising. New units includes InteliSys control which allows for remote monitoring via SCADA systems.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to comply with a regulatory obligation or requirement

Replace wall/roof sheets- comms / GEA hut

Table 157: Replace wall/roof sheets- comms / GEA hut

	Project details
Expenditure	[redacted]
Description	Replacement wall and roof sheeting by building contractor for repeater huts at R42 due to corrosion of original sheets plus the installation of a ladder safety attachment point to GEA hut roof for maintenance on solar panels, exhaust outlets, vents and fan cowlings. Expenditure is continued from the work initiated in 2013.
Business need	Due to ageing and continued operation, the roof and wall sheets of the hut at repeater sites show severe corrosion that needs to be replaced to protect equipment from water egress which has the potential to damage GEA alternators.
NGR 79(2) ground	In accordance with NGR 79 (2)(c) the capital expenditure is necessary: • to maintain and improve the safety of services. • to maintain the integrity of services.

Inspection of NP unit hot gas path at CS6

Table 158: Inspection of NP unit hot gas path at CS6

	Project details
Expenditure	[redacted]
Description	Replacement and inspection of all hot gas path components on CS6 unit 2 GE Nuovo Pignone gas turbine.
Business need	Nuovo Pignone gas turbines require intermediate maintenance to be performed at 17,000 operating hours, this is done to ensure that the hot gas path components do not degrade past there useful life and that they can then be repaired. The engine has reached its operating hours limit of 17,000 hours for this Hot Gas Path Inspection and requires replacement of all worn or thermally affected hot section components with new or refurbished components
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Replace air conditioning at CS

Table 159: Replace air conditioning at CS

	Project details
Expenditure	[redacted]
Description	This project is an annual replacement of air conditioner units, targeting units that are faulty and have reached the end of useful life. Replace all following air conditioning at CS1 through to CS8 targeting units that are faulty and have reached the end of their useful life. CS1, CS5 and CS8: • A/C1 Switch room • A/C2 Switch/Equipment room • A/C4 Equipment room • A/C5 Control Room • A/C1 Accommodation • A/C2 Accommodation • A/C3 Accommodation • Unit 3 Switch room A/C1 • Unit 3 Switch room A/C2 CS2, CS3, CS4, CS6 and CS7: • CS2/CS3/CS4 and CS7 Control Room • CS2/CS3/CS4/CS6 and CS7 Workshop • CS3 Switch Room A • CS3/CS6 Rooms 11,12,13,14 and 15 • CS4 and CS7 Unit 3 Switch room A/C1 • CS4 and CS7 Unit 3 Switch room A/C2 • CS6 Corridor A/C
Business need	Air conditioning units are essential to allow equipment to operate within the manufacturer's specified temperature range. Operating continuously at high temperatures can lead to premature failure or intermittent trips of critical infrastructure on the DBNGP. For instance, some equipment rooms have heat detectors that will shut GEAs down on high enclosure temperature. In addition, air conditioners at accommodation buildings maintain suitable living conditions.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

24VDC batteries and charger replacement

Table 160: 24VDC batteries and charger replacement

	Project details
Expenditure	[redacted]
Description	The purpose of this ongoing project is to replace the 24VDC battery chargers and battery banks for all compressor stations. CS07, CS09 and CS06 battery charger and battery banks had already been replaced in 2011, 2012 and 2013 respectively This project is scheduled to be complete over a three year period. Expenditure is for works to be carried out in 2015.
Business need	• Obsolete equipment with no support • Spare parts are no longer available • Faults on these systems are increasing • Currently there three battery chargers isolated due to failures • Batteries are at the limits of their designed lifespan
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Replacement of 110V DC batteries and chargers

Table 161: Replacement of 110V DC batteries and chargers

	Project details
Expenditure	[redacted]
Description	This project is scheduled to be complete over a four year period The purpose of this project is to replace the 110VDC battery chargers and battery banks for all compressor stations. CS09 and CS06 battery charger and battery banks were replaced in 2012 and 2013 respectively. 110VDC battery chargers sets requirements: • Each battery charger sets consist of 1x 110VDC charger cabinets, 1x battery maintenance point (BMP) panels. • Total required battery chargers = 14x sets • 110VDC battery banks sets requirements: • Each battery bank sets consist of 54x gel type batteries (340Ah Capacity). • Total required battery banks = 14x sets Scope of Work • Engineering consultants to provide support for design • Vendors to supply 110VDC battery changers and battery banks sets for CS#1, 2, 3, 4, 5, 7 and 8 • Electrical Contractors to install 110VDC battery changers and battery banks • Consultants and electrical contractors to test and commissioning installation • As build drawings
Business need	Justifications: • Obsolete equipment with no support • Spare parts are no longer available • Faults on these systems are increasing • Currently there two battery chargers isolated due to failures
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Upgrade of GEA and DEA controls at CS1 to 8

