

6 APPENDIX

6.1 Total process equipment and annual utility costs estimated for the production plant for scenario 1

Table 5: Associated process equipment costs

AREA	PROCESS EQUIPMENT	No. of units	Total cost £
Area 1	Storage silo	2	518 000
	Wheat tempering unit	20	78 400
	Water pump	1	3 000
	Air blower	50	25 000
	Screw conveyor	2	24 350
	Bucket elevator	8	296 000
	Magnetic separator	4	16 000
	Aspiration channel	5	10 000
	Combi cleaner	5	150 000
	Scourer	5	100 000
	Breaker roller	145	2 175 000
	Reduction roller	145	1 450 000

	Cyclone separator	50	88 250
	Rotary sifter	290	3 100
SUB TOTAL			4.937.100

Area 2	Positive displacement pump	4	129.015
	Mixing vessel	1	114.800
	Mixing vessel	1	149.240
SUB TOTAL			457.595

Area 3	Centrifugal pump	4	57 007
	Centrifugal pump	4	64 654
	Heat exchanger	2	143 645
	Liquefaction reactors	4	4 970 000
	Saccharification reactors	16	14 400 000
SUB TOTAL			19 635 307

Area 4	Heat exchanger	20	2 600 000
	Heat exchanger	10	550 000
	Heat exchanger	1	630 990
	Centrifugal pump	21	121 730
	Fermenter reactors	50	36 610 410
	Vessel	6	1 584 370
	Separator decanter	1	164 200
	Centrifuge	5	1 166 500
SUB TOTAL =			43 428 200

Area 5	Centrifugal pump	2	54 000
	Stirred tank mixer vessel	1	38 000
	Continuous gravity decanter	1	226 000
	Distillation column	2	1 718 000
	Reboiler absorber column	1	628 000

	Kettle reboiler	3	524 000
	Condenser	2	260 000

SUB TOTAL = 3 448 000

Area 6	Heat exchanger	2	14 850
	Sieve plate column	2	52 750
	Condenser	2	21 100
	Reboiler	2	79 300
	Centrifugal pump	4	4 640
	Reflux drum	2	12 800
	Acetone storage unit	1	70 000
	Ethanol storage unit	1	54 000
	Slop cut storage unit	1	12 400

SUB TOTAL = 321 840

TOTAL = 72 228 042

Table 6: Associated utility costs per annum

AREA	UTILITY	ANNUAL COST £
Area 1	Towns water, 20 °C	91.679
	Electricity	13.581.228
SUB TOTAL =		13 672 907
Area 2	Towns water, 20 °C	2 550 000
	LPS, 131 °C	1.830.000
	Electricity	29 100 000
SUB TOTAL =		33 480 000
Area 3	Towns water, 20 °C	10 362 816
	Cooling water, 18 °C	886.000
	LPS, 131 °C	7 970 000
	Electricity	28 458 900
SUB TOTAL =		47 677 716

Area 4	LPS, 131 °C	1 728 000
	Nitrogen	10 408 000
	Aqueous effluent disposal	17 924 961
	Electricity	9 450 127
SUB TOTAL =		39 511 088

Area 5	Cooling water, 18 °C	30 240
	Electricity	11 760
	IPS, 201 °C	1 740 720
	LPS, 131 °C	1 673 840
	Aqueous effluent disposal	679 488
SUB TOTAL =		4 136 048

Area 6	Cooling water, 18 °C	181 428
	LPS, 131 °C	322 072
	Electricity	3 412
	Nitrogen	2 793
	Towns water, 20 °C	260

