Purpose of CBA: describe the *primary driver* of the investment decision

We have proposed a program of refurbishment and replacement of our SEPD 132kV Transformer fleet. This CBA is designed to support our decision to refurbish transformers rather than replace, where technically appropriate, and to advise on the type of replacement units when replacement is either the only option or when its eventually required post refurbishment. We also carry out a check on our Load Related Transformer replacement program.

If investment is to replace an existing asset / asset class, please state the condition of the asset / asset class (HI / CI etc.)

132kV transformers in the SEPD area in asset health condition H4 and H5

List below all options considered to meet the stated aim

Options considered / project name	Comment
"do-minimum" option	Refurbish transformer
Baseline	Refurbishment giving 10 year life extension before replacing with cheapest unit.
Option 1	Replace Transformer - with least cost replacement. Comparatively heavy unit comparable with existing older unit.
Option 2	Replace Transformer - with capitalised loss unit (current policy)
Option 3	Replace Transformer - with very low loss unit.
Option 4	Refurbishment giving 10 year life extension before replacing with capitalised loss unit.

List below the short list of those options which have been costed within this CBA workbook

Option no.	Options considered	Decision	Comment	For the chosen option only, provide detail of where CBA expenditure included in this CBA is reported in the RPDT pack. e.g. LV switchgear RPDT CV5 rows 10 to 32.	NPVs based on payback periods				
					16 years	24 years	32 years	45 years	50YD years
1	Immediate replacement with cheapest available unit.	Rejected	NPV not as positive as Option 4 therefore rejected as viable option.		-£0.07	-£0.02	£0.01	£0.05	
2	Replacement in year 1 with capitalised loss unit (current policy) vs baseline	Adopted	Positive NPV. Adopt where criticality directs and failure of asset not sensible. Otherwise consider Opt 4.	0065 132kV Transformer RPDT CV5 row 101	-£0.07	£0.02	£0.09	£0.17	
3	Replacement year 1 with very low loss unit vs baseline	Rejected	Negative NPV therefore baseline option (refurb) is better value assuming 10 year life extension.		-£0.60	-£0.55	-£0.79	-£1.05	
4	Refurbishment year 1 giving 10 year life extension, followed by replacement with capitalised loss unit.	Adopted	Positive NPV in relation to baseline and Option 1 - should be adopted where criticality directs that refurbishment is a viable option.	0065 132kV Transformer RPDT CV5 row 82 0085 132kV Transformer RPDT CV5 row 101	-£0.02	£0.02	£0.05	£0.08	

Wpc NPV with sensitivity on refurbishment life extension			
-2yr	-1yr	+2yr	+5yr
-£0.21	-£0.16	£0.05	£0.05
-£0.33	£0.28	£0.17	£0.07
-£0.89	-£0.94	-£1.05	-£1.14
-£0.05	-£0.05	£0.06	£0.15

Option Benefits - £0/- units / year post investment			
Losses (MWh)	CI	CML	Carbon (tCO2e)
0	0	0	0
343	0	0	138
536	0	0	257
0	0	0	0

Incremental investment (£k) justified by optimum CBA - per unit								
Base LUC	Losses LUC	CI / CML LUC		Carbon LUC	Safety	Other	**Total incremental**	Adjustment required in RPDT / Benchmarking
n/a	0	0	0	0	0	0	0	n/a
708	#VALUE!	#VALUE!	#VALUE!	#VALUE!	0	0	#VALUE!	CV5: Asset Replacement LUC
708	#VALUE!	#VALUE!	#VALUE!	#VALUE!	0	0	#VALUE!	n/a
0	0	0	0	0	0	0	0	CV5: Asset refurbishment LUC

CBA Option 1 **Immediate replacement with cheapest available unit**

Term (years from first out flow)	NPV (£m)
16	-£0.07
24	-£0.03
32	£0.01
45	£0.05

first year of investment out flow: 1

		Calculation	Units	RIIO-ED1 1 2016	2 2017	3 2018	4 2019	5 2020	6 2021	7 2022	8 2023	RIIO-ED2 9 2024	10 2025	11 2026	12 2027	13 2028	14 2029	15 2030	16 2031	RIIO-ED3 17 2032	18 2033	19 2034	20 2035	21 2036	22 2037	23 2038	24 2039
Investment	Asset Replacement		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total investment		£m		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Avoided DNO costs	Inspections & Maintenance		£m																								
	Asset Replacement		£m																								
	Refurbishment		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total avoided DNO costs		£m		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total DNO net benefits before capitalisation	(1) = investment + DNO benefits	£m		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Capitalisation rates	(2)	%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
	Capitalised investment	(3)=(1)x(2)	£m		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Investment to be expensed	(4)=(1)-(3)	£m		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Depreciation	(5)=$\sum(5)_t$	£m	-	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cost of Capital	(6)=avg[(6^{cl}),(6^{op})]xWACC	£m	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Total Net DNO benefits	**(7)=(4)+(5)+(6)**	**£m**	**(0.14)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**0.20**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**
Societal benefits (£m) i.e. costs avoided	Losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	CO2e associated with losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Customer interruptions (CI)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Customer minutes lost (CML)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other GHG emissions (CO2e) i.e. not associated with losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Fatality		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Major injury		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Oil leakage		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other 1 (specify)		£m																								
	Other 2 (specify)		£m																								
	Other 3 (specify)		£m																								
	Total societal net benefits		**£m**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Net benefits		**£m**	**(0.14)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**0.20**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**
	Discount factor	=1/[(1+SRTP)^n]		0.97	0.93	0.90	0.87	0.84	0.81	0.79	0.76	0.73	0.71	0.68	0.66	0.64	0.62	0.60	0.58	0.56	0.54	0.52	0.50	0.49	0.47	0.45	0.44
	Discount factor (safety)	=1/[(1+PTPR)^n]		0.99	0.97	0.96	0.94	0.93	0.91	0.90	0.89	0.87	0.86	0.85	0.84	0.82	0.81	0.80	0.79	0.78	0.76	0.75	0.74	0.73	0.72	0.71	0.70
	Discounted net benefits		£m	(0.14)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	0.15	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Cumulative discounted net benefits		**£m**	**(0.14)**	**(0.16)**	**(0.18)**	**(0.19)**	**(0.21)**	**(0.23)**	**(0.24)**	**(0.26)**	**(0.27)**	**(0.12)**	**(0.11)**	**(0.11)**	**(0.10)**	**(0.09)**	**(0.08)**	**(0.07)**	**(0.07)**	**(0.06)**	**(0.05)**	**(0.05)**	**(0.04)**	**(0.04)**	**(0.03)**	**(0.03)**

Non-DNO (eg societal) benefits

Enter values as increments (delta) relative to your reference scenario. If this is your reference scenario enter 0. Reductions are entered as positive numbers and increases as negative numbers.

Societal net benefits (impact relative to business as usual scenario)	Reduced losses		MWh																								
	Reduced emissions associated with losses		tCO2e	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reduced number of customers interrupted		no.																								
	Reduced customer minutes lost		Mins																								
	Reduced emissions (not associated with losses)[1]		tCO2e																								
	Reduced probability of fatality[2]		%																								
	Reduced probability of major injury[2]		%																								
	Reduced oil leakage		Litres																								

[1] Includes all GHG not associated with losses e.g. SF6 converted to tCO2e using Defra conversion factors
http://www.defra.gov.uk/publications/2012/05/30/pb13773-2012-ghg-conversion/
Where losses are entered in terms of MWh, the CO2e associated with those losses will be calculated based on an assumed GHG conversion factor. The tCO2e are monetised using DECC traded carbon values.
All other GHG emissions not associated with losses should be entered in row 90 to avoid double counting.

