

## **Appendix A - Additional Detail**

### **1 - Summary from AEL proposal to Policy and Finance Committee (Feb 2015)**

Alderney Electricity Ltd proposes an accelerated upgrade programme for the Island's electricity distribution grid over the period of the next 3 years. This will include: new switchgear at the Power Station, upgrades to 8 key substations, associated cabling and removal of 2 existing substations. The scope of this proposal covers urgent safety and supply concerns associated with the electricity distribution network. The programme will include a full security audit of the facilities and remedial actions. The wider issues of Alderney's energy future remain to be addressed in line with the emergent Alderney Energy Strategy.

The total cost, including contingency, for the programme is estimated at £1.49m. The current asset management programme, predicated on the level of independent funding accessible to AEL, would spend approximately £350,000 over the same period on this specific architecture. AEL ask the Policy and Finance Committee of the States of Alderney to recommend funding of between £1.1m and £1.2m over the next 36 months to provide the necessary additional funding to complete the programme.

#### **Purpose:**

- The primary purpose of the proposal is network safety for AEL staff and the public.
- The secondary purpose addresses areas of the grid exhibiting unacceptably high vulnerability to loss of supply.

#### **Objectives:**

- 1 Within 3 years no member of AEL staff will live switch on high voltage (HV) equipment that does not conform to current standards. This will apply equally to both "switch on" and fault finding modes.
- 2 Within 1 year, security across the entire network will be audited and remedial action taken to ensure conformance to recognised standards and methods for the prevention of unauthorised access to hazardous installations.
- 3 Within 2 years, such necessary action will be taken to address areas of the network experiencing high vulnerability of supply on the HV and low voltage (LV) networks.

#### **Constraints:**

- Shortfall in available funding.
- Outside labour/expertise required, internal capacity is insufficient to deliver the programme within the required time frame.
- AEL to provide oversight of design and installation to ensure the essential understanding of the grid architecture is retained within the company.

Once complete, the grid will be managed from a "control" network comprised of the upgraded substations. The skills required to operate the network safely will be reduced in line with normal utility operating procedures, addressing medium term staffing concerns. Further benefits include improved HV infrastructure to those parts of the Island where large-scale development may occur, thereby facilitating Alderney's future development plans.

### **2 - Funding Mechanism**

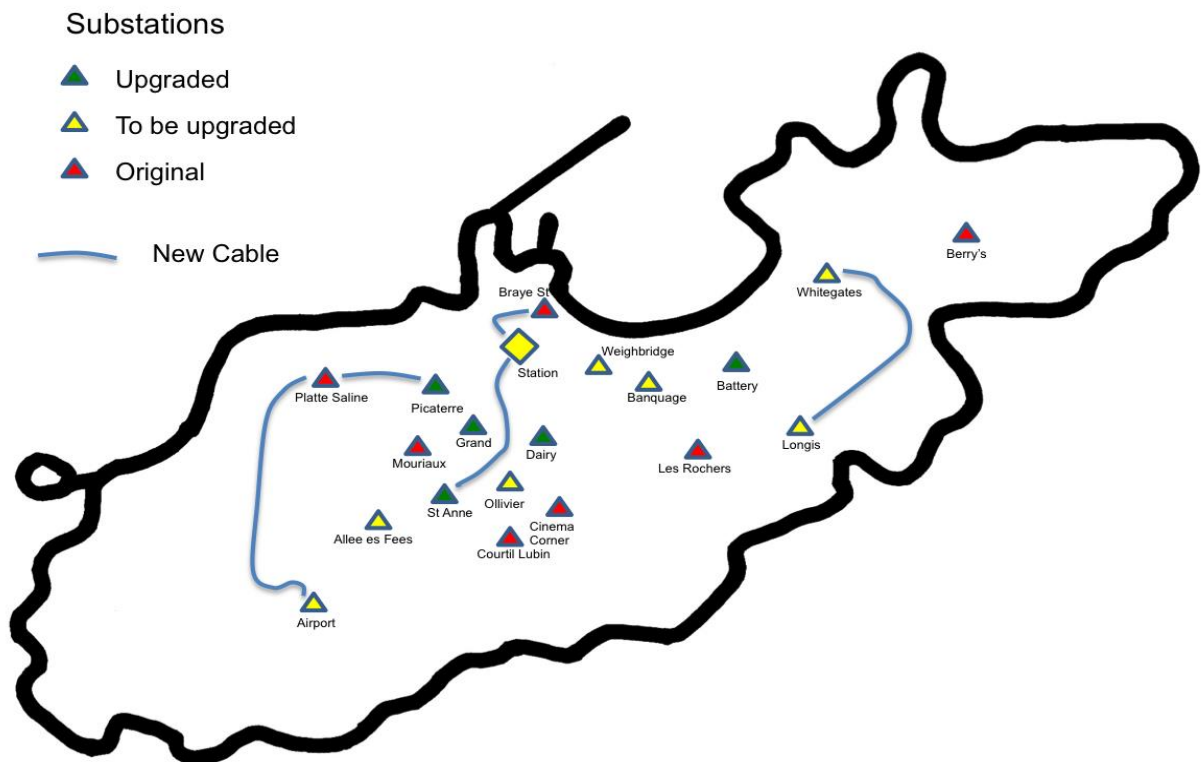
In order to ensure that AEL have the necessary funding available at all times to meet variability in programme working capital requirements, the company will increase its loan facility. AEL already have outline agreement from their capital providers, Lombard Capital Finance, to provide this facility but may be able to obtain funding directly from States of Guernsey monies raised through bond issue at a lower interest rate.