	Compressed air	5
SUB TOTAL =		509 970

TOTAL = 138 987 729

6.2 Utilities and raw materials cost/area analysis for scenarios 1 & 2

Table 7: Utilities cost/area analysis for scenario 1

Ref. no	UTILITIES - COST/AREA ANALYSIS	AREA 1	AREA 2	AREA 3	AREA 4	AREA 5	AREA 6	UTILITY TOTAL (£)	% OF PLANT TOTAL
1	Towns water, 20 °C	91 679	2 550 000	10 362 816	0	0	260	13 004 754	9%
2	Air	0	0	0	0	0	0	0	0%
3	Electricity	13 581 228	29 100 000	28 458 900	9 450 127	11 760	3 412	80 605 427	58%
4	LPS, 131 °C	0	1 830 000	7 970 000	1 728 000	1 673 840	322 072	13 523 912	10%
5	Cooling water, 18 °C	0	0	886 000	0	30 240	181 428	1 097 668	1%
6	IPS, 201 °C	0	0	0	0	1 740 720	0	1 740 720	1%
7	Compressed air	0	0	0	0	0	5	5	0%
8	Nitrogen	0	0	0	10 408.000	0	2 793	10 410 793	7%
9	Aqueous effluent disposal	0	0	0	17 924 961	679 488	0	18 604 449	13%
AREA AND PLANT TOTALS		13 672 907	33 480 000	47 677 716	39 511 088	4 136 048	509 970	138 987 729	100%

Table 8: Raw materials cost/area analysis for scenario 1

Ref. no	RAW MATERIAL-PLANT COSTS	AREA 1	AREA 2	AREA 3	AREA 4	AREA 5	AREA 6	RAW MATERIAL TOTAL (£)	% OF PLANT TOTAL
1	Wheat	158 041 600	0	0	0	0	0	158 041 600	96%
2	α -amylase	0	0	60 960	0	0	0	60 960	0%
3	Glucoamylase	0	0	2 910 800	0	0	0	2 910 800	2%
4	Sulfuric acid	0	0	5 245	0	0	0	5 245	0%
5	Caustic soda	0	0		3 415 854	0	0	3 415 854	2%
AREA AND PLANT TOTALS		158 041 600	0	2 977 005	3 415 854	0	0	164 434 458	100%

Table 9: Utilities cost/area analysis for scenario 2

Ref. no	UTILITIES - COST/AREA ANALYSIS	AREA 1	AREA 2	AREA 3	AREA 4	AREA 5	AREA 6	UTILITY TOTAL (£)	% OF PLANT TOTAL
1	Towns water, 20 °C	91 679	2 550 000	10 362 816	0	0	260	13 004 754	11%
2	Air	0	0	0	0	0	0	0	0%
3	Electricity	13 581 228	20 370 000	18 498 285	9.450.127	11 760	3 412	61 914 812	52%
4	LPS, 131 °C	0	1 830 000	5 770 000	1 728 000	1 673 840	322 072	11 323 912	10%
5	Cooling water, 18 °C	0	0	886 000	0	30 240	181 428	1 097 668	1%
6	IPS, 201 °C	0	0	0	0	1 740 720	0	1 740 720	1%
7	Compressed air	0	0	0	0	0	5	5	0%
8	Nitrogen	0	0	0	10 408 000	0	2 793	10 410 793	9%
9	Aqueous effluent disposal	0	0	0	17 924 961	679 488	0	18 604 449	16%
AREA AND PLANT TOTALS		13 672 907	24 750 000	35 517 101	39 511 088	4 136 048	509 970	118 097 114	100%

Table 10: Raw materials cost/area analysis for scenario 2

Ref. no	RAW MATERIAL COSTS	AREA 1	AREA 2	AREA 3	AREA 4	AREA 5	AREA 6	RAW MATERIAL TOTAL (£)	% OF TOTAL
1	Wheat	158 041 600	0	0	0	0	0	158 041 600	96%
2	α -amylase	0	0	60 960	0	0	0	60 960	0%
3	Glucoamylase	0	0	2 910 800	0	0	0	2 910 800	2%
4	Sulfuric acid	0	0	5 245	0	0	0	5 245	0%
5	Caustic soda	0	0	0	3 415 854	0	0	3 415 854	2%
AREA AND PLANT TOTALS		158 041 600	0	2 977 005	3 415 854	0	0	164 434 458	100%

6.3 Assumptions employed in completing the cost summaries for scenarios 1 & 2

FIXED CAPITAL INVESTMENT - Estimate				S1	S2
Lang factor (Fluids-Solids type processing plant) (Sinnott et al., 2005 p252)				Relevant Cost	Relevant Cost
A. DIRECT COSTS				£	£
Equipment erection		0.45		32 502 619	27 103 813
Piping		0.45		32 502 619	27 103 813
Instrumentation		0.15		10 834 206	9 034 604
Electrical		0.10		7 222 804	6 023 070
Buildings		0.10		7 222 804	6 023 070
Land				2 876 500	2 876 500