[2] http://www.hse.gov.uk/risk/theory/alarpcheck.htm

CBA Option 1.1 **Sensitivity check: Option 1 with 5yr refurb life extension**

Term (years from first out flow)	NPV (£m)
16	£0.06
24	£0.10
32	£0.13
45	£0.16

first year of investment out flow: 1

			Units	RIIO-ED1								RIIO-ED2								RIIO-ED3							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		Calculation		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Investment	Asset Replacement		£m	[redacted]																							
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total investment		£m	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Avoided DNO costs	Inspections & Maintenance		£m																								
	Asset Replacement		£m					[redacted]																			
	Refurbishment		£m	[redacted]																							
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total avoided DNO costs		£m	[redacted]	-	-	-	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total DNO net benefits before capitalisation	(1) = investment + DNO benefits	£m	[redacted]	-	-	-	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Capitalisation rates	(2)	%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
	Capitalised investment	(3)=(1)x(2)	£m	[redacted]	-	-	-	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Investment to be expensed	(4)=(1)-(3)	£m		-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Depreciation	(5)=$\sum(5)_t$	£m	-	(0.01)	(0.01)	(0.01)	(0.01)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cost of Capital	(6)=avg[(6^{cl}),(6^{op})]xWACC	£m	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Total Net DNO benefits	**(7)=(4)+(5)+(6)**	**£m**	**(0.14)**	**(0.02)**	**(0.02)**	**(0.02)**	**0.20**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**
Societal benefits (£m) i.e. costs avoided	Losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	CO2e associated with losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Customer interruptions (CI)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Customer minutes lost (CML)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other GHG emissions (CO2e) i.e. not associated with losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Fatality		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Major injury		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Oil leakage		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other 1 (specify)		£m																								
	Other 2 (specify)		£m																								
	Other 3 (specify)		£m																								
	Total societal net benefits		**£m**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Net benefits		**£m**	**(0.14)**	**(0.02)**	**(0.02)**	**(0.02)**	**0.20**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**
	Discount factor	=1/[(1+SRTP)^n]		0.97	0.93	0.90	0.87	0.84	0.81	0.79	0.76	0.73	0.71	0.68	0.66	0.64	0.62	0.60	0.58	0.56	0.54	0.52	0.50	0.49	0.47	0.45	0.44
	Discount factor (safety)	=1/[(1+PTPR)^n]		0.99	0.97	0.96	0.94	0.93	0.91	0.90	0.89	0.87	0.86	0.85	0.84	0.82	0.81	0.80	0.79	0.78	0.76	0.75	0.74	0.73	0.72	0.71	0.70
	Discounted net benefits		£m	(0.14)	(0.02)	(0.02)	(0.02)	0.17	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
	Cumulative discounted net benefits		**£m**	**(0.14)**	**(0.16)**	**(0.18)**	**(0.19)**	**(0.02)**	**(0.01)**	**(0.00)**	**0.01**	**0.01**	**0.02**	**0.03**	**0.04**	**0.04**	**0.05**	**0.06**	**0.06**	**0.07**	**0.08**	**0.08**	**0.09**	**0.09**	**0.09**	**0.10**	**0.10**

Non-DNO (eg societal) benefits

Enter values as increments (delta) relative to your reference scenario. If this is your reference scenario enter 0. Reductions are entered as positive numbers and increases as negative numbers.

Societal net benefits (impact relative to business as usual scenario)	Reduced losses		MWh																								
	Reduced emissions associated with losses		tCO2e	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reduced number of customers interrupted		no.																								
	Reduced customer minutes lost		Mins																								
	Reduced emissions (not associated with losses)[1]		tCO2e																								
	Reduced probability of fatality[2]		%																								
	Reduced probability of major injury[2]		%																								
	Reduced oil leakage		Litres																								

[1] Includes all GHG not associated with losses e.g. SF6 converted to tCO2e using Defra conversion factors
http://www.defra.gov.uk/publications/2012/05/30/pb13773-2012-ghg-conversion/
Where losses are entered in terms of MWh, the CO2e associated with those losses will be calculated based on an assumed GHG conversion factor. The tCO2e are monetised using DECC traded carbon values.
All other GHG emissions not associated with losses should be entered in row 90 to avoid double counting.

[2] http://www.hse.gov.uk/risk/theory/alarpcheck.htm

CBA Option 1.2 **Sensitivity check: Option 1 with a 3yr refurb life extension**

Term (years from first out flow)	NPV (£m)
16	£0.12
24	£0.16
32	£0.18
45	£0.21

first year of investment out flow: 1

			Units	RIIO-ED1								RIIO-ED2								RIIO-ED3							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		Calculation		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Investment	Asset Replacement		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total investment		£m		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Avoided DNO costs	Inspections & Maintenance		£m																								
	Asset Replacement		£m																								
	Refurbishment		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total avoided DNO costs		£m		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total DNO net benefits before capitalisation	(1) = investment + DNO benefits	£m		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Capitalisation rates	(2)	%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
	Capitalised investment	(3)=(1)x(2)	£m		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Investment to be expensed	(4)=(1)-(3)	£m		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Depreciation	(5)=$\sum(5)_t$	£m	-	(0.01)	(0.01)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cost of Capital	(6)=avg[(6^{cl}),(6^{op})]xWACC	£m	(0.01)	(0.01)	(0.00)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00
	Total Net DNO benefits	**(7)=(4)+(5)+(6)**	**£m**	**(0.14)**	**(0.02)**	**0.20**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**
Societal benefits (£m) i.e. costs avoided	Losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	CO2e associated with losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Customer interruptions (CI)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Customer minutes lost (CML)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other GHG emissions (CO2e) i.e. not associated with losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Fatality		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Major injury		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Oil leakage		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other 1 (specify)		£m																								
	Other 2 (specify)		£m																								
	Other 3 (specify)		£m																								
	Total societal net benefits		**£m**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Net benefits		**£m**	**(0.14)**	**(0.02)**	**0.20**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**
	Discount factor	=1/[(1+SRTP)^n]		0.97	0.93	0.90	0.87	0.84	0.81	0.79	0.76	0.73	0.71	0.68	0.66	0.64	0.62	0.60	0.58	0.56	0.54	0.52	0.50	0.49	0.47	0.45	0.44
	Discount factor (safety)	=1/[(1+PTPR)^n]		0.99	0.97	0.96	0.94	0.93	0.91	0.90	0.89	0.87	0.86	0.85	0.84	0.82	0.81	0.80	0.79	0.78	0.76	0.75	0.74	0.73	0.72	0.71	0.70
	Discounted net benefits		£m	(0.14)	(0.02)	0.18	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
	Cumulative discounted net benefits		**£m**	**(0.14)**	**(0.16)**	**0.02**	**0.03**	**0.04**	**0.05**	**0.06**	**0.07**	**0.08**	**0.09**	**0.09**	**0.10**	**0.11**	**0.11**	**0.12**	**0.12**	**0.13**	**0.13**	**0.14**	**0.14**	**0.15**	**0.15**	**0.16**	**0.16**

Non-DNO (eg societal) benefits

Enter values as increments (delta) relative to your reference scenario. If this is your reference scenario enter 0. Reductions are entered as positive numbers and increases as negative numbers.

Societal net benefits (impact relative to business as usual scenario)	Reduced losses		MWh																								
	Reduced emissions associated with losses		tCO2e	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reduced number of customers interrupted		no.																								
	Reduced customer minutes lost		Mins																								
	Reduced emissions (not associated with losses)[1]		tCO2e																								
	Reduced probability of fatality[2]		%																								
	Reduced probability of major injury[2]		%																								
	Reduced oil leakage		Litres																								

[1] Includes all GHG not associated with losses e.g. SF6 converted to tCO2e using Defra conversion factors
http://www.defra.gov.uk/publications/2012/05/30/pb13773-2012-ghg-conversion/
Where losses are entered in terms of MWh, the CO2e associated with those losses will be calculated based on an assumed GHG conversion factor. The tCO2e are monetised using DECC traded carbon values.
All other GHG emissions not associated with losses should be entered in row 90 to avoid double counting.

[2] http://www.hse.gov.uk/risk/theory/alarpcheck.htm

CBA Option 1.3 **Sensitivity check: Option 1 with 15yr refurb life extension**

Term (years from first out flow)	NPV (£m)
16	-£0.20
24	-£0.14
32	-£0.10
45	-£0.05

first year of investment out flow: 1

		Calculation	Units	RIIO-ED1								RIIO-ED2								RIIO-ED3							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
				2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Investment	Asset Replacement		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total investment		£m		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Avoided DNO costs	Inspections & Maintenance		£m																								
	Asset Replacement		£m																								
	Refurbishment		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total avoided DNO costs		£m		-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
	Total DNO net benefits before capitalisation	(1) = investment + DNO benefits	£m		-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
	Capitalisation rates	(2)	%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
	Capitalised investment	(3)=(1)x(2)	£m		-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
	Investment to be expensed	(4)=(1)-(3)	£m		-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
	Depreciation	(5)=$\sum(5)_t$	£m	-	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cost of Capital	(6)=avg[(6^{cl}),(6^{op})]xWACC	£m	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Total Net DNO benefits	**(7)=(4)+(5)+(6)**	**£m**	**(0.14)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**0.21**	**0.02**	**0.02**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**
Societal benefits (£m) i.e. costs avoided	Losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	CO2e associated with losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Customer interruptions (CI)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Customer minutes lost (CML)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other GHG emissions (CO2e) i.e. not associated with losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Fatality		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Major injury		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Oil leakage		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other 1 (specify)		£m																								
	Other 2 (specify)		£m																								
	Other 3 (specify)		£m																								
	Total societal net benefits		**£m**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Net benefits		**£m**	**(0.14)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**0.21**	**0.02**	**0.02**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**
	Discount factor	=1/[(1+SRTP)^n]		0.97	0.93	0.90	0.87	0.84	0.81	0.79	0.76	0.73	0.71	0.68	0.66	0.64	0.62	0.60	0.58	0.56	0.54	0.52	0.50	0.49	0.47	0.45	0.44
	Discount factor (safety)	=1/[(1+PTPR)^n]		0.99	0.97	0.96	0.94	0.93	0.91	0.90	0.89	0.87	0.86	0.85	0.84	0.82	0.81	0.80	0.79	0.78	0.76	0.75	0.74	0.73	0.72	0.71	0.70
	Discounted net benefits		£m	(0.14)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	0.12	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Cumulative discounted net benefits		**£m**	**(0.14)**	**(0.16)**	**(0.18)**	**(0.19)**	**(0.21)**	**(0.23)**	**(0.24)**	**(0.26)**	**(0.27)**	**(0.28)**	**(0.29)**	**(0.31)**	**(0.32)**	**(0.33)**	**(0.20)**	**(0.20)**	**(0.19)**	**(0.18)**	**(0.17)**	**(0.16)**	**(0.16)**	**(0.15)**	**(0.14)**	**(0.14)**

Non-DNO (eg societal) benefits

Enter values as increments (delta) relative to your reference scenario. If this is your reference scenario enter 0. Reductions are entered as positive numbers and increases as negative numbers.