The States of Alderney will meet additional loan interest and capital repayments above those already budgeted within AEL existing asset management programme. These payments will be at a level to ensure that the new loan facility is cleared by completion of the programme of works. This mechanism will ensure that there is no net transfer of liability from AEL balance sheet to profit and loss account and thus no impact on AEL profitability that might lead to electricity price increases.

The distribution grid assets will transfer to the States of Alderney upon completion of the upgrade programme. This ensures that the funding provided by the States does not increase the value of those shares in Alderney Electricity Ltd held by shareholders other than the States of Alderney. There will be a net profit on transfer of assets for the States of Alderney as the total value will include the contribution for AEL and prior assets some of which will have residual value on the AEL balance sheet at that time. Whilst this will create a corresponding in year loss on the transfer for AEL, this will be a non-cash transaction and will have no operational impact.

### 3 - Accelerated Asset Management Programme

Control network will be formed from those substations already upgraded (green) and those to be upgraded as part of the accelerated programme (yellow). Those stations shown in red will be untouched and left switched. Should faults occur, power to these stations will be switched off and all faults repaired on dead circuits. In due course these stations will be removed and the areas served will be fed by new low voltage overlay from control stations. The individual control station specifications are configured for this eventuality. Such works are non-essential in the short to medium term.



#### 4 - Works Programme and Funding Requirements

07/15 to 12/15		Substation cost	Cable costs	Cont Labour	Totals	States Cont'
Phase 1	ST ANNES	£48,000	£17,100	£24,000	£89,100	
Phase 1	"B" STATION SWITCHES	£26,400			£26,400	
Phase 2	AIRPORT SUB	£133,800	£22,500	£58,500	£214,800	
					£330,300	£253,000
01/16 to 06/16						
Phase 3	WEIGHBRIDGE SUB	£163,600	£30,000	£111,600	£305,200	
Phase 4	ALEE FES AIRPORT CABLE		£33,000	£46,800	£79,800	
Phase 5	OLIVIER SUB	£78,300			£78,300	
Phase 6	BANQUAGE SUB	£83,400	£6,300	£16,800	£106,500	
					£569,800	£437,000
07/16 to 12/16						
Phase 7	ALLEE ES FEES SUB	£92,800			£92,800	£71,000
01/17 to 06/17						
Phase 8	LONGIS SUB	£92,500			£92,500	
Phase 9	WHITEGATES CABLE		£81,000	£142,800	£223,800	
					£316,300	£242,500
07/17 to 12/17						
Phase 10	WHITEGATES SUB	£132,600	£9,600	£6,000	£148,200	£114,000
		£851,400	£199,500	£406,500	£1,457,400	£1,117,500
					Estimated interest payable	£82,500
					<b>Total</b>	<b>£1,200,000</b>

#### 5 - Other Options and Associated Risks

**Continue with existing asset management programme** - The current 10 year upgrade programme was put in place in 2007. The objective was to renovate the entire grid. Resource constraints have meant that 8 years in, approximately 3 years work has been done meaning it will take another 20 years to complete. Over this time period, the loss of skills necessary to operate the grid and the continued degradation of antiquated equipment will bring the probability of a major fault to near certainty. This option therefore does nothing to address either safety concerns for AEL staff and public alike or the supply vulnerability.

**Increase the level of grid functionality to facilitate future initiatives, for example distributed generation** - The primary purpose of the proposed programme is to address critical safety, skills and supply vulnerability issues. Increasing the scope of the programme to encompass additional functionality with the objective of increasing the sustainability of the Alderney's energy system, whilst necessary in the medium term, would slow progress towards the primary objectives. Further such moves towards improved sustainability need to be specified in the context of Alderney's wider economic and energy strategies. The modular nature of modern grid components means that functionality can be increased in the future. The proposed strategy presents the most technologically and economically viable approach given these wider constraints and will deliver the primary objectives in the shortest time.