Equipment		72 228 042	60 230 697
<u>SUB TOTAL</u>		165 389 593	138 395 567
B. INDIRECT COSTS			
Design and engineering	0.25	41 347 398	34 598 892
Contractor's fees	0.05	8 269 480	6 919 778
Contingency allowance (Incl. in working capital)	0.10	16 538 959	13 839 557
<u>SUB TOTAL</u>		66 155 837	55 358 227
<u>TOTAL FIXED CAPITAL INVESTMENT (A+B)</u>	1.40	231 545 431	193 753 794
<u>Notes:</u> 1. Estimates made from total equipment cost 2. S1: Scenario 1 - Original estimates 3. S2: Scenario 2 – Revised estimates following feasible cost reduction			

CAPEX	SCENARIO 1		SCENARIO 2	S2/S1
FIXED CAPITAL	£	Factor used %	£	%
Equipment cost	72 228 042		60 230 697	83.4%
Equipment erection and structural work	32 502 619		27 103 813	83.4%
Piping insulation and painting	32 502 619		27 103 813	83.4%
Instrumentation and control equipment	10 834 206		9 034 604	83.4%
Electrical power and lighting	7 222 804		6 023 070	83.4%
Process buildings and structures	7 222 804		6 023 070	83.4%
Land	2 876 500		2 876 500	100.0%
	<u>SUB-TOTAL</u>		138 395 567	83.7%

Design & engineering costs	41 347 398		34 598 892	83.7%
Contractor's fees	8 269 480		6 919 778	83.7%
<u>SUB-TOTAL</u>	49 616 878		41 518 670	83.7%
<u>TOTAL FIXED CAPITAL</u>	215 006 471		179 914 237	83.7%
WORKING CAPITAL	£		£	%
Start-up	3 000 000		2 300 000	76.7%
Initial catalyst charges	1 485 880		1 485 880	100.0%
Raw materials and intermediates in the process	21 500 647	5%	8 995 712	41.8%
Finished product inventories	10 750 324	5%	8 995 712	83.7%
Contingency allowance	16 538 959		13 839 557	83.7%
Funds to cover outstanding accounts from customers	0	0%	0	
<u>TOTAL WORKING CAPITAL</u>	53 275 810	20%	35 616 860	66.9%
<u>TOTAL CAPITAL INVESTMENT</u>	268 282 282		215 531 098	80.3%
OPEX	£	%	£	%
VARIABLE COSTS				
Raw materials	164 434 458		164 434 458	100.0%
Miscellaneous materials	1 505 045	10%	899 571	59.8%
Utilities	138 987 729		118 097 114	85.0%
<u>TOTAL VARIABLE COSTS</u>	304 927 232		283 431 143	93.0%
FIXED COSTS	£	%	£	%
Maintenance	15 050 453	5%	8 995 712	59.8%
Operating labour	15 171 109	5%	14 126 579	93.1%
Laboratory costs	3 034 222	20%	2 825 316	93.1%
Supervision	2 063 100		2 063 100	100.0%
Plant overheads	7 585 555	50%	7 063 289	93.1%

Capital charges - Buildings	722 280	10%	602 307	83.4%
Capital charges - Equipment	7 222 804	10%	6 023 070	83.4%
Tax - Gaseous emissions	232 480	10%	232 480	100.0%
Tax – Corporation tax (19%)	0		0	
<u>TOTAL FIXED COSTS</u>	51 082 003		41 931 852	82.1%
<u>TOTAL VARIABLE & FIXED COSTS</u>	356 009 236		325 362 995	91.4%
INDIRECT	£	%	£	%
Sales expense	15 246 362	3%	8 502 934	55.8%
Insurance	4 300 129	2%	3 598 285	83.7%
Royalties and licence fees	2 499 316	1%	1 249 658	50.0%
General overheads	9 147 817	3%	8 502 934	93.0%
R&D *	0	0%	0	
<u>TOTAL INDIRECT COSTS</u>	31 193 624		21 853 811	70.1%
<u>TOTAL OPEX</u>	387 202 860		347 216 807	89.7%
Notes: (1) – of total fixed capital (2) – of maintenance costs (3) – of total operating costs (4) – of total operating labour (5) – of total direct production costs (6) – of total sales * Assumed no R&D as royalties and fees are paid				