		Units																								
Societal net benefits (impact relative to business as usual scenario)	Reduced losses	MWh																								
	Reduced emissions associated with losses	tCO2e	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Reduced number of customers interrupted	no.																								
	Reduced customer minutes lost	Mins																								
	Reduced emissions (not associated with losses)[1]	tCO2e																								
	Reduced probability of fatality[2]	%																								
	Reduced probability of major injury[2]	%																								
	Reduced oil leakage	Litres																								

[1] Includes all GHG not associated with losses e.g. SF6 converted to tCO2e using Defra conversion factors
http://www.defra.gov.uk/publications/2012/05/30/pb13773-2012-ghg-conversion/
Where losses are entered in terms of MWh, the CO2e associated with those losses will be calculated based on an assumed GHG conversion factor. The tCO2e are monetised using DECC traded carbon values.
All other GHG emissions not associated with losses should be entered in row 90 to avoid double counting.

[2] http://www.hse.gov.uk/risk/theory/alarpcheck.htm

CBA Option 2 — **Replacement in year 1 with capitalised loss unit (current policy) vs baseline**

Term (years from first out flow)	NPV (£m)
16	-£0.07
24	£0.02
32	£0.09
45	£0.17

first year of investment out flow: 1

			Units	RIIO-ED1								RIIO-ED2								RIIO-ED3							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		Calculation		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Investment	Asset Replacement		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total investment		£m		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Avoided DNO costs	Inspections & Maintenance		£m																								
	Asset Replacement		£m																								
	Refurbishment		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total avoided DNO costs		£m		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total DNO net benefits before capitalisation	(1) = investment + DNO benefits	£m		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Capitalisation rates	(2)	%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
	Capitalised investment	(3)=(1)x(2)	£m		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Investment to be expensed	(4)=(1)-(3)	£m		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Depreciation	(5)=$\sum(5)_t$	£m	-	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cost of Capital	(6)=avg[(6^{cl}),(6^{op})]xWACC	£m	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Net DNO benefits	**(7)=(4)+(5)+(6)**	**£m**	**(0.22)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**0.20**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Societal benefits (£m) i.e. costs avoided	Losses		£m	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	CO2e associated with losses		£m	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Customer interruptions (CI)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Customer minutes lost (CML)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other GHG emissions (CO2e) i.e. not associated with losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Fatality		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Major injury		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Oil leakage		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other 1 (specify)		£m																								
	Other 2 (specify)		£m																								
	Other 3 (specify)		£m																								
	Total societal net benefits		**£m**	**-**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**
	Net benefits		**£m**	**(0.22)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.01)**	**(0.01)**	**(0.01)**	**(0.01)**	**0.21**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**
	Discount factor	=1/[(1+SRTP)^n]		0.97	0.93	0.90	0.87	0.84	0.81	0.79	0.76	0.73	0.71	0.68	0.66	0.64	0.62	0.60	0.58	0.56	0.54	0.52	0.50	0.49	0.47	0.45	0.44
	Discount factor (safety)	=1/[(1+PTPR)^n]		0.99	0.97	0.96	0.94	0.93	0.91	0.90	0.89	0.87	0.86	0.85	0.84	0.82	0.81	0.80	0.79	0.78	0.76	0.75	0.74	0.73	0.72	0.71	0.70
	Discounted net benefits		£m	(0.21)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	0.15	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Cumulative discounted net benefits		**£m**	**(0.21)**	**(0.23)**	**(0.24)**	**(0.26)**	**(0.27)**	**(0.28)**	**(0.29)**	**(0.30)**	**(0.31)**	**(0.16)**	**(0.14)**	**(0.13)**	**(0.11)**	**(0.10)**	**(0.09)**	**(0.07)**	**(0.06)**	**(0.05)**	**(0.03)**	**(0.02)**	**(0.01)**	**0.00**	**0.01**	**0.02**

Non-DNO (eg societal) benefits

Enter values as increments (delta) relative to your reference scenario. If this is your reference scenario enter 0. Reductions are entered as positive numbers and increases as negative numbers.

Societal net benefits (impact relative to business as usual scenario)	Reduced losses		MWh		263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263
	Reduced emissions associated with losses		tCO2e	-	128.34	124.53	120.72	116.91	113.10	109.29	105.48	101.67	97.86	94.05	90.24	86.44	82.63	78.82	75.01	71.20	67.39	63.58	59.77	55.96	52.15	48.34	44.53
	Reduced number of customers interrupted		no.																								
	Reduced customer minutes lost		Mins																								
	Reduced emissions (not associated with losses)[1]		tCO2e																								
	Reduced probability of fatality[2]		%																								
	Reduced probability of major injury[2]		%																								
	Reduced oil leakage		Litres																								

[1] Includes all GHG not associated with losses e.g. SF6 converted to tCO2e using Defra conversion factors
http://www.defra.gov.uk/publications/2012/05/30/pb13773-2012-ghg-conversion/
Where losses are entered in terms of MWh, the CO2e associated with those losses will be calculated based on an assumed GHG conversion factor. The tCO2e are monetised using DECC traded carbon values.
All other GHG emissions not associated with losses should be entered in row 90 to avoid double counting.

[2] http://www.hse.gov.uk/risk/theory/alarpcheck.htm

CBA Option 2.1 **Sensitivity check: Option 2 with 5yr refurb life extension**

Term (years from first out flow)	NPV (£m)
16	£0.07
24	£0.15
32	£0.21
45	£0.28

first year of investment out flow: 1

			Units	RIIO-ED1								RIIO-ED2								RIIO-ED3							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		Calculation		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Investment	Asset Replacement		£m	[redacted]																							
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total investment		£m	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Avoided DNO costs	Inspections & Maintenance		£m																								
	Asset Replacement		£m					[redacted]																			
	Refurbishment		£m	[redacted]																							
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total avoided DNO costs		£m	[redacted]	-	-	-	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total DNO net benefits before capitalisation	(1) = investment + DNO benefits	£m	[redacted]	-	-	-	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Capitalisation rates	(2)	%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
	Capitalised investment	(3)=(1)x(2)	£m	[redacted]	-	-	-	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Investment to be expensed	(4)=(1)-(3)	£m		-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Depreciation	(5)=$\sum(5)_t$	£m	-	(0.01)	(0.01)	(0.01)	(0.01)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cost of Capital	(6)=avg[(6^{cl}),(6^{op})]xWACC	£m	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Net DNO benefits	**(7)=(4)+(5)+(6)**	**£m**	**(0.22)**	**(0.03)**	**(0.03)**	**(0.03)**	**0.19**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Societal benefits (£m) i.e. costs avoided	Losses		£m	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	CO2e associated with losses		£m	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Customer interruptions (CI)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Customer minutes lost (CML)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other GHG emissions (CO2e) i.e. not associated with losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Fatality		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Major injury		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Oil leakage		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other 1 (specify)		£m																								
	Other 2 (specify)		£m																								
	Other 3 (specify)		£m																								
	Total societal net benefits		**£m**	**-**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**
	Net benefits		**£m**	**(0.22)**	**(0.02)**	**(0.02)**	**(0.02)**	**0.21**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**
	Discount factor	=1/[(1+SRTP)^n]		0.97	0.93	0.90	0.87	0.84	0.81	0.79	0.76	0.73	0.71	0.68	0.66	0.64	0.62	0.60	0.58	0.56	0.54	0.52	0.50	0.49	0.47	0.45	0.44
	Discount factor (safety)	=1/[(1+PTPR)^n]		0.99	0.97	0.96	0.94	0.93	0.91	0.90	0.89	0.87	0.86	0.85	0.84	0.82	0.81	0.80	0.79	0.78	0.76	0.75	0.74	0.73	0.72	0.71	0.70
	Discounted net benefits		£m	(0.21)	(0.02)	(0.02)	(0.01)	0.17	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Cumulative discounted net benefits		**£m**	**(0.21)**	**(0.23)**	**(0.24)**	**(0.26)**	**(0.08)**	**(0.07)**	**(0.06)**	**(0.04)**	**(0.03)**	**(0.01)**	**0.00**	**0.01**	**0.03**	**0.04**	**0.05**	**0.07**	**0.08**	**0.09**	**0.10**	**0.11**	**0.12**	**0.13**	**0.14**	**0.15**

Non-DNO (eg societal) benefits

Enter values as increments (delta) relative to your reference scenario. If this is your reference scenario enter 0. Reductions are entered as positive numbers and increases as negative numbers.

Societal net benefits (impact relative to business as usual scenario)	Reduced losses		MWh		263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263
	Reduced emissions associated with losses		tCO2e	-	128.34	124.53	120.72	116.91	113.10	109.29	105.48	101.67	97.86	94.05	90.24	86.44	82.63	78.82	75.01	71.20	67.39	63.58	59.77	55.96	52.15	48.34	44.53
	Reduced number of customers interrupted		no.																								
	Reduced customer minutes lost		Mins																								
	Reduced emissions (not associated with losses)[1]		tCO2e																								
	Reduced probability of fatality[2]		%																								
	Reduced probability of major injury[2]		%																								
	Reduced oil leakage		Litres																								

[1] Includes all GHG not associated with losses e.g. SF6 converted to tCO2e using Defra conversion factors
http://www.defra.gov.uk/publications/2012/05/30/pb13773-2012-ghg-conversion/
Where losses are entered in terms of MWh, the CO2e associated with those losses will be calculated based on an assumed GHG conversion factor. The tCO2e are monetised using DECC traded carbon values.
All other GHG emissions not associated with losses should be entered in row 90 to avoid double counting.