Table 162: Upgrade GEA and DEA controls at CS1 to 8

	Project details
Expenditure	[redacted]
Description	Upgrade GEA and DEA controls at compressor stations 1 through to 9 This project is to implement the work recommended in Front End Engineering Design (FEED) study of the Compressor Station Power Systems, and will enhance the controllability / operability and improve the stability of the DBNGP Compressor Station Power Generation Systems (GEA and DEA). This project will be completed over multiple years.
Business need	This project will enhance the controllability and improve the stability of the DBNGP Compressor Station power systems. The existing power generation systems have reached the limit of their useable life. Old control system hardware has become obsolete and therefore is in need of replacement to up to date generation control system equipment. Legacy GEA control system architecture severely restricts effective integration into the compressor station control system, leading to loss of unstable operation affecting compressor station reliability. This project will enhance maintainability with respect to ease of fault finding, operational efficiency and access to historical data and event logs. Monitoring of live operational data will also be enhanced allowing access via the local site HMI, Control System Network and remotely from SCADA.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

CS1-9 Power system rationalisation

Table 163: CS1-0 Power system rationalisation

	Project details
Expenditure	[redacted]
Description	This project is the follow-up to the Front End Engineering Design (FEED) study of the Compressor Station Power Systems, and will enhance the controllability / operability and stability of the DBNGP Compressor Station Power Generation Systems (GEA and DEA). The following summarises the approach to the GEA-DEA Controllability Project: • Upgrade the GEA and DEA control system for Compressor Station integration and ease of maintenance operability. • Monitoring of GEA/DEA operating parameters and KPI functions. • Rationalise operating data being collected with regard to alarms and monitoring efficiency points • Enhance controllability to improve the stability of the power systems • Automatic optimal power generator size selection to maximise fuel gas efficiency • Reduced GEA fuel consumption to lower fuel costs • Reduced GEA CO_2 emissions to lower carbon costs • Simple and reliable Low Load solutions to address the issue of running GEA/DEAs on a low load • Direct ACF Base Temperature Control (as opposed to Station Discharge Temperature control of ACFs) to address the issue of running ACFs when not required. The added benefit of this is that reducing the number of ACFs running may reduce station load to a point where it is more efficient to switch to a smaller generator. • Lower maintenance costs as load banks and after cooler fans are run significantly less. • Load Management for each site is reviewed and recommendations made to improve the stability of the power systems. E.g. CS06 automatic load bank top-up when Station load requires both the 400kW Deutz GEAs online. • Generator management for each site is reviewed and recommendations made to improve the reliability and efficiency of the power systems. E.g. The LM PLC may determine the optimal sized GEA to power the site, and will externally force this GEA to a Priority 0, therefore nominating it as the highest priority GEA within the InteliSys Power Management system. As well as maintenance benefits, there are significant carbon footprint benefits from optimising the generator manage Enhance generator and power distribution reliability to improve the stability of the compressor station power system. One or two compressor stations are upgraded annually
Business need	• Pre-Stage 5 Power Generation control systems have reached the limit of their useable life. • Older control system hardware has become obsolete and therefore is in need of migration to current / future generation control system equipment. • Legacy GEA control system architecture severely restricts effective integration into the compressor station control system, leading to loss of event history. • Of particular importance, is the identification of redundant and obsolete legacy code, associated panel wiring, and control devices that should be replaced or removed during the standardisation process. • In light of the above, a FEED study was undertaken for the requirements to bring the GEA Control Systems in line with the DBP Control System Hierarchy & Philosophy to improve reliability of power generation equipment at Compressor Stations on the DBNGP.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Replacement of unit control systems at CS2/2, CS4/2 and CS7/2

Table 164: Replacement of unit control systems at CS

	Project details
Expenditure	[redacted]
Description	Replace existing Allen Bradley PLC 5/80 based control system and replace with Allen Bradley ControLogix PLC based control system at CS02/U2, CS04/U2 and CS07/U2 The existing panels will be removed by disconnecting existing filed cables. New panels will be installed on the existing panel foot print. The cable will be reconnected into the new control panel. Also under this project following will be replaced: • Variable frequency drive to control the starter motor will be replaced being obsolete. • The actuator assembly of fuel valve, bleed valve and IGV will be replaced as required by Solar to optimise engine performance. • Seal gas and buffer air transmitter as required by Solar • Anti-surge valve positioner
Business need	• The existing control system is Allen Bradley PLC 5/80 based system. This system was installed and commissioned during Stage 3 Expansion phase (1998). • The present control system PLC and software is considered by Solar Turbines to be obsolete and would not be supported by the vendor. There is a very limited vendor support and will reduce to none with time. • This capital expenditure will ensure that obsolete hardware will be changed in timely manner without affecting the reliable and safe operation of unit. • Also Solar has introduced their control optimisation in their new ControLogix based control system which is not compatible with the existing control system. • This replacement will remove this obsolete system and provide reliability and backup fault-finding, by Solar ,with the new ControLogix based control system
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Replacement of concrete supports

Table 165: Replacement of concrete supports

	Project details
Expenditure	[redacted]
Description	Above-ground concrete plinths that support pipe in 180 degree cylindrical gutters will be cut away and replaced with square steel supports. The supporting contact areas will be inspected for the first time since installation and the coating repaired if necessary. Trials have been carried out at WLPG and CS9 for this application. Work will be carried out at all affected sites assessed on severity during project implementation
Business need	The guttered concrete plinth supports prevent any kind of inspection of the pipe contact surface. They prevent re-coating of the contact area and constitute a crevice that can trap water and debris. Other water and debris traps at surface sites have exhibited accelerated coating deterioration and corrosion, e.g. horizontal flanges.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Jandakot workshop tools