Figure 2: Cost summary breakdown for scenarios 1 & 2 including key assumptions employed (Sinnott et al., 2005 p.261-267)

6.4 Cash flow statements for both scenarios 1 & 2 including discounted cash flow calculations at two different discount rates

[illegible]

4	TAX - CORPORATION TAX		0																
	<u>TOTAL FIXED COSTS</u>		0	45	48	51	54	58	61	65	69	73	77	82	87	92	97	103	0
	<u>TOTAL VARIABLE & FIXED COSTS</u>		0	363	378	394	411	429	447	466	486	507	528	551	575	599	625	630	0
	<u>INDIRECT</u>																		
	SALES EXPENSE 0,25 OF DIRECT PRODUCTION COST			16	16	17	18	19	19	20	21	22	23	23	24	25	26	27	
	GENERAL OVERHEADS			10	10	10	11	11	12	12	13	13	14	14	15	15	16	16	
	R&D			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	<u>TOTAL INDIRECT COSTS</u>		0	25	26	27	29	30	31	32	33	35	36	38	39	41	42	44	0
	<u>TOTAL CASH OUTFLOW FROM OPEX</u>		0	388	405	422	440	458	478	498	519	541	565	589	614	640	668	674	0
	<u>TOTAL CASH OUTFLOW</u>		215	441	405	422	440	458	478	498	519	541	565	589	614	640	668	674	0
CASH INFLOW																			
BUTANOL			107	112	118	124	130	137	144	151	158	166	174	183	192	202	212		
ETHANOL			8	9	9	10	10	11	11	12	12	13	14	14	15	16	17		
ACETONE			15	15	15	15	15	15	15	15	15	15	15	15	15	15	15		
HYDROGEN			1	1	1	1	1	1	1	1	1	1	1	1	2	2	2		
<u>TOTAL CASH INFLOW FROM SALES</u>		0	131	137	143	150	156	163	171	179	187	195	204	214	224	234	245	0	
WORKING CAPITAL RELEASE		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	53	
LAND REALEASE		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
<u>TOTAL CASH INFLOW</u>		0	131	137	143	150	156	163	171	179	187	195	204	214	224	234	245	56	
<u>NET CASH INFLOW / -OUTFLOW</u>		-215	-310	-268	-279	-290	-302	-314	-327	-341	-355	-369	-384	-400	-416	-433	-429	56	
<u>NET CASH INFLOW / -OUTFLOW CUMULATIVE</u>		-215	-525	-793	-1 071	-1 361	-1 663	-1 978	-2 305	-2 646	-3 001	-3 370	-3 754	-4 154	-4 570	-5 003	-5 432	-5 376	
7	DISCOUNT RATE (i)	5%	105%	110%	116%	122%	128%	134%	141%	148%	155%	163%	171%	180%	189%	198%	208%	218%	
	DISCOUNT FACTOR		0,952	0,907	0,864	0,823	0,784	0,746	0,711	0,677	0,645	0,614	0,585	0,557	0,530	0,505	0,481	0,458	
	DCF	-215	-295	-243	-241	-239	-237	-235	-233	-231	-229	-227	-225	-223	-221	-219	-206	26	
	CUMULATIVE DCF	-215	-510	-753	-994	-1 232	-1 469	-1 704	-1 936	-2 167	-2 395	-2 622	-2 847	-3 070	-3 290	-3 509	-3 715	-3 690	
8	DISCOUNT RATE (i)	10%	110%	116%	121%	127%	134%	140%	147%	155%	163%	171%	179%	188%	198%	207%	218%	229%	
	DISCOUNT FACTOR		0,909	0,866	0,825	0,785	0,748	0,712	0,678	0,646	0,615	0,586	0,558	0,532	0,506	0,482	0,459	0,437	
	DCF	-215	-282	-232	-230	-228	-226	-224	-222	-220	-218	-216	-214	-213	-211	-209	-197	24	
	CUMULATIVE DCF	-215	-497	-729	-958	-1 186	-1 412	-1 636	-1 858	-2 078	-2 296	-2 513	-2 727	-2 940	-3 150	-3 359	-3 556	-3 532	
NOTES:																			
1	Estimated Inflation rate per year used as follows:																		
	ANNUAL INCREASE - estimate FOR VARIABLE COSTS		4%																
	ANNUAL INCREASE - estimate FOR FIXED COSTS		6%																
	ANNUAL INCREASE - estimate FOR SALES		5%																
2	Working capital included in year 1 and not in year 0 as it is assumed that it will be incurred at the end of year 0 (Dec 2020) and after completion of construction of plant																		
3	Emissions tax (Gaseous emissions) is paid 1 year in arrears																		