[2] http://www.hse.gov.uk/risk/theory/alarpcheck.htm

CBA Option 2.2 **Sensitivity check: Option 2 with 3yr refurb life extension**

Term (years from first out flow)	NPV (£m)
16	£0.13
24	£0.21
32	£0.27
45	£0.33

first year of investment out flow: 1

		Calculation	Units	RIIO-ED1 1 2016	2 2017	3 2018	4 2019	5 2020	6 2021	7 2022	8 2023	RIIO-ED2 9 2024	10 2025	11 2026	12 2027	13 2028	14 2029	15 2030	16 2031	RIIO-ED3 17 2032	18 2033	19 2034	20 2035	21 2036	22 2037	23 2038	24 2039
Investment	Asset Replacement		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total investment		£m		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Avoided DNO costs	Inspections & Maintenance		£m																								
	Asset Replacement		£m																								
	Refurbishment		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total avoided DNO costs		£m		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total DNO net benefits before capitalisation	(1) = investment + DNO benefits	£m		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Capitalisation rates	(2)	%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
	Capitalised investment	(3)=(1)x(2)	£m		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Investment to be expensed	(4)=(1)-(3)	£m		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Depreciation	$(5)=\sum(5)_t$	£m	-	(0.01)	(0.01)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cost of Capital	$(6)=avg[(6^{cl}),(6^{op})]xWACC$	£m	(0.01)	(0.02)	(0.01)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total Net DNO benefits	**(7)=(4)+(5)+(6)**	**£m**	**(0.22)**	**(0.03)**	**0.19**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Societal benefits (£m) i.e. costs avoided	Losses		£m	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	CO2e associated with losses		£m	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Customer interruptions (CI)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Customer minutes lost (CML)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other GHG emissions (CO2e) i.e. not associated with losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Fatality		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Major injury		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Oil leakage		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other 1 (specify)		£m																								
	Other 2 (specify)		£m																								
	Other 3 (specify)		£m																								
	Total societal net benefits		**£m**	**-**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**
	Net benefits		**£m**	**(0.22)**	**(0.02)**	**0.21**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**
	Discount factor	=1/[(1+SRTP)^n]		0.97	0.93	0.90	0.87	0.84	0.81	0.79	0.76	0.73	0.71	0.68	0.66	0.64	0.62	0.60	0.58	0.56	0.54	0.52	0.50	0.49	0.47	0.45	0.44
	Discount factor (safety)	=1/[(1+PTPR)^n]		0.99	0.97	0.96	0.94	0.93	0.91	0.90	0.89	0.87	0.86	0.85	0.84	0.82	0.81	0.80	0.79	0.78	0.76	0.75	0.74	0.73	0.72	0.71	0.70
	Discounted net benefits		£m	(0.21)	(0.02)	0.19	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Cumulative discounted net benefits		**£m**	**(0.21)**	**(0.23)**	**(0.04)**	**(0.03)**	**(0.02)**	**(0.00)**	**0.01**	**0.02**	**0.04**	**0.05**	**0.06**	**0.08**	**0.09**	**0.10**	**0.11**	**0.13**	**0.14**	**0.15**	**0.16**	**0.17**	**0.18**	**0.19**	**0.20**	**0.21**

Non-DNO (eg societal) benefits

Enter values as increments (delta) relative to your reference scenario. If this is your reference scenario enter 0. Reductions are entered as positive numbers and increases as negative numbers.

Societal net benefits (impact relative to business as usual scenario)	Reduced losses		MWh		263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263
	Reduced emissions associated with losses		tCO2e	-	128.34	124.53	120.72	116.91	113.10	109.29	105.48	101.67	97.86	94.05	90.24	86.44	82.63	78.82	75.01	71.20	67.39	63.58	59.77	55.96	52.15	48.34	44.53
	Reduced number of customers interrupted		no.																								
	Reduced customer minutes lost		Mins																								
	Reduced emissions (not associated with losses)[1]		tCO2e																								
	Reduced probability of fatality[2]		%																								
	Reduced probability of major injury[2]		%																								
	Reduced oil leakage		Litres																								

[1] Includes all GHG not associated with losses e.g. SF6 converted to tCO2e using Defra conversion factors
http://www.defra.gov.uk/publications/2012/05/30/pb13773-2012-ghg-conversion/
Where losses are entered in terms of MWh, the CO2e associated with those losses will be calculated based on an assumed GHG conversion factor. The tCO2e are monetised using DECC traded carbon values.
All other GHG emissions not associated with losses should be entered in row 90 to avoid double counting.

[2] http://www.hse.gov.uk/risk/theory/alarpcheck.htm

CBA Option 2.3 **Sensitivity check: Option 2 with 15yr refurb life extension**

Term (years from first out flow)	NPV (£m)
16	-£0.19
24	-£0.09
32	-£0.01
45	£0.07

first year of investment out flow: 1

			Units	RIIO-ED1 1	2	3	4	5	6	7	8	RIIO-ED2 9	10	11	12	13	14	15	16	RIIO-ED3 17	18	19	20	21	22	23	24
		Calculation		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Investment	Asset Replacement		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total investment		£m		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Avoided DNO costs	Inspections & Maintenance		£m																								
	Asset Replacement		£m																								
	Refurbishment		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total avoided DNO costs		£m		-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
	Total DNO net benefits before capitalisation	(1) = investment + DNO benefits	£m		-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
	Capitalisation rates	(2)	%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
	Capitalised investment	(3)=(1)x(2)	£m		-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
	Investment to be expensed	(4)=(1)-(3)	£m		-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
	Depreciation	(5)=$\sum(5)_t$	£m	-	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cost of Capital	(6)=avg[(6^{cl}),(6^{op})]xWACC	£m	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.00)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Total Net DNO benefits	**(7)=(4)+(5)+(6)**	**£m**	**(0.22)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**0.20**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**
Societal benefits (£m) i.e. costs avoided	Losses		£m	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	CO2e associated with losses		£m	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Customer interruptions (CI)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Customer minutes lost (CML)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other GHG emissions (CO2e) i.e. not associated with losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Fatality		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Major injury		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Oil leakage		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other 1 (specify)		£m																								
	Other 2 (specify)		£m																								
	Other 3 (specify)		£m																								
	Total societal net benefits		**£m**	**-**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**
	Net benefits		**£m**	**(0.22)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.01)**	**(0.01)**	**(0.01)**	**(0.01)**	**(0.01)**	**(0.01)**	**(0.01)**	**(0.01)**	**(0.01)**	**(0.01)**	**0.22**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**
	Discount factor	=1/[(1+SRTP)^n]		0.97	0.93	0.90	0.87	0.84	0.81	0.79	0.76	0.73	0.71	0.68	0.66	0.64	0.62	0.60	0.58	0.56	0.54	0.52	0.50	0.49	0.47	0.45	0.44
	Discount factor (safety)	=1/[(1+PTPR)^n]		0.99	0.97	0.96	0.94	0.93	0.91	0.90	0.89	0.87	0.86	0.85	0.84	0.82	0.81	0.80	0.79	0.78	0.76	0.75	0.74	0.73	0.72	0.71	0.70
	Discounted net benefits		£m	(0.21)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	0.13	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Cumulative discounted net benefits		**£m**	**(0.21)**	**(0.23)**	**(0.24)**	**(0.26)**	**(0.27)**	**(0.28)**	**(0.29)**	**(0.30)**	**(0.31)**	**(0.32)**	**(0.32)**	**(0.33)**	**(0.33)**	**(0.34)**	**(0.21)**	**(0.19)**	**(0.18)**	**(0.17)**	**(0.15)**	**(0.14)**	**(0.12)**	**(0.11)**	**(0.10)**	**(0.09)**

Non-DNO (eg societal) benefits

Enter values as increments (delta) relative to your reference scenario. If this is your reference scenario enter 0. Reductions are entered as positive numbers and increases as negative numbers.

Societal net benefits (impact relative to business as usual scenario)	Reduced losses		MWh		263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263
	Reduced emissions associated with losses		tCO2e	-	128.34	124.53	120.72	116.91	113.10	109.29	105.48	101.67	97.86	94.05	90.24	86.44	82.63	78.82	75.01	71.20	67.39	63.58	59.77	55.96	52.15	48.34	44.53
	Reduced number of customers interrupted		no.																								
	Reduced customer minutes lost		Mins																								
	Reduced emissions (not associated with losses)[1]		tCO2e																								
	Reduced probability of fatality[2]		%																								
	Reduced probability of major injury[2]		%																								
	Reduced oil leakage		Litres																								

[1] Includes all GHG not associated with losses e.g. SF6 converted to tCO2e using Defra conversion factors
http://www.defra.gov.uk/publications/2012/05/30/pb13773-2012-ghg-conversion/
Where losses are entered in terms of MWh, the CO2e associated with those losses will be calculated based on an assumed GHG conversion factor. The tCO2e are monetised using DECC traded carbon values.
All other GHG emissions not associated with losses should be entered in row 90 to avoid double counting.