Table 166: Jandakot workshop tools

	Project details
Expenditure	[redacted]
Description	This project is for tool and equipment procurement for the set-up of the overhaul/repairs workshop at DBP's Jandakot facility. Procure the following workshop tools and equipment: • Canvas covers for 4 machines • Canvas hoods to cover drill mill, lathe, surface grinder, drill press (sizes made to order) • Norbar hydraulic wrench with pump and adaptors (valve strip downs) • Belt finisher • Nitro-pack • Bearing/ seal install kit • Micrometres outside, 1-2", 2-3", 3-4" 6-14" • Electric die grinder • Engineers combination set • Grinder diamond dressing tool • Set squares • Retractable air hose reel with hose • Lathe cutting tools
Business need	Required to allow staff to access appropriate equipment required to perform normal maintenance duties on the DBNGP.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

SDO tools

Table 167: SDO tools

	Project details
Expenditure	[redacted]
Description	This project is for the procurement of tools for SDO staff to perform required duties, including • GPS unit with high accuracy specifically for ILI and DCVG excavations Trimble ProXRT wit GLONASS • Communication field laptop computers • 20MHz digital multimeter, Scope meter 123 • Set of screwdrivers • Small tool set • GPS unit • Replace damaged part of existing camera • Crystal nVision pressure and temperature calibrator • Yokogawa CA71 pulse generator
Business need	Required to allow staff to access appropriate equipment required to perform normal maintenance duties on the DBNGP.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

6x4 tipper, tag trailer & skid steer loader

Table 168: 6x4 tipper, tag trailer and skid steer loader

Expenditure	[redacted]
Description	Purchase of civil equipment including 6x4 tipper, tag trailer and skid steer loader.
Business need	Excessive transport hire arrangements, down time and costs associated with repairs to: • 1984 JCB Backhoe with Front End Loader. • Second hand MAN Prime Mover that is in regular repair The new equipment selected is versatile and ideal for the maintenance work that is required to complete work on the DBNGP.
NGR 79(2) ground	In accordance with NGR 79 (2)(c) the capital expenditure is necessary: • to maintain the integrity of services. • to comply with a regulatory obligation or requirement.

Install soft start to aftercoolers

Table 169: Install soft start to aftercolers

	Project details
Expenditure	[redacted]
Description	This project involved the refurbishment /modification of all 50 aftercooler fan drawers (currently direct online (DOL) type) at all 10 compressor stations. Project is to be delivered over two years.
Business need	The existing aftercooler MCC draws are failing / burning out after years of service with the DOL and autotransformer systems installed. Failures of MCC draws will render compressor unit unavailable or restricted by a high station gas discharge temperature during high flow periods especially in summer months affecting the delivery of the contracted gas capacity. This required modification to the MCC draws will improve GEA reliability by gradually loading up the GEAs with aftercooler fans coming online, rather than throwing block loads (transients) on GEAs which is capable of tripping the GEAs on under voltage and under speed. Spare parts for existing aftercooler drawers are also unavailable.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Field technical services tools

Table 170: Field technical services tools

	Project details
Expenditure	[redacted]
Description	The purchase of specialist tools for Rotating Plant Mechanical, Gas Measurement, and Rotating Plant Control Systems teams within the Maintenance division.
Business need	Procurement of specialised equipment and tooling to facilitate the Field Technical Services Group's function to support and investigate various tasks that involve diagnostics and project work directly related to DBNGP asset and personnel.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Maintenance tools

Table 171: Maintenance tools

	Project details
Expenditure	[redacted]
Description	Purchase tooling to ensure maintenance activities can be completed efficiently and effectively. Purchase and repair of tooling includes: • Tooling repair • 475 Hart Communicator • "Fluke 725 Temp Probe • 80PK-9" x 4 • Crystal DP x 1 • Crystal Cells x 4 • Crystal IS33 x 2 • Fluke EX87 x 2 • Fluke EX725 x 1 • Fluke 773 Amp Meters • Camera x 11 • 1650 Power Safe Load Bank • DBP Compatible hand held 2 way radios with car chargers
Business need	Required to allow staff to access appropriate equipment required to perform normal maintenance duties on the DBNGP.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Refurbish accommodation facilities

Table 172: Refurbish accommodation facilities

	Project details
Incurred expenditure	[redacted]
Description	This project is for the replacement and refurbishment of accommodation facilities located at CS4 and CS5 needed to maintain the standard of facilities.
Business need	Due to ageing and continued operation of the accommodation facility over a number of years, it is necessary to replace and refurbish worn out accommodation units at some compressor stations. This is to ensure the facilities meet the building code and are a suitable environment for employees to live in.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to comply with a regulatory obligation or requirement.