4	There is no corporation tax liability	
5	VAT is ignored for simplicity	
6	It is assumed that equipment/buildings have no scrap value at the end of the project	
7	DISCOUNT RATE (i) %	5
	1. INTEREST RATE	3%
	2. INFLATION	2%
8	DISCOUNT RATE (i) %	10
	1. INTEREST RATE	8%
	2. INFLATION	2%

Figure 3 : Cash flow statement assuming 15 year operating life for plant, including DCF analysis for scenario 1

CASH-FLOW STATEMENT - PERIOD: 15 YEARS (SCENARIO 2)	YR0	YR1	YR2	YR3	YR4	YR5	YR6	YR7	YR8	YR9	YR10	YR11	YR12	YR13	YR14	YR15	YR16
CURRENCY: £ Millions	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
ANNUAL INCREASE - estimate FOR VARIABLE COSTS		104%	104%	104%	104%	104%	104%	104%	104%	104%	104%	104%	104%	104%	104%	104%	104%
ANNUAL INCREASE - estimate FOR FIXED COSTS		106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%	106%
ANNUAL INCREASE - estimate FOR SALES		105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%	105%
CASH OUTFLOW																	
FIXED CAPITAL																	
EQUIPMENT COST	60																
EQUIPMENT ERECTION, FOUNDATIONS AND STRUCTURAL WORK	27																
PIPING INSULATION AND PAINTING	27																
INSTRUMENTATION AND CONTROL EQUIPMENT	9																
ELECTRICAL POWER AND LIGHTING	6																
PROCESS BUILDINGS AND STRUCTURES	6																
LAND	3																
DESIGN AND ENGINEERING COSTS	35																
CONTRACTOR'S FEES	7																
TOTAL CASH OUTFLOW FROM FIXED CAPITAL	180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WORKING CAPITAL																	
START-UP		2															
INITIAL CATALYST CHARGES		1															
RAW MATERIALS FOR INTERMEDIATES IN THE PROCESS		9															
FINISHED PRODUCT INVENTORIES		9															
CONTIGENCY ALLOWANCE		14															
FUNDS TO COVER OUTSTANDING ACCOUNTS FROM CUSTOMERS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL CASH OUTFLOW FROM WORKING CAPITAL	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OPEX																	
VARIABLE COSTS																	
RAW MATERIALS		171	178	185	192	200	208	216	225	234	243	253	263	274	285	287	0
MISCELLANEOUS MATERIALS		1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	0
UTILITIES	0	123	128	133	138	144	149	155	162	168	175	182	189	197	205	213	0