[2] http://www.hse.gov.uk/risk/theory/alarpcheck.htm

CBA Option 3 — **Replacement year 1 with very low loss unit vs baseline**

Term (years from first out flow)	NPV (£m)
16	-£0.60
24	-£0.55
32	-£0.79
45	-£1.05

first year of investment out flow: 1

		Calculation	Units	RIIO-ED1 1 2016	2 2017	3 2018	4 2019	5 2020	6 2021	7 2022	8 2023	RIIO-ED2 9 2024	10 2025	11 2026	12 2027	13 2028	14 2029	15 2030	16 2031	RIIO-ED3 17 2032	18 2033	19 2034	20 2035	21 2036	22 2037	23 2038	24 2039
Investment	Asset Replacement		£m																							
	Please specify		£m																							
	Please specify		£m																							
	Please specify		£m																							
	Please specify		£m																							
	Total investment		£m		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Avoided DNO costs	Inspections & Maintenance		£m																							
	Asset Replacement		£m																							
	Refurbishment		£m																							
	Please specify		£m																							
	Please specify		£m																							
	Please specify		£m																							
	Total avoided DNO costs		£m		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
	Total DNO net benefits before capitalisation	(1) = investment + DNO benefits	£m		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
	Capitalisation rates	(2)	%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
	Capitalised investment	(3)=(1)x(2)	£m		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
	Investment to be expensed	(4)=(1)-(3)	£m		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
	Depreciation	(5)=$\sum(5)_t$	£m	-	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
	Cost of Capital	(6)=avg[(6^{cl}),(6^{op})]xWACC	£m	(0.02)	(0.05)	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
	Total Net DNO benefits	**(7)=(4)+(5)+(6)**	**£m**	**(0.52)**	**(0.07)**	**(0.07)**	**(0.07)**	**(0.07)**	**(0.07)**	**(0.07)**	**(0.07)**	**(0.07)**	**0.16**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.02)**	**(0.02)**
Societal benefits (£m) i.e. costs avoided	Losses		£m	-	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
	CO2e associated with losses		£m	-	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Customer interruptions (CI)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Customer minutes lost (CML)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other GHG emissions (CO2e) i.e. not associated with losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Fatality		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Major injury		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Oil leakage		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other 1 (specify)		£m																							
	Other 2 (specify)		£m																							
	Other 3 (specify)		£m																							
	Total societal net benefits		**£m**	**-**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**
	Net benefits		**£m**	**(0.52)**	**(0.05)**	**(0.04)**	**(0.04)**	**(0.04)**	**(0.04)**	**(0.04)**	**(0.03)**	**(0.03)**	**0.19**	**0.00**	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**
	Discount factor	=1/[(1+SRTP)^n]		0.97	0.93	0.90	0.87	0.84	0.81	0.79	0.76	0.73	0.71	0.68	0.66	0.64	0.62	0.60	0.58	0.56	0.54	0.52	0.50	0.49	0.47	0.45	0.44
	Discount factor (safety)	=1/[(1+PTPR)^n]		0.99	0.97	0.96	0.94	0.93	0.91	0.90	0.89	0.87	0.86	0.85	0.84	0.82	0.81	0.80	0.79	0.78	0.76	0.75	0.74	0.73	0.72	0.71	0.70
	Discounted net benefits		£m	(0.50)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.03)	(0.03)	(0.02)	0.14	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Cumulative discounted net benefits		**£m**	**(0.50)**	**(0.54)**	**(0.58)**	**(0.62)**	**(0.65)**	**(0.69)**	**(0.72)**	**(0.74)**	**(0.77)**	**(0.63)**	**(0.63)**	**(0.62)**	**(0.62)**	**(0.62)**	**(0.61)**	**(0.60)**	**(0.60)**	**(0.59)**	**(0.59)**	**(0.58)**	**(0.57)**	**(0.57)**	**(0.56)**	**(0.55)**

Non-DNO (eg societal) benefits

Enter values as increments (delta) relative to your reference scenario. If this is your reference scenario enter 0. Reductions are entered as positive numbers and increases as negative numbers.

Societal net benefits (impact relative to business as usual scenario)	Reduced losses		MWh		526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526
	Reduced emissions associated with losses		tCO2e	-	256.68	249.06	241.44	233.82	226.20	218.58	210.96	203.35	195.73	188.11	180.49	172.87	165.25	157.63	150.01	142.40	134.78	127.16	119.54	111.92	104.30	96.68	89.06
	Reduced number of customers interrupted		no.																							
	Reduced customer minutes lost		Mins																							
	Reduced emissions (not associated with losses)[1]		tCO2e																							
	Reduced probability of fatality[2]		%																							
	Reduced probability of major injury[2]		%																							
	Reduced oil leakage		Litres																							

[1] Includes all GHG not associated with losses e.g. SF6 converted to tCO2e using Defra conversion factors
http://www.defra.gov.uk/publications/2012/05/30/pb13773-2012-ghg-conversion/
Where losses are entered in terms of MWh, the CO2e associated with those losses will be calculated based on an assumed GHG conversion factor. The tCO2e are monetised using DECC traded carbon values.
All other GHG emissions not associated with losses should be entered in row 90 to avoid double counting.

[2] http://www.hse.gov.uk/risk/theory/alarpcheck.htm

CBA Option 3.1 **Sensitivity check: Option 3 with 5yr refurb life extension**

Term (years from first out flow)	NPV (£m)
16	-£0.47
24	-£0.42
32	-£0.67
45	-£0.94

first year of investment out flow: 1

		Calculation	Units	RIIO-ED1								RIIO-ED2								RIIO-ED3							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
				2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Investment	Asset Replacement		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total investment		£m		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Avoided DNO costs	Inspections & Maintenance		£m																								
	Asset Replacement		£m																								
	Refurbishment		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total avoided DNO costs		£m		-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total DNO net benefits before capitalisation	(1) = investment + DNO benefits	£m		-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Capitalisation rates	(2)	%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
	Capitalised investment	(3)=(1)x(2)	£m		-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Investment to be expensed	(4)=(1)-(3)	£m		-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Depreciation	(5)=$\sum(5)_t$	£m	-	(0.03)	(0.03)	(0.03)	(0.03)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
	Cost of Capital	(6)=avg[(6^{cl}),(6^{op})]xWACC	£m	(0.02)	(0.05)	(0.05)	(0.05)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
	Total Net DNO benefits	**(7)=(4)+(5)+(6)**	**£m**	**(0.52)**	**(0.07)**	**(0.07)**	**(0.07)**	**0.15**	**(0.04)**	**(0.04)**	**(0.04)**	**(0.04)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**
Societal benefits (£m) i.e. costs avoided	Losses		£m	-	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
	CO2e associated with losses		£m	-	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Customer interruptions (CI)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Customer minutes lost (CML)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other GHG emissions (CO2e) i.e. not associated with losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Fatality		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Major injury		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Oil leakage		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other 1 (specify)		£m																								
	Other 2 (specify)		£m																								
	Other 3 (specify)		£m																								
	Total societal net benefits		**£m**	**-**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**
	Net benefits		**£m**	**(0.52)**	**(0.05)**	**(0.04)**	**(0.04)**	**0.18**	**(0.01)**	**(0.01)**	**(0.00)**	**(0.00)**	**(0.00)**	**0.00**	**0.00**	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**
	Discount factor	=1/[(1+SRTP)^n]		0.97	0.93	0.90	0.87	0.84	0.81	0.79	0.76	0.73	0.71	0.68	0.66	0.64	0.62	0.60	0.58	0.56	0.54	0.52	0.50	0.49	0.47	0.45	0.44
	Discount factor (safety)	=1/[(1+PTPR)^n]		0.99	0.97	0.96	0.94	0.93	0.91	0.90	0.89	0.87	0.86	0.85	0.84	0.82	0.81	0.80	0.79	0.78	0.76	0.75	0.74	0.73	0.72	0.71	0.70
	Discounted net benefits		£m	(0.50)	(0.04)	(0.04)	(0.04)	0.15	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Cumulative discounted net benefits		**£m**	**(0.50)**	**(0.54)**	**(0.58)**	**(0.62)**	**(0.47)**	**(0.47)**	**(0.48)**	**(0.48)**	**(0.48)**	**(0.48)**	**(0.48)**	**(0.48)**	**(0.48)**	**(0.48)**	**(0.47)**	**(0.47)**	**(0.46)**	**(0.46)**	**(0.45)**	**(0.45)**	**(0.44)**	**(0.44)**	**(0.43)**	**(0.42)**

Non-DNO (eg societal) benefits

Enter values as increments (delta) relative to your reference scenario. If this is your reference scenario enter 0. Reductions are entered as positive numbers and increases as negative numbers.

Societal net benefits (impact relative to business as usual scenario)	Reduced losses		MWh		526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526
	Reduced emissions associated with losses		tCO2e	-	256.68	249.06	241.44	233.82	226.20	218.58	210.96	203.35	195.73	188.11	180.49	172.87	165.25	157.63	150.01	142.40	134.78	127.16	119.54	111.92	104.30	96.68	89.06
	Reduced number of customers interrupted		no.																								
	Reduced customer minutes lost		Mins																								
	Reduced emissions (not associated with losses)[1]		tCO2e																								
	Reduced probability of fatality[2]		%																								
	Reduced probability of major injury[2]		%																								
	Reduced oil leakage		Litres																								

[1] Includes all GHG not associated with losses e.g. SF6 converted to tCO2e using Defra conversion factors
http://www.defra.gov.uk/publications/2012/05/30/pb13773-2012-ghg-conversion/
Where losses are entered in terms of MWh, the CO2e associated with those losses will be calculated based on an assumed GHG conversion factor. The tCO2e are monetised using DECC traded carbon values.
All other GHG emissions not associated with losses should be entered in row 90 to avoid double counting.