Upgrade comms at Maitland meter station

Table 173: Upgrade comms at Maitland meter station

	Project details
Expenditure	[redacted]
Description	Project to install standard serial communications at Maitland meter station to provide fast and reliable SCADA communications
Business need	The Maitland meter station is serviced by a communications device that is not the current standard utilised along the DBNGP. This device is one of only two devices used for the entire DBNGP and is difficult to maintain. It is also proposed to repoint this connection from R1/MLV 7 to R2/MLV 8 so as to free up communications capacity at MLV7 which is full and can deliver no more SCADA connections. Existing infrastructure at R2/MLV8 will be utilised to service this link
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services

Upgrade comms at Mungarra meter station

Table 174: Upgrade comms at Mungarra meter station

	Project details
Expenditure	[redacted]
Description	Remove and upgrade the communications to Mungarra power station. Installation of a communications pole at Mungarra as well as a Sagem microwave link to repeater 30. Provision of CSN, corporate and a telephone at site.
Business need	The existing communications to Mungarra is at end of life and Western Power infrastructure is no longer supported or available. Communications to Mungarra PS is slow and has limited capacity to provide a suitable control systems network, corporate or even a telephone connection.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services

Upgrade comms at Pinjar meter station

Table 175: Upgrade comms at Pinjar meter station

	Project details
Expenditure	[redacted]
Description	Remove and upgrade the communications to Pinjar power station. Installation of a communications pole at Pinjar as well as a Sagem microwave link to repeater 41. Provision of CSN, corporate and a telephone at site.
Business need	The existing communications to Pinjar is at end of life and Western Power infrastructure is no longer supported or available. Communications to Pinjar PS is slow and limited with no ability to provide a suitable Control systems network, corporate or even a telephone connection. DBP is also unable to isolate and identify faults without the support of Western Power.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services

Load bank cable replacement

Table 176: Load bank cable replacement

	Project details
Expenditure	[redacted]
Description	The purpose of this project is to improve the reduce load banks faults at all compressor stations. A design issue has been identified with the load banks cabling. The internal cables are undersized and underrated for heat and therefore cause overheating of connected equipment and cable causing the load banks to trip. Scope of work • Supply and install new cabling – replace 6mm2 with 10/16mm2 cable. • Commission • Produce As-build drawings
Business need	• Mitigate risks of fire • Mitigate risks of electrical shocks or electrocution • Reduce load bank failures
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Upgrade solar panels at spur sites 1-6

Table 177: Upgrade solar panels at spur sites 1-6

	Project details
Incurred expenditure	[redacted]
Description	Upgrade of solar panels at spur sites 1-6 This forecast expenditure is the remaining cost to complete this multi-year project.
Business need	Due to ageing and failure of existing solar panels, the site has become prone to power outages and therefore lack of visibility via control systems. To control this site effectively it is necessary to upgrade the solar power at this site to maintain effective control.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Replace turbine air inlet CS7/2

Table 178: Replace Stage 3A turbine air inlet filters at CS4/2

	Project details
Incurred expenditure	[redacted]
Description	Removal of the existing Stage 3A turbine inlet filter housings, and installation of the turbine air inlets at compressor station No.4 unit 2 This forecast expenditure is the cost to complete this multi-year project.
Business need	The existing Stage 3A turbine air inlet filters housings were corroding and deteriorating and required replacement in order to reduce the risk of turbine axial compressor damage and possible catastrophic failure. Expected benefits of this project are a significantly reduced risk of failure from ingestion of corrosion and collapsed filter material.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Replacement of air compressors at CS

Table 179: Replacement of air compressors at CS

	Project details
Expenditure	[redacted]
Description	Replace all Air Compressor on CS sites. Forecast expenditure is to carry out the work at CS5.
Business need	The reliability of air compressor units is imperative, as units provide the buffer air when the boost compressor is not running and pressurised. Units are 20+ years and are obsolete and the repair cost is more than the cost of the new unit. Upgrades include IntelliSys control which maintenance remote monitoring functionality via SCADA systems.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

CS10/3 exhaust expansion joint replacement

Table 180: CS10/3 exhaust expansion joint replacement

	Project details
Expenditure	[redacted]
Description	This project will replace the exhaust expansion joints on CS10 unit 3 as per Solar Turbines service bulletin number 8.12/111B. Improved version of the bolt-on style exhaust expansion bellows mitigates the risk of linear detachment on part-load solonox units.
Business need	Inspections have identified deterioration in CS10 U3 exhaust expansion joint, leaks in the enclosure roof and potential damage to the exhaust collector. It is a solar service bulletin requirement.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services

4kw CCVT at MLV8

Table 181: 4kw CCVT at MLV8

	Project details
Expenditure	[redacted]
Description	Supply, install and commission one 4KW CCVT at MLV8 to replace the failed unit.
Business need	The unit is to be replaced due to the original closed circuit vapour turbine unit having failed. Reliable Power supply at MLV sites is crucial for: • The operation and control of MLVs, • Providing TSCC (gas control) with SCADA visibility of the site, and • Powering the communications network along the pipeline to ensure less downtime and greater reliability
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Upgrade of Intellisys control system for 10kw GEA units

