REPEX AND OPEX TO MAINTAIN RELIABILITY

		CY11 - 15								CY16-20									
Asset Class Description Repex Categories	Asset Code	Replacement Capex Actual $'M Real 15 11-15	Estimated Percentage of Assets at High Risk of Failure 2015	SAIFI Trend 11-15	SAIFI (unplanned) Interruptions 2014	SAIFI (unplanned) Interruptions Ave 2011-14	SAIDI Trend 11-15	SAIDI (unplanned) mins 2014	SAIDI (unplanned) mins Ave 2011-14	Estimated Percentage of Assets at High Risk of Failure 2020 without replacement capex	Replacement Capex Forecast $'M Real 15 16 -20	Estimated Percentage of Assets at High Risk of Failure 2020 with replacment capex	Opex Changes between Current v Next Reg Period	Estimated SAIFI Trend 15-20	Estimated SAIFI Underlying Interruptions 16-20 ave	Estimated SAIFI (unplanned) Interruptions 16-20 ave	Estimated SAIDI Trend 15-20	Estimated SAIDI (unplanned) Underlying mins 16-20 ave	Estimated SAIDI (unplanned) mins 16-20 ave	Comments
pole top structures	PF	**102**	21%	increase (+.024 pa)	**0.117**	0.089	increase (+2.7 pa)	**12.0**	8.0	27%	**98**	10%	Change to pole top camera inspections will improve condition assessment and hence effectiveness of replacement capex. Higher inspection volumes (mid-cycle Aerial) will improve coverage across asset base to better target capex.	falling (-0.0104 pa)	**0.075**	**0.057**	falling (-1.35 pa)	**6.5**	**3.9**	The combined spend in pole fire mitigation and cross arm replacement will be maintained to address deteriorating reliability. Inspection methodology and inspection volumes have been improved / increased.
	RX													flat			flat (-0.025 pa)			
pole replacement & staking	RP & RR	**36**	7%	flat to increase (+0.002 pa)	**0.014**	0.011	flat to increase (+0.59 pa)	**2.3**	1.4	14%	**39**	11%	Maintain current pole management practice of staking poles once limited life status is reached.	increase (+0.0063 pa)	**0.039**	**0.037**	increase (+0.275 pa)	**3.4**	**2.5**	A modest increase in capex has been forecast reflecting a larger portion of poles reaching the last 15% of their life.
overhead conductor	RO, PD	**0**	32%	increase (+.008pa)	**0.088**	0.069	increase (+1.4pa)	**7.6**	5.6	48%	**1**	46%	Maintain current general practice of cyclic inspection, repair on failure, replace on condition (noting current practice does vary across the asset class).	increase (+0.0125 pa)	**0.138**	**0.125**	increase (+1.125 pa)	**12.1**	**8.5**	The increased spend (incl. in VBRC other) partially addresses more conductor reaching end of life in the next regulatory period. A failure rate increase is expect 16-20 due to net condition deterioration.
underground cable	RU, RX, RS	**38**	15%	increase (+.02 pa)	**0.093**	0.066	increase (+1.4pa)	**7.2**	4.6	20%	**43**	19%	Maintain current general practice of run to failure, then repair or replace. Some increase in conditions monitoring for some asset classes, particularly HV cable testing.	increase (+0.0135 pa)	**0.147**	**0.132**	increase (+1.40 pa)	**12.8**	**9.1**	No significant change in capex or opex to maintain reliability. A failure rate increase is forecast due to more cable near end of life.
transformers	distr (RH)	**11**	6%	flat (-.002 pa)	**0.020**	0.023	flat (+.2 pa)	**2.6**	2.3	14%	**14**	8%	For distribution transformers, maintain mandatory inspection and reactive maintenance and replacement.	flat (+0.0010 pa)	**0.024**	**0.019**	flat (-0.125 pa)	**2.1**	**1.3**	The increased spend for distribution and ZSS transformers addresses more equipment reaching end of life in the next regulatory period, than in the current regulatory period.
	ZSS (RS & PZ)	**21**	34%	decrease (-.004 pa)	**0.000**	0.016	decrease (-.2 pa)	**0.0**	0.4	52%	**55**	37%	Additional condition monitoring is proposed as more equipment enters the last 15% of life, to guide optimum timing to replace.	increase (+0.0033 pa)	**0.013**	**0.010**	increase (-0.275 pa)	**1.1**	**0.7**	
switchgear	distr (RH, RX). RS	**35**	16%	flat (-.001 pa)	**0.046**	0.049	flat (+.3 pa)	**5.1**	4.5	28%	**48**	22%	For distribution switchgear, maintain "run to failure" with targeted replacement program.	flat (+0.0015 pa)	**0.051**	**0.040**	flat (-0.175 pa)	**4.4**	**2.7**	The increased spend addresses more equipment reaching end of life in the next regulatory period, than in the current regulatory period.