[2] http://www.hse.gov.uk/risk/theory/alarpcheck.htm

CBA Option 3.2 **Sensitivity check: Option 3 with 3yr refurb life extension**

Term (years from first out flow)	NPV (£m)
16	-£0.41
24	-£0.37
32	-£0.61
45	-£0.89

first year of investment out flow: 1

		Calculation	Units	RIIO-ED1								RIIO-ED2								RIIO-ED3							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
				2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Investment	Asset Replacement		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total investment		£m		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Avoided DNO costs	Inspections & Maintenance		£m																								
	Asset Replacement		£m																								
	Refurbishment		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total avoided DNO costs		£m		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total DNO net benefits before capitalisation	(1) = investment + DNO benefits	£m		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Capitalisation rates	(2)	%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
	Capitalised investment	(3)=(1)x(2)	£m		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Investment to be expensed	(4)=(1)-(3)	£m		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Depreciation	(5)=$\sum(5)_t$	£m	-	(0.03)	(0.03)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
	Cost of Capital	(6)=avg[(6^{cl}),(6^{op})]xWACC	£m	(0.02)	(0.05)	(0.04)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
	Total Net DNO benefits	**(7)=(4)+(5)+(6)**	**£m**	**(0.52)**	**(0.07)**	**0.15**	**(0.04)**	**(0.04)**	**(0.04)**	**(0.04)**	**(0.04)**	**(0.04)**	**(0.04)**	**(0.04)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**
Societal benefits (£m) i.e. costs avoided	Losses		£m	-	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
	CO2e associated with losses		£m	-	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Customer interruptions (CI)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Customer minutes lost (CML)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other GHG emissions (CO2e) i.e. not associated with losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Fatality		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Major injury		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Oil leakage		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other 1 (specify)		£m																								
	Other 2 (specify)		£m																								
	Other 3 (specify)		£m																								
	Total societal net benefits		**£m**	**-**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**
	Net benefits		**£m**	**(0.52)**	**(0.05)**	**0.18**	**(0.01)**	**(0.01)**	**(0.01)**	**(0.01)**	**(0.00)**	**(0.00)**	**(0.00)**	**0.00**	**0.00**	**0.00**	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**
	Discount factor	=1/[(1+SRTP)^n]		0.97	0.93	0.90	0.87	0.84	0.81	0.79	0.76	0.73	0.71	0.68	0.66	0.64	0.62	0.60	0.58	0.56	0.54	0.52	0.50	0.49	0.47	0.45	0.44
	Discount factor (safety)	=1/[(1+PTPR)^n]		0.99	0.97	0.96	0.94	0.93	0.91	0.90	0.89	0.87	0.86	0.85	0.84	0.82	0.81	0.80	0.79	0.78	0.76	0.75	0.74	0.73	0.72	0.71	0.70
	Discounted net benefits		£m	(0.50)	(0.04)	0.16	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00
	Cumulative discounted net benefits		**£m**	**(0.50)**	**(0.54)**	**(0.38)**	**(0.39)**	**(0.40)**	**(0.41)**	**(0.41)**	**(0.42)**	**(0.42)**	**(0.42)**	**(0.42)**	**(0.42)**	**(0.42)**	**(0.41)**	**(0.41)**	**(0.41)**	**(0.40)**	**(0.40)**	**(0.39)**	**(0.39)**	**(0.38)**	**(0.38)**	**(0.37)**	**(0.37)**

Non-DNO (eg societal) benefits

Enter values as increments (delta) relative to your reference scenario. If this is your reference scenario enter 0. Reductions are entered as positive numbers and increases as negative numbers.

Societal net benefits (impact relative to business as usual scenario)	Reduced losses		MWh		526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526
	Reduced emissions associated with losses		tCO2e	-	256.68	249.06	241.44	233.82	226.20	218.58	210.96	203.35	195.73	188.11	180.49	172.87	165.25	157.63	150.01	142.40	134.78	127.16	119.54	111.92	104.30	96.68	89.06
	Reduced number of customers interrupted		no.																								
	Reduced customer minutes lost		Mins																								
	Reduced emissions (not associated with losses)[1]		tCO2e																								
	Reduced probability of fatality[2]		%																								
	Reduced probability of major injury[2]		%																								
	Reduced oil leakage		Litres																								

[1] Includes all GHG not associated with losses e.g. SF6 converted to tCO2e using Defra conversion factors
http://www.defra.gov.uk/publications/2012/05/30/pb13773-2012-ghg-conversion/
Where losses are entered in terms of MWh, the CO2e associated with those losses will be calculated based on an assumed GHG conversion factor. The tCO2e are monetised using DECC traded carbon values.
All other GHG emissions not associated with losses should be entered in row 90 to avoid double counting.

[2] http://www.hse.gov.uk/risk/theory/alarpcheck.htm

CBA Option 3.3 **Sensitivity check: Option 3 with 15yr refurb life extension**

Term (years from first out flow)	NPV (£m)
16	-£0.73
24	-£0.67
32	-£0.89
45	-£1.14

first year of investment out flow: 1

		Calculation	Units	RIIO-ED1 1	2	3	4	5	6	7	8	RIIO-ED2 9	10	11	12	13	14	15	16	RIIO-ED3 17	18	19	20	21	22	23	24
				2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Investment	Asset Replacement		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total investment		£m		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Avoided DNO costs	Inspections & Maintenance		£m																								
	Asset Replacement		£m																								
	Refurbishment		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total avoided DNO costs		£m		-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
	Total DNO net benefits before capitalisation	(1) = investment + DNO benefits	£m		-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
	Capitalisation rates	(2)	%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
	Capitalised investment	(3)=(1)x(2)	£m		-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
	Investment to be expensed	(4)=(1)-(3)	£m		-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-
	Depreciation	(5)=$\sum(5)_t$	£m	-	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
	Cost of Capital	(6)=avg[(6^{cl}),(6^{op})]xWACC	£m	(0.02)	(0.05)	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
	Total Net DNO benefits	**(7)=(4)+(5)+(6)**	**£m**	**(0.52)**	**(0.07)**	**(0.07)**	**(0.07)**	**(0.07)**	**(0.07)**	**(0.07)**	**(0.07)**	**(0.07)**	**(0.06)**	**(0.06)**	**(0.06)**	**(0.06)**	**(0.06)**	**(0.06)**	**0.16**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**	**(0.02)**
Societal benefits (£m) i.e. costs avoided	Losses		£m	-	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
	CO2e associated with losses		£m	-	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Customer interruptions (CI)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Customer minutes lost (CML)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other GHG emissions (CO2e) i.e. not associated with losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Fatality		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Major injury		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Oil leakage		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other 1 (specify)		£m																								
	Other 2 (specify)		£m																								
	Other 3 (specify)		£m																								
	Total societal net benefits		**£m**	**-**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**
	Net benefits		**£m**	**(0.52)**	**(0.05)**	**(0.04)**	**(0.04)**	**(0.04)**	**(0.04)**	**(0.04)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.03)**	**(0.02)**	**(0.02)**	**0.20**	**0.01**	**0.01**	**0.01**	**0.01**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**
	Discount factor	=1/[(1+SRTP)^n]		0.97	0.93	0.90	0.87	0.84	0.81	0.79	0.76	0.73	0.71	0.68	0.66	0.64	0.62	0.60	0.58	0.56	0.54	0.52	0.50	0.49	0.47	0.45	0.44
	Discount factor (safety)	=1/[(1+PTPR)^n]		0.99	0.97	0.96	0.94	0.93	0.91	0.90	0.89	0.87	0.86	0.85	0.84	0.82	0.81	0.80	0.79	0.78	0.76	0.75	0.74	0.73	0.72	0.71	0.70
	Discounted net benefits		£m	(0.50)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	0.12	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Cumulative discounted net benefits		**£m**	**(0.50)**	**(0.54)**	**(0.58)**	**(0.62)**	**(0.65)**	**(0.69)**	**(0.72)**	**(0.74)**	**(0.77)**	**(0.79)**	**(0.81)**	**(0.82)**	**(0.84)**	**(0.85)**	**(0.73)**	**(0.73)**	**(0.72)**	**(0.71)**	**(0.70)**	**(0.70)**	**(0.69)**	**(0.68)**	**(0.67)**	**(0.67)**

Non-DNO (eg societal) benefits

Enter values as increments (delta) relative to your reference scenario. If this is your reference scenario enter 0. Reductions are entered as positive numbers and increases as negative numbers.