Table 182: Upgrade of Intellisys control system for 10 kw GEA units

	Project details
Expenditure	[redacted]
Description	The proposed change is to replace the unsupported existing relay based control board and auxiliary equipment that has been in service for over 30 years and has become extremely unreliable in the last few years with an Intellisys Controller, type AMF25. In addition to replacing the relay based control board the existing SLC500 PLC which is no longer supported. The new system will be based on an Intellisys controller which DBP has standardised on its existing GEA's at Compressor Stations. The AMF 25 controller is specifically designed for automatic mains failure (AMF) and has been successfully tested on a 10kW GEA at the Jandakot depot. The GEA control design will be based on a generic design for both CCVT and mains powered sites. The AMF 25 controller provides an ethernet connection which will be attached to the control system network and provide a secured WEB based access for maintenance staff. The AMF 25 like all Intellisys controllers has an internal history recording system to allow maintenance staff to review logged history and will be available via the control system network This expenditure is the cost to complete this multi-year project.
Business need	The existing relay based generator control boards are unavailable and creating generator failures due to lifting copper tracks and general old age. These boards have been in service for over 30 years along with the associated meters and relays. The existing SLC500 PLC is also unsupported.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Replacement of labyrinth seals with mechanical seals on all NP units at CS6 & CS9

Table 183: Replacement of labyrinth seals with mechanical seals on all NP units at CS6 & CS9

	Project details
Expenditure	[redacted]
Description	Installation of Coba Seals to replace labyrinth seals on Nuovo Pignone PCL603 centrifugal compressor.
Business need	Coba seals are air efficient and uses less than 5% of current air usage so the modification will help in reducing a substantial amount of buffer (instrument) air consequently reducing the operating and maintenance cost of instrument air compressors and electrical load. Coba Seals are far more efficient as compared to labyrinth seals so chances of oil carryover are low which consequently reduces the contamination and ultimately increases the life of dry gas seal.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Upgrade of gas turbine fuel gas pressure control system

Table 184: Upgrade of gas turbine fuel gas pressure control system

	Project details
Expenditure	[redacted]
Description	This project will replace the pneumatic controllers on fuel gas skids with electronic transmitters and the pneumatic positioners of the control valves will be replaced with digital positioners. The affected sites include CS1 Unit 1, CS3 Unit 1, CS5 Unit 1 & 2, and CS8 Unit 1 & 2.
Business need	• Present pneumatic controllers are very difficult to maintain due to their high price and unavailability of technicians capable of carrying out required maintenance. • It is not possible to control fuel pressure within the desired band of 200 KPA. As a result, there have been occasional trips of the units due to high T5 temperature. • The proposed conversion will provide tighter control on valve and improved diagnostic / condition monitoring. • The use of digital controllers is in line with current industry practice.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Installation of solar compressor dynamic vibration data visibility program

Table 185: Installation of solar compressor dynamic vibration data visibility program

	Project details
Expenditure	[redacted]
Description	This project is for the purchase and installation of Bently Nevada FMIM's (Field Management Interface Module) to enable the collection and analysis of dynamic data from the existing machine protection racks on all Stage 4 Solar packages, upgraded ACS Solar packages and Stage 3A packages after the control systems upgrade.
Business need	Justification for this project is to provide permanent installation of the Bently Nevada FMIM cards into the onsite control and monitoring panel to eliminate the risk of damage from the current practice of plugging and removing portable controller cards. The benefits will include the improvement to online data collection and analysis as well as reducing the repair cost to the damaged card slots through frequent insertions and removals.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Provision of condition monitoring data visibility

Table 186: Provision of condition monitoring data visibility

	Project details
Expenditure	[redacted]
Description	The staged purchase, installation and configuration of Bently Nevada System1 servers to manage the collection and analysis of dynamic data at all compressor stations. Servers will be managed as part of the control systems network.
Business need	The data collected by the modules will used to determine asset condition and provide information to engineering for the optimisation of asset lifecycle. Installed protection systems on all production units are Bently Nevada. Bently Nevada systems comply with API670 and are considered “best in class” for vibration monitoring. Integration with installed systems are “plug and play”, spare parts are readily available, There is local engineering and sales support from GE and the components are certified Zone 1.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Office 2013

Table 187: Office 2013

	Project details
Expenditure	[redacted]
Description	This project is to upgrade Microsoft Office (MSO) 2010 to MSO2013 as part of strategy to manage DBP corporate desktop environment.
Business need	It allows DBP to take advantage of improvements and functionality of MSO2013 and avoid version incompatibilities that DBP experienced when it failed to upgrade from MSO2003 to MSO2010 in a timely manner. It will ensure the step change to the new Microsoft Office environment is smaller for the end user and therefore the effort required to adapt will be minimal.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Workstation managed operating environment (MOE)

Table 188: Workstation managed operating environment (MOE)

	Project details
Expenditure	[redacted]
Description	This project is to design, develop and implement a new MOE for DBP workstations based on best industry practice. Scope of work includes: • Pilot plan • Testing; and • Rollout
Business need	After transitioning to the new ZettaServe, DBP is required to have to have the Management Operating Environment (MOE) for workstations re-built to enable best practice in desktop building, deploying and maintaining as well as configuration management and remote management. This will enable the Service provider to minimise the amount of effort and cost to manage workstations across DBP. The new MOE is required as part of DBP's strategy to proactively manage the corporate desktop environment. It was not completed as part of the transition to minimise the impact to end users but is required to remove legacy configuration.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Windows 8.1 desktop upgrade