<u>TOTAL CASH OUTFLOW VARIABLE COSTS</u>	0	295	307	319	332	345	359	373	388	403	420	436	454	472	491	501	0
<u>FIXED COSTS</u>																	
MAINTENANCE		10	10	11	11	12	13	14	14	15	16	17	18	19	20	22	
OPERATING LABOUR		15	16	17	18	19	20	21	23	24	25	27	28	30	32	34	
LABORATORY COSTS		3	3	3	4	4	4	4	5	5	5	5	6	6	6	7	
SUPERVISION		2	2	2	3	3	3	3	3	3	4	4	4	4	5	5	
PLANT OVERHEADS (65% OF LABOUR COSTS)		7	7	8	8	9	9	10	11	11	12	13	13	14	15	16	
CAPITAL CHARGES - BUILDINGS		0															
CAPITAL CHARGES - EQUIPMENT		0															
TAX - GASEOUS EMISSIONS		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TAX - CORPORATION TAX		0															
<u>TOTAL FIXED COSTS</u>	0	37	39	42	44	47	49	52	55	59	62	66	70	74	79	83	0
<u>TOTAL VARIABLE & FIXED COSTS</u>	0	332	346	360	376	391	408	425	443	462	482	502	524	546	569	584	0
<u>INDIRECT</u>																	
SALES EXPENSE 0,25 OF DIRECT PRODUCTION COST		9	9	10	10	10	11	11	12	12	13	13	14	14	15	15	
INSURANCE		4	4	4	4	4	5	5	5	5	5	6	6	6	6	6	
ROYALTIES & LICENSE FEES		1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	
GENERAL OVERHEADS		9	9	10	10	10	11	11	12	12	13	13	14	14	15	15	
R&D		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<u>TOTAL INDIRECT COSTS</u>	0	23	24	25	26	27	28	29	30	31	32	34	35	36	38	39	0
<u>TOTAL CASH OUTFLOW FROM OPEX</u>	0	354	369	385	401	418	436	454	473	493	514	536	559	583	607	624	0
<u>TOTAL CASH OUTFLOW</u>	180	390	369	385	401	418	436	454	473	493	514	536	559	583	607	624	0
<u>CASH INFLOW</u>																	
BUTANOL		107	112	118	124	130	137	144	151	158	166	174	183	192	202	212	
ETHANOL		8	9	9	10	10	11	11	12	12	13	14	14	15	16	17	
ACETONE		15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	
HYDROGEN		1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	
<u>TOTAL CASH INFLOW FROM SALES</u>	0	131	137	143	150	156	163	171	179	187	195	204	214	224	234	245	0
WORKING CAPITAL RELEASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36
LAND REALEASE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
<u>TOTAL CASH INFLOW</u>	0	131	137	143	150	156	163	171	179	187	195	204	214	224	234	245	38
NET CASH INFLOW / -OUTFLOW	-180	-259	-232	-242	-252	-262	-272	-283	-295	-307	-319	-332	-345	-359	-373	-379	38
NET CASH INFLOW / -OUTFLOW CUMULATIVE	-180	-439	-671	-913	-1164	-1426	-1698	-1982	-2276	-2583	-2902	-3233	-3578	-3937	-4310	-4689	-4650
DISCOUNT RATE (i)	5%	105%	110%	116%	122%	128%	134%	141%	148%	155%	163%	171%	180%	189%	198%	208%	218%
DISCOUNT FACTOR		0,952	0,907	0,864	0,823	0,784	0,746	0,711	0,677	0,645	0,614	0,585	0,557	0,530	0,505	0,481	0,458
DCF	-180	-246	-211	-209	-207	-205	-203	-201	-199	-198	-196	-194	-192	-190	-188	-182	18
CUMULATIVE DCF	-180	-426	-637	-846	-1053	-1258	-1461	-1663	-1862	-2060	-2255	-2449	-2641	-2832	-3020	-3202	-3184
DISCOUNT RATE (i)	10%	110%	116%	121%	127%	134%	140%	147%	155%	163%	171%	179%	188%	198%	207%	218%	229%

DISCOUNT FACTOR		0,909	0,866	0,825	0,785	0,748	0,712	0,678	0,646	0,615	0,586	0,558	0,532	0,506	0,482	0,459	0,437
DCF	-180	-235	-201	-199	-198	-196	-194	-192	-190	-189	-187	-185	-183	-182	-180	-174	17
CUMULATIVE DCF	-180	-415	-616	-816	-1013	-1209	-1403	-1595	-1786	-1974	-2161	-2346	-2529	-2711	-2891	-3065	-3048
NOTES: Same as for Scenario 1 Cash Flow Statement																	

Figure 4: Cash flow statement assuming 15-year operating life for plant, including DCF analysis for scenario 2