Societal net benefits (impact relative to business as usual scenario)	Reduced losses		MVVh		526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526	526
	Reduced emissions associated with losses		tCO2e	-	256.68	249.06	241.44	233.82	226.20	218.58	210.96	203.35	195.73	188.11	180.49	172.87	165.25	157.63	150.01	142.40	134.78	127.16	119.54	111.92	104.30	96.68	89.06
	Reduced number of customers interrupted		no.																								
	Reduced customer minutes lost		Mins																								
	Reduced emissions (not associated with losses)[1]		tCO2e																								
	Reduced probability of fatality[2]		%																								
	Reduced probability of major injury[2]		%																								
	Reduced oil leakage		Litres																								

[1] Includes all GHG not associated with losses e.g. SF6 converted to tCO2e using Defra conversion factors
http://www.defra.gov.uk/publications/2012/05/30/pb13773-2012-ghg-conversion/
Where losses are entered in terms of MWh, the CO2e associated with those losses will be calculated based on an assumed GHG conversion factor. The tCO2e are monetised using DECC traded carbon values.
All other GHG emissions not associated with losses should be entered in row 90 to avoid double counting.

[2] http://www.hse.gov.uk/risk/theory/alarpcheck.htm

CBA Option 4 — **Refurbishment year 1 giving 10 year life extension, followed by replacement with capitalised loss unit**

Term (years from first out flow)	NPV (£m)
16	-£0.02
24	£0.02
32	£0.05
45	£0.08

first year of investment out flow: 1

			Units	RIIO-ED1										RIIO-ED2												RIIO-ED3									
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		Calculation		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Investment	Asset Replacement		£m										[redacted]														
	Please specify		£m	[redacted]																							
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total investment		£m	[redacted]	-	-	-	-	-	-	-	-	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Avoided DNO costs	Inspections & Maintenance		£m																								
	Asset Replacement		£m										[redacted]														
	Refurbishment		£m	[redacted]																							
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total avoided DNO costs		£m	[redacted]	-	-	-	-	-	-	-	-	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total DNO net benefits before capitalisation	(1) = investment + DNO benefits	£m	-	-	-	-	-	-	-	-	-	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Capitalisation rates	(2)	%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
	Capitalised investment	(3)=(1)x(2)	£m	-	-	-	-	-	-	-	-	-	[redacted]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Investment to be expensed	(4)=(1)-(3)	£m	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Depreciation	(5)=$\sum(5)_t$	£m	-	-	-	-	-	-	-	-	-	-	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
	Cost of Capital	(6)=avg[(6^{cl}),(6^{op})]xWACC	£m	-	-	-	-	-	-	-	-	-	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)
	Total Net DNO benefits	**(7)=(4)+(5)+(6)**	**£m**	-	-	-	-	-	-	-	-	-	(0.07)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
	Losses		£m	-	-	-	-	-	-	-	-	-	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	CO2e associated with losses		£m	-	-	-	-	-	-	-	-	-	-	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Customer interruptions (CI)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Customer minutes lost (CML)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other GHG emissions (CO2e) i.e. not associated with losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Fatality		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Major injury		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Oil leakage		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other 1 (specify)		£m																								
	Other 2 (specify)		£m																								
	Other 3 (specify)		£m																								
	Total societal net benefits		**£m**	-	-	-	-	-	-	-	-	-	-	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	Net benefits		**£m**	-	-	-	-	-	-	-	-	-	(0.07)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Discount factor	=1/[(1+SRTP)^n]		0.97	0.93	0.90	0.87	0.84	0.81	0.79	0.76	0.73	0.71	0.68	0.66	0.64	0.62	0.60	0.58	0.56	0.54	0.52	0.50	0.49	0.47	0.45	0.44
	Discount factor (safety)	=1/[(1+PTPR)^n]		0.99	0.97	0.96	0.94	0.93	0.91	0.90	0.89	0.87	0.86	0.85	0.84	0.82	0.81	0.80	0.79	0.78	0.76	0.75	0.74	0.73	0.72	0.71	0.70
	Discounted net benefits		£m	-	-	-	-	-	-	-	-	-	(0.05)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
	Cumulative discounted net benefits		**£m**	-	-	-	-	-	-	-	-	-	(0.05)	(0.05)	(0.04)	(0.04)	(0.03)	(0.03)	(0.02)	(0.01)	(0.01)	(0.00)	0.00	0.01	0.01	0.02	0.02

Non-DNO (eg societal) benefits

Enter values as increments (delta) relative to your reference scenario. If this is your reference scenario enter 0. Reductions are entered as positive numbers and increases as negative numbers.

Societal net benefits (impact relative to business as usual scenario)	Reduced losses		MWh											263	263	263	263	263	263	263	263	263	263	263	263	263	263
	Reduced emissions associated with losses		tCO2e	-	-	-	-	-	-	-	-	-	-	94.05	90.24	86.44	82.63	78.82	75.01	71.20	67.39	63.58	59.77	55.96	52.15	48.34	44.53
	Reduced number of customers interrupted		no.																								
	Reduced customer minutes lost		Mins																								
	Reduced emissions (not associated with losses)[1]		tCO2e																								
	Reduced probability of fatality[2]		%																								
	Reduced probability of major injury[2]		%																								
	Reduced oil leakage		Litres																								

[1] Includes all GHG not associated with losses e.g. SF6 converted to tCO2e using Defra conversion factors
http://www.defra.gov.uk/publications/2012/05/30/pb13773-2012-ghg-conversion/
Where losses are entered in terms of MWh, the CO2e associated with those losses will be calculated based on an assumed GHG conversion factor. The tCO2e are monetised using DECC traded carbon values.
All other GHG emissions not associated with losses should be entered in row 90 to avoid double counting.

[2] http://www.hse.gov.uk/risk/theory/alarpcheck.htm

CBA Option 4.1 **Sensitivity check: Option 4 with 5yr refurb life extension**

Term (years from first out flow)	NPV (£m)
16	-£0.14
24	-£0.09
32	-£0.05
45	-£0.00

first year of investment out flow: 1

		Calculation	Units	RIIO-ED1 1 2016	2 2017	3 2018	4 2019	5 2020	6 2021	7 2022	8 2023	RIIO-ED2 9 2024	10 2025	11 2026	12 2027	13 2028	14 2029	15 2030	16 2031	RIIO-ED3 17 2032	18 2033	19 2034	20 2035	21 2036	22 2037	23 2038	24 2039
Investment	Asset Replacement		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total investment		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Avoided DNO costs	Inspections & Maintenance		£m																								
	Asset Replacement		£m																								
	Refurbishment		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total avoided DNO costs		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total DNO net benefits before capitalisation	(1) = investment + DNO benefits	£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Capitalisation rates	(2)	%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
	Capitalised investment	(3)=(1)x(2)	£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Investment to be expensed	(4)=(1)-(3)	£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Depreciation	(5)=$\sum(5)_t$	£m	-	-	-	-	-	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
	Cost of Capital	(6)=avg[(6^{cl}),(6^{op})]xWACC	£m	-	-	-	-	(0.01)	(0.03)	(0.03)	(0.03)	(0.03)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
	Total Net DNO benefits	**(7)=(4)+(5)+(6)**	**£m**	-	-	-	-	(0.30)	(0.04)	(0.04)	(0.04)	(0.04)	0.18	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Societal benefits (£m) i.e. costs avoided	Losses		£m	-	-	-	-	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	CO2e associated with losses		£m	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Customer interruptions (CI)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Customer minutes lost (CML)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other GHG emissions (CO2e) i.e. not associated with losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Fatality		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Major injury		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Oil leakage		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other 1 (specify)		£m																								
	Other 2 (specify)		£m																								
	Other 3 (specify)		£m																								
	Total societal net benefits		**£m**	-	-	-	-	-	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	Net benefits		**£m**	-	-	-	-	(0.30)	(0.03)	(0.03)	(0.02)	(0.02)	0.20	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Discount factor	=1/[(1+SRTP)^n]		0.97	0.93	0.90	0.87	0.84	0.81	0.79	0.76	0.73	0.71	0.68	0.66	0.64	0.62	0.60	0.58	0.56	0.54	0.52	0.50	0.49	0.47	0.45	0.44
	Discount factor (safety)	=1/[(1+PTPR)^n]		0.99	0.97	0.96	0.94	0.93	0.91	0.90	0.89	0.87	0.86	0.85	0.84	0.82	0.81	0.80	0.79	0.78	0.76	0.75	0.74	0.73	0.72	0.71	0.70
	Discounted net benefits		£m	-	-	-	-	(0.25)	(0.02)	(0.02)	(0.02)	(0.02)	0.14	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Cumulative discounted net benefits		**£m**	-	-	-	-	(0.25)	(0.27)	(0.29)	(0.31)	(0.33)	(0.19)	(0.18)	(0.17)	(0.16)	(0.16)	(0.15)	(0.14)	(0.13)	(0.13)	(0.12)	(0.11)	(0.11)	(0.10)	(0.09)	(0.09)

Non-DNO (eg societal) benefits

Enter values as increments (delta) relative to your reference scenario. If this is your reference scenario enter 0. Reductions are entered as positive numbers and increases as negative numbers.

		Units																								
Societal net benefits (impact relative to business as usual scenario)	Reduced losses	MWh						263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263
	Reduced emissions associated with losses	tCO2e	-	-	-	-	-	113.10	109.29	105.48	101.67	97.86	94.05	90.24	86.44	82.63	78.82	75.01	71.20	67.39	63.58	59.77	55.96	52.15	48.34	44.53
	Reduced number of customers interrupted	no.																								
	Reduced customer minutes lost	Mins																								
	Reduced emissions (not associated with losses)[1]	tCO2e																								
	Reduced probability of fatality[2]	%																								
	Reduced probability of major injury[2]	%																								
	Reduced oil leakage	Litres																								

[1] Includes all GHG not associated with losses e.g. SF6 converted to tCO2e using Defra conversion factors
http://www.defra.gov.uk/publications/2012/05/30/pb13773-2012-ghg-conversion/
Where losses are entered in terms of MWh, the CO2e associated with those losses will be calculated based on an assumed GHG conversion factor. The tCO2e are monetised using DECC traded carbon values.
All other GHG emissions not associated with losses should be entered in row 90 to avoid double counting.