	ZSS (RS)	**24**	51%	flat (+.002 pa)	**0.000**	0.007	flat (+.4 pa)	**0.0**	0.9	60%	**32**	47%	Additional condition monitoring is proposed as more equipment enters the last 15% of life, to guide optimum timing to replace.	flat (+0.0015 pa)	**0.006**	**0.005**	flat (0.125 pa)	**0.5**	**0.3**	
services	RM	**69**	5%	flat (.000 pa)	**0.000**	0.000	flat (-.002 pa)	**0.0**	0.0	8%	**34**	0%	No change	flat	**0.000**	**0.000**	flat	**0.0**	**0.0**	Reduction in Capex due to the completion of the "Neutral Screen" service replacement program for defective cable type.
protection and control	PQ, PR, PZ, RC	**31**	21%	flat (.001 pa)	**0.002**	0.016	flat (-.08 pa)	**0.1**	0.4	38%	**34**	22%	No change	increase (+0.0035 pa)	**0.016**	**0.012**	increase (+0.325 pa)	**1.4**	**0.9**	Protection system operation is critical for safety and preventing undue equipment damage.
Other equipment failure					**0.013**	0.014		**2.1**	2.3					flat (+0.0005 pa)	**0.015**	**0.012**	falling (-0.2 pa)	**1.3**	**0.8**	
Subtotal Asset Replacement (excl.ZSS Primary)		**367**									**398**									
ZSS primary assets	RC, RS	**8**	18%	decrease (-.002 pa)	**0.017**	0.014	decrease (-.23 pa)	**0.4**	0.4	24%	**10**	18%	No change	increase (+0.0021 pa)	**0.026**	**0.020**	increase (+0.475 pa)	**2.3**	**1.4**	ZSS primary assets have a small but growing impact reliability.
Subtotal Asset Replacement (incl. ZSS Primary)			19%	increase (+.044 pa)	**0.41**	**0.38**	increase (+6.3pa)	**39.4**	**30.9**	28%		23%		increase (+0.0355 pa)	**0.552**	**0.469**	increase (+2.15 pa)	**48.0**	**32.1**	
Non VBRC Safety only (Safety Programs)	CCTV	**1**									**6**									
Subtotal Non VBRC Safety		**1**									**6**									
Operational Technology Safety	Various	**2**									**25**									
Operational Technology Reliability	Distr Fault Recorders	**0**									**4**							**-1.6**		
	Fault location identification	**0**									**3**							**-1.5**		
Operational Technology Other	Various	**2**									**10**									
Subtotal Operational Technology		**4**									**41**									
Reliability Performance	ACR's RCGS's	**12**									**10**				**-0.197**			**-26.3**		Additional remote switches to allow faster isolation of faulted sections of the network, and restoration for the remainder.
	Fuse savers	**0**									**2**				**-0.010**			**-0.9**		Fuse savers allow successful reclose for transient faults that would otherwise result in fuse operation & extended outages.
	Rogue feeders	**4**									**6**				**0.000**	40%		**0.0**	40%	Rogue feeders focuses mostly on improving service to worst served customers; its impact on overall relability is small and tends to maintain the current trend.
	Clashing	**1**									**4**				**0.000**			**0.0**		Clashing mitigation reduces secondary damage; this program is on going with any benefits imbedded in the long term SAIFI and SAIDI trends
	Animal proofing	**7**									**10**				**-0.013**			**-3.0**		Targets localised possum issues and addresses worst served customers. There is a growing level of replacements as early possum proofing techniques approach end-of-life.
	Communications upgrade	**0**									**4**				**0.000**			**-1.6**		Resolution of communications to remote devices will improve restoration times.
Subtotal Reliability Performance		**24**									**36**									
Environmental	PE	**2**									**5**									
Power Quality	PQ	**5**									**8**									
TS Rebuild replacement	Other	**0**									**5**									
IT initiatives	IT	**not incl.**									**not incl.**							**-3.1**		Includes two projects that deliver faster restoration times.
Subtotal "Other Repex"		**45**									**112**				**-0.220**			**-37.9**		
VBRC Safety Projects	REFCL	**3**									**7**									
	Other	**22**									**46**									All "Other" is Overhead conductors and is assessed above under Asset Replacement
Subtotal VBRC Safety Projects		**24**									**53**				**0.0**	60%		**0.0**	60%	
SubTotal		**437**			**0.41**	**0.38**		**39.4**	**30.9**		**564**									
Equipment Failure				Actual	**0.41**	**0.38**		**39.4**	**30.9**				Forecast	increase (+.0355 pa)	**0.55**	**0.47**	increase (+2.15 pa)	**48.0**	**32.1**	
Weather & Vegetation				Actual	**0.25**	**0.32**		**19.6**	**23.5**				Forecast	increase (+.0250 pa)	**0.35**	**0.28**	increase (+2.80 pa)	**30.8**	**19.5**	
Animal, 3rd Party, NCF				Actual	**0.34**	**0.32**		**18.9**	**18.4**				Forecast	falling (-.0075 pa)	**0.31**	**0.25**	increase (+2.10 pa)	**27.3**	**16.7**	
Reliability Performance + OT + IT													Forecast		**-0.22**			**-37.9**		
Total				**Actual**	**1.00**	**1.01**		**77.9**	**72.8**				**Forecast**	flat	**1.00**	**1.00**	falling (-2.40 pa)	**68.2**	**68.3**	
Target				**Target**	**0.94**	**0.95**		**57.3**	**57.9**				**Target**		**1.00**	**1.00**		**68.3**	**68.3**	