Table 189: Windows 8.1 desktop upgrade

	Project details
Expenditure	[redacted]
Description	Upgrade all current DBP corporate desktops using Windows 7 operating system to the current version of W8.1. A phased approach will be used whereby when the PC replacement programme is executed new machines will have W8.1 installed and after that the remaining PC's will be upgraded. The second phase will involve upgrading workstations in-situ. Both phases will also require: • Project plan • Rollout plan • Test plan • All workstations across DBP will have W8.1 installed • Fully documented W8.1 design will be produced • Project manager provided by ZettaServe
Business need	This upgrade is required as part of DBP's strategy to proactively manage the corporate desktop environment. Windows 7 client operating system is now two versions behind the current Microsoft OS and goes end of support in January 2015. It is more cost effective to upgrade prior to this date. In the past DBP has incurred significant operational difficulties and expense when staying too long on a given OS.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

HSE intranet page enhancements

Table 190: HSE intranet page enhancement

	Project details
Expenditure	[redacted]
Description	This project is to re-design the HSE Intranet Home Page through a third party web designer.
Business need	DBP's HSE Incident Management System 'InControl' includes functionality that was based on the HSE Intranet Home Page. The new site will update remove functionality now provided by Incontrol and improve the layout of the HSE Intranet Home Page to facilitate other aspects of Health, Safety and Environment with information that is relevant to the day to day operation of the business.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services

Purchase of additional hardware and software for field interface equipment

Table 191: Purchase of additional hardware and software for field interface equipment

	Project details
Expenditure	[redacted]
Description	The purchase of specialist tools for rotating plant mechanical, gas measurement, and rotating plant control systems teams within the maintenance division.
Business need	Procurement of specialised equipment and tooling to facilitate the Field Technical Services Group's function to support and investigate various tasks that involve diagnostics and project work directly related to DBNGP asset and personnel.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services

Jandakot upgrade completions

Table 192: Jandakot upgrade completions

	Project details
Expenditure	[redacted]
Description	Complete the following upgrade completion works: Jandakot Facility Site Plans and Electrical Drawings • site survey including building layouts • Jandakot facility electrical drawings • Jandakot facility water/gas/comms/Telstra drawings Garden Landscaping Upgrade outstanding locks at Jandakot to relevant "Y" security key level. Bicycle rack and accommodation
Business need	Works are required to ensure that the Jandakot depot facility provides accommodation and security meet acceptable levels
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Modification of instrument gas supply to the MLV actuators

Table 193: Modification of instrument gas supply to the MLV actuators

	Project details
Expenditure	[redacted]
Description	Re-design of MLVL actuator instrument isolation and testing points including: • The addition of multiport valves to instrumentation • The addition of an isolation valve to the accumulator and PSV; and • Modifications to tubing to provide safe venting of accumulators
Business need	When opened the vent point of the accumulator vents high pressure gas directly to the ground, immediately adjacent the person performing the work. This activity, which is currently required to be performed at least 70 times per year, creates an unnecessary risk to the safety of personnel and the integrity of the equipment. Further, the current configuration of MLVL actuator instrumentation tubing, does not allow for instruments to be isolated individually and each time maintenance is to be performed, the entire system, including the accumulator, has to be vented down.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services

Decommission removal of Jandakot gas engine alternator

Table 194: Decommission removal of Jandakot gas engine alternator

	Project details
Expenditure	[redacted]
Description	Relocation of Jandakot GEA at Jandakot Depot following completion of Jandakot power upgrade project. GEA to be preserved and transported to Kwinana Junction facility.
Business need	• GEA will be made redundant following installation of higher capacity DEA (Diesel engine alternator). • GEA is operational ready and reliable which can be utilised for Kwinana Junction backup power requirements. This becomes more important with the relocation of the SCADA, Corporate IT, and Corporate Telephony secondary systems to Kwinana Junction. • GEA can be preserved in accordance to vendor's specification and be ready for transport as required.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Electrical isolation of all LM500

Table 195: Electrical isolation of all LM500

	Project details
Expenditure	[redacted]
Description	There are 6 LM 500 turbine-compressor packages, located at CS#1, CS#2, CS#3, CS#4, CS#6 and CS#7 on the DBNGP. These units have been mechanically Isolated. The electrical isolation is the next step in the decommissioning the LM 500 Units. The project involves the overall consolidation of all Electrical, Control and Ancillary equipment associated with the LM500 Units. Overall station operation must not be affected by the isolation and all station interfaces must be considered. This expenditure is the cost to complete the remaining work in this project.
Business need	• The maintenance of the electrical and control systems will be diminished, as equipment is isolated and de-energised. • Routine station checks of the LM500 equipment will not be required.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Installation of diesel fuel filters at bulk diesel storage tanks