[2] http://www.hse.gov.uk/risk/theory/alarpcheck.htm

CBA Option 4.2 **Sensitivity check: Option 4 with 3yr refurb life extension**

Term (years from first out flow)	NPV (£m)
16	-£0.20
24	-£0.14
32	-£0.09
45	-£0.05

first year of investment out flow: 1

		Calculation	Units	RIIO-ED1 1 2016	2 2017	3 2018	4 2019	5 2020	6 2021	7 2022	8 2023	RIIO-ED2 9 2024	10 2025	11 2026	12 2027	13 2028	14 2029	15 2030	16 2031	RIIO-ED3 17 2032	18 2033	19 2034	20 2035	21 2036	22 2037	23 2038	24 2039
Investment	Asset Replacement		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total investment		£m		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Avoided DNO costs	Inspections & Maintenance		£m																								
	Asset Replacement		£m																								
	Refurbishment		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total avoided DNO costs		£m		-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total DNO net benefits before capitalisation	(1) = investment + DNO benefits	£m	-	-		-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Capitalisation rates	(2)	%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
	Capitalised investment	(3)=(1)x(2)	£m	-	-		-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Investment to be expensed	(4)=(1)-(3)	£m	-	-		-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Depreciation	(5)=$\sum(5)_t$	£m	-	-	-	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
	Cost of Capital	(6)=avg[(6^{cl}),(6^{op})]xWACC	£m	-	-	(0.01)	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
	Total Net DNO benefits	**(7)=(4)+(5)+(6)**	**£m**	-	-	(0.30)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	0.18	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Societal benefits (£m) i.e. costs avoided	Losses		£m	-	-	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	CO2e associated with losses		£m	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Customer interruptions (CI)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Customer minutes lost (CML)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other GHG emissions (CO2e) i.e. not associated with losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Fatality		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Major injury		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Oil leakage		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other 1 (specify)		£m																								
	Other 2 (specify)		£m																								
	Other 3 (specify)		£m																								
	Total societal net benefits		**£m**	-	-	-	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
	Net benefits		**£m**	-	-	(0.30)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)	0.20	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02
	Discount factor	=1/[(1+SRTP)^n]		0.97	0.93	0.90	0.87	0.84	0.81	0.79	0.76	0.73	0.71	0.68	0.66	0.64	0.62	0.60	0.58	0.56	0.54	0.52	0.50	0.49	0.47	0.45	0.44
	Discount factor (safety)	=1/[(1+PTPR)^n]		0.99	0.97	0.96	0.94	0.93	0.91	0.90	0.89	0.87	0.86	0.85	0.84	0.82	0.81	0.80	0.79	0.78	0.76	0.75	0.74	0.73	0.72	0.71	0.70
	Discounted net benefits		£m	-	-	(0.27)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	0.14	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Cumulative discounted net benefits		**£m**	-	-	(0.27)	(0.29)	(0.31)	(0.34)	(0.36)	(0.37)	(0.39)	(0.25)	(0.24)	(0.23)	(0.22)	(0.21)	(0.21)	(0.20)	(0.19)	(0.18)	(0.17)	(0.17)	(0.16)	(0.15)	(0.15)	(0.14)

Non-DNO (eg societal) benefits

Enter values as increments (delta) relative to your reference scenario. If this is your reference scenario enter 0. Reductions are entered as positive numbers and increases as negative numbers.

Societal net benefits (impact relative to business as usual scenario)	Reduced losses		MWh				263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263	263
	Reduced emissions associated with losses		tCO2e	-	-	-	120.72	116.91	113.10	109.29	105.48	101.67	97.86	94.05	90.24	86.44	82.63	78.82	75.01	71.20	67.39	63.58	59.77	55.96	52.15	48.34	44.53
	Reduced number of customers interrupted		no.																								
	Reduced customer minutes lost		Mins																								
	Reduced emissions (not associated with losses)[1]		tCO2e																								
	Reduced probability of fatality[2]		%																								
	Reduced probability of major injury[2]		%																								
	Reduced oil leakage		Litres																								

[1] Includes all GHG not associated with losses e.g. SF6 converted to tCO2e using Defra conversion factors
http://www.defra.gov.uk/publications/2012/05/30/pb13773-2012-ghg-conversion/
Where losses are entered in terms of MWh, the CO2e associated with those losses will be calculated based on an assumed GHG conversion factor. The tCO2e are monetised using DECC traded carbon values.
All other GHG emissions not associated with losses should be entered in row 90 to avoid double counting.

[2] http://www.hse.gov.uk/risk/theory/alarpcheck.htm

CBA Option 4.3 **Sensitivity check: Option 4 with 15yr refurb life extension**

Term (years from first out flow)	NPV (£m)
16	£0.08
24	£0.11
32	£0.13
45	£0.15

first year of investment out flow: 1

		Calculation	Units	RIIO-ED1								RIIO-ED2								RIIO-ED3							
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
				2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
Investment	Asset Replacement		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total investment		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Avoided DNO costs	Inspections & Maintenance		£m																								
	Asset Replacement		£m																								
	Refurbishment		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Please specify		£m																								
	Total avoided DNO costs		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total DNO net benefits before capitalisation	(1) = investment + DNO benefits	£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Capitalisation rates	(2)	%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
	Capitalised investment	(3)=(1)x(2)	£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Investment to be expensed	(4)=(1)-(3)	£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Depreciation	(5)=$\sum(5)_t$	£m	-	-	-	-	-	-	-	-	-	-	0.01	0.01	0.01	0.01	0.01	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
	Cost of Capital	(6)=avg[(6^{cl}),(6^{op})]xWACC	£m	-	-	-	-	-	-	-	-	-	0.01	0.02	0.02	0.02	0.02	0.00	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
	Total Net DNO benefits	**(7)=(4)+(5)+(6)**	**£m**	-	-	-	-	-	-	-	-	-	**0.22**	**0.03**	**0.03**	**0.03**	**0.03**	(0.27)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Societal benefits (£m) i.e. costs avoided	Losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	CO2e associated with losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Customer interruptions (CI)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Customer minutes lost (CML)		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other GHG emissions (CO2e) i.e. not associated with losses		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Fatality		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Major injury		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Oil leakage		£m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Other 1 (specify)		£m																								
	Other 2 (specify)		£m																								
	Other 3 (specify)		£m																								
	Total societal net benefits		**£m**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**	**0.02**
	Net benefits		**£m**	-	-	-	-	-	-	-	-	-	**0.22**	**0.03**	**0.03**	**0.03**	**0.03**	(0.27)	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**
	Discount factor	=1/[(1+SRTP)^n]		0.97	0.93	0.90	0.87	0.84	0.81	0.79	0.76	0.73	0.71	0.68	0.66	0.64	0.62	0.60	0.58	0.56	0.54	0.52	0.50	0.49	0.47	0.45	0.44
	Discount factor (safety)	=1/[(1+PTPR)^n]		0.99	0.97	0.96	0.94	0.93	0.91	0.90	0.89	0.87	0.86	0.85	0.84	0.82	0.81	0.80	0.79	0.78	0.76	0.75	0.74	0.73	0.72	0.71	0.70
	Discounted net benefits		£m	-	-	-	-	-	-	-	-	-	0.16	0.02	0.02	0.02	0.02	(0.16)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Cumulative discounted net benefits		**£m**	-	-	-	-	-	-	-	-	-	**0.16**	**0.18**	**0.20**	**0.22**	**0.24**	**0.08**	**0.08**	**0.09**	**0.09**	**0.09**	**0.10**	**0.10**	**0.11**	**0.11**	**0.11**

Non-DNO (eg societal) benefits

Enter values as increments (delta) relative to your reference scenario. If this is your reference scenario enter 0. Reductions are entered as positive numbers and increases as negative numbers.

Societal net benefits (impact relative to business as usual scenario)	Reduced losses		MWh																263	263	263	263	263	263	263	263	263
	Reduced emissions associated with losses		tCO2e	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75.01	71.20	67.39	63.58	59.77	55.96	52.15	48.34	44.53
	Reduced number of customers interrupted		no.																								
	Reduced customer minutes lost		Mins																								
	Reduced emissions (not associated with losses)[1]		tCO2e																								
	Reduced probability of fatality[2]		%																								
	Reduced probability of major injury[2]		%																								
	Reduced oil leakage		Litres																								

[1] Includes all GHG not associated with losses e.g. SF6 converted to tCO2e using Defra conversion factors
http://www.defra.gov.uk/publications/2012/05/30/pb13773-2012-ghg-conversion/
Where losses are entered in terms of MWh, the CO2e associated with those losses will be calculated based on an assumed GHG conversion factor. The tCO2e are monetised using DECC traded carbon values.
All other GHG emissions not associated with losses should be entered in row 90 to avoid double counting.

[2] http://www.hse.gov.uk/risk/theory/alarpcheck.htm