Table 196: Installation of diesel fuel filters at bulk diesel storage tanks

	Project details
Expenditure	[redacted]
Description	Install filtration on compressor station bulk fuel tanks to control contamination. The filter units are to be installed on the bowser for dispensing to vehicles and gensets. Filter units with a vacuum breaker are to be installed on the tank breathers to control atmospheric ingress.
Business need	Condition sampling results of bulk fuel tanks and DEA day tanks has shown water and particulate contamination in excess of ISO and OEM recommended limits. Water contamination has the potential to cause bacterial infestation of diesel which can lead to fuel filter blockages. Particulate contamination of diesel has the potential to cause fuel filter blockages and damage to light vehicle fuel systems such as injectors and pumps. It also increases fuel consumption and exhaust particulate pollution. For EUI fuel injection systems, equipment OEM's, typically require a fuel cleanliness level of 18/16/13 per ISO 4406. High Pressure Common Rail (HPCR) engines require diesel fuel cleanliness levels as low as 12/9/6 per ISO 4406. In the past 2 years there have been several bacterial infestations in DEA fuel tanks with one in particular at CS09 DEA1 which has caused an ECM fault and a subsequent delayed restart after a black site outage
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Installation of air conditioning in PAV huts

Table 197: Installation of air conditioning in PAV huts

	Project details
Expenditure	[redacted]
Description	• Install split system air conditioning to 6 Pulse Access Valve (PAV) Hut main Control Rooms that are not air conditioned. • Decommission and remove roof ventilation fans and damper equipment from the PAV Hut main Control Rooms. • Seal roof and damper voids. • Update drawings and working instructions (WIs) to reflect changes
Business need	PAV huts are currently forced draft cooled. Temperatures within these huts can reach over 50 degrees in summer.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Installation of remote monitoring & diagnostics for NP units

Table 198: Installation of remote monitoring & diagnostics for NP units

	Project details
Expenditure	[redacted]
Description	The purpose of this project is to renew the remote monitoring and diagnostic contract with GE for Nuovo Pignone Gas Turbine compressor package at CS 6/ unit 2 and CS 9/ unit 1.
Business need	There are currently several methods employed at DBP to collect machine diagnostic and trend data with inherent problems: • SCADA: current poll rate are not fast enough to capture transient events normally associated with turbo-machinery; • Remote login to the HMI via the CSN: which has security issues and the potential to trip of the unit; and • Periodic data collection from buffered outputs of the individual racks: labour intensive and not able to capture transient events for turbo-machinery. This system has a capability to manage machine data to analyse and use to determine asset condition and provide information to engineering for the optimisation of asset lifecycle. The proposed system has already been in use at DBP on the Nuovo Pignone units with the now defunct control system supplied as part of the Mk6e upgrade.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Alarm management for compressor stations

Table 199: Alarm management for compressor stations

	Project details
Expenditure	[redacted]
Description	Purchase, install and configure Alarm Management software that includes the Alarm master database for all alarms related to HMI's at Compressor Station as part of meeting ANSI/ISA-18.2-2009, Management of Alarm Systems for the Process Industries standard.
Business need	ANSI/ISA-18.2-2009, Management of Alarm Systems for the Process Industries standard released in 2009 has certain mandatory requirements. The standard requires an alarm master database to be kept and managed over the life of the alarms. Operators of equipment with a HMI systems and display alarms are required to meet these new standards. In addition to the alarm master database, rationalisation and auditing capabilities are also included along with appropriate reporting features.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to comply with a regulatory obligation or requirement

Conversion of logic master program into Proficy of remaining GE PLC

Table 200: Conversion of logic master program into Proficy of remaining GE PLC

	Project details
Expenditure	[redacted]
Description	The project will convert the current application program into Proficy including changing of CPU and firmware required. The scope of the project includes off site conversion of the program, FAT, site download and site testing to verify the functionality. The conversion will be done by Motherwell the sole distributor of GE in WA.
Business need	• Removal of redundant PLC programming software. • After conversion, there is no need to keep any programming software on site. The program can be accessed only by authorised persons with their maintenance tool. • Increase software security and integrity of assets. • Better interface with other equipment on the facility.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Purchase of 8-10Tflat bed 4WD truck with 10T Hiab crane

Table 201: Purchase of 8-10T flatbed 4WD truck with 10T Hiab crane

	Project details
Expenditure	[redacted]
Description	This project is to purchase an 8-10T flatbed truck with 10T Hiab crane tail lift and scaffold for: • CCVT access during maintenance activities. • Tail lift for battery change outs at MLV sites
Business need	There are a number of activities that currently require the rental of a Hiab truck: • maintenance activities required to respond to CCVT failure; • overhaul and replacement of 10kw GEA; • battery change outs at MLV; • pigging operations; • blasting and painting works at all sites; • ongoing potholing operations; and • site clean-ups. The purchase of this equipment is more cost effective with short payback period.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

NP boost compressor maintenance container

Table 202: NP boost compressor maintenance container

	Project details
Expenditure	[redacted]
Description	Fit out and tooling of a 20ft sea-container for the storing and transporting of Nuovo Pignone boost compressor tooling.
Business need	The tooling containers enable quick response and will ensure the maintenance department stream line the efficiency of job completion and reliability of both Nuovo Pignone units. As has been done with the Solar turbine tooling containers DBP's Maintenance division can take ownership of the Nuovo Pignone tooling and equipment for future works on the DBP improving safety and job efficiency.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Purchase manitou for compressor stations

Table 203: Purchase manitou for compressor stations

	Project details
Expenditure	[redacted]
Description	The scope of this project is for the acquisition of 2 Manitou. Units are to replace the requirement for hired forklifts that are regularly used at compressor sites.
Business need	Machinery is critical for the operation of the compressor stations and delivery of the inventory to site. Appropriate tools and equipment are essential for the effective operation and safety of personnel and their ability to respond and perform tasks efficiently.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Upgrade of video conferencing to incorporate external parties

Table 204: Upgrade of video conferencing

	Project details
Expenditure	[redacted]
Description	Implement point to point video and desktop with external parties and enable the same facilities on DBP smart phones Pilot LYNC programme to be expanded to all users within DBP. Pilot users have strongly advocated that being able to share desktop and video conference with parties external to DBP.
Business need	Improve and simplify communication with vendors and suppliers especially with respect to technical matters. Video conferencing is also considered to be a cost savings initiative.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Provision of video conferencing at compressor stations

Table 205: Provision of video conferencing at compressor stations

	Project details
Expenditure	[redacted]
Description	Currently there are video conferencing (VC) facilities at CS1, CS3, CS5, CS9, Esplanade (x2) and Jandakot. This project will deliver video conferencing to the additional remote sites that do not have VC installed (CS2, CS4, CS6, CS7 and CS8). The VC equipment will connect to exiting electronic notice board screens at each of the sites.
Business need	The existing VC equipment was installed in 2011/12 and has reduced travel requirements. A continued drive to use this technology instead of face to face should continue this trend
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Mipela GeoSolutions X-info suite onsite implementation

Table 206: Mipela GeoSolutions X-info suite onsite implementation

	Project details
Expenditure	[redacted]
Description	Implement the Mipela Geosolutions X-Info Suite to replace the existing legacy Pipeline Operations Management System (POMS) and Lands Management Systems (LMS) for the operating pipelines and future pipeline projects to reduce system management costs whilst increasing customer service levels, response timeframes, consistency and administrative transparency.
Business need	• Improve communication and accountability • Manage business processes efficiently • Access securely anytime, anywhere • Locate a single source of information that is always up to date and centrally managed • Efficient data reporting and analysis
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Repair workshop instrument clean room

Table 207: Repair workshop instrument clean room

	Project details
Expenditure	[redacted]
Description	Construction of an air-conditioned clean room within the repairs workshop to undertake instrumentation repairs, testing and calibrations.
Business need	The current instrument workshop area is housed within the day crew office area. Space is of a premium at the Jandakot facility and this is a cost effective way of better utilising the available space. This also enables a centralisation of repairs activities.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Jandakot maintenance repair workshop - upgrade power facilities

Table 208: Jandakot maintenance repair workshop - upgrade power facilities

	Project details
Expenditure	[redacted]
Description	Upgrade existing electrical power system/distribution for Maintenance Repair facility at Jandakot (Heavy Workshop).
Business need	Existing switchboard and electrical distribution for repair workshop is inadequate to support the use of equipment required to complete repairs. Switchboard upgrade will facilitate full use of current equipment and resources to complete in house repairs of DBP assets minimising expensive outsourcing for required repairs. Switchboard upgrade will improve safety by providing power to equipment that minimises risk by utilising specialised equipment
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Replacement of sacrificial anode on Worsley lateral

Table 209: Replacement of sacrificial anode bed on Worsley lateral

	Project details
Expenditure	[redacted]
Description	Replenish the two magnesium sacrificial anode beds on the SW Cogen Lateral with fresh anodes. Installation will be performed by the Annual Survey Contractor to avoid additional mobilisation costs.
Business need	The SW Cogen lateral has two sets of ten buried magnesium anodes that reinforce the cathodic protection at a watercourse and a lake, sites WX34.004 and WX53.755. The much lower soil resistivity in these areas can prevent the impressed current cathodic protection from achieving protection potential on its own in these areas. The 2012 Annual Survey reported six of the ten anodes at WX34.004 to have failed and the remaining four to be failing.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services • to maintain the integrity of services

Repair of workshop entry ramp

Table 210: Repair of workshop entry ramp

	Project details
Expenditure	[redacted]
Description	Workshop external lean-to floor levelling and decreasing of workshop entry ramp angle to a safe level.
Business need	Under the lean-to of the heavy workshop, the current asphalt ground has a 0-130mm slope. This is required to be levelled out to be able to install equipment. The north ramp into the heavy workshop is too steep for forklifts to negotiate safely when carrying a load. Proposal is to reduce the angle of the ramp to a level which makes it safe to negotiate with a fork lift whilst carrying a heavy load. It should also be noted that the Jandakot facility now has 7 ton fork lift capability
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain and improve the safety of services

FEED upgrade of water bath heater pipework

Table 211: FEED upgrade of water bath heater pipework

	Project details
Expenditure	[redacted]
Description	The FEED will include: • Design review of existing heaters to be carried out to develop a scope of what Heater Upgrades are required. • To engage a gas burner specialist to review the water bath heater main burner and pilot burner control and fuel supply systems as well as the bath temperature control and monitoring systems.
Business need	The FEED study enables the risk assessment of potential available approaches and the development of budget requirement.
NGR 79(2) ground	In accordance with NGR 79(2)(c) capital expenditure is necessary: • to maintain the integrity of services • to maintain DBP's capacity to meet levels of demand for services at the time the capital expenditure was incurred.

Appendix A: CONFIDENTIALITY TABLE