

APPENDIX 1. CAPACITY INCREASE ACHIEVED IN AUSTRALIAN PROCESS PLANTS

APPENDIX 1.1 CAPACITY DATA FOR CHEMICAL PLANTS

PRODUCT	COMPANY AND LOCATION	START-UP YEAR	INITIAL CAPACITY (kt/yr)	REFERENCE YEAR	CAPACITY IN REFERENCE YEAR (kt/yr)	CURRENT STATUS	CAPACITY RATIO Q_2/Q_1	TIME PERIOD (yrs)	EQUIVALENT RATE OF CAPACITY GROWTH (% per annum)	REFERENCE	
Ethylene	A.P.C. Altona	1961	45	1985	0	1985		24		17	
	A.P.C. Altona	1970	100	1985	0	1985		15		18	
	I.C.I. Botany	1967	63	1983	S	1983	1.59	16	2.9	C	
	I.C.I. Botany	1983	250	1985	0	1985		2		20	
	I.C.I. Botany	1944	8	1980	90-100	0	1985	12.0	36	6.9	19,1
	I.C.I. Osborne	1940	50	1984	350	0	1985	7.0	44	4.4	3,4
Soda Ash	I.C.I. Botany	1970		1983	S	1983		13			
	I.C.I. Botany	1963		1985	31	0	1985	>1.3	22	>1.2	5,20
Ethylene Oxide	I.C.I. Botany	1966	40	1985	60	0	1985	1.5	19	2.1	6,20
Vinyl Chloride Monomer	I.C.I. Botany	1957	7	1983	100	0	1985	14.3	26	10.2	12,7
Low Density Polyethylene	Compol Altona	1961	7	1980	50	0	1985	7.1	19	10.3	1,8
	Hoechst Altona	1967	12	1980	18	0	1985	1.5	13	3.1	1,8
High Density Polyethylene	Hoechst Altona	1972	24	1980	30	0	1985	1.25	8	2.8	1,8
	Compol Altona	1972	27	1980	32	0	1985	1.19	8	2.1	1,8
Polyvinyl Chloride	I.C.I. Botany	1954	5	1980	52	0	1985	10.4	26	9.0	1
	B.F.G. Altona	1961	37	1980	62	0	1985	1.7	19	2.7	1
	I.C.I. Laverton	1979	50	1980	50	0	1985				

14001

APPENDIX 1.1 CAPACITY DATA FOR CHEMICAL PLANTS (Continued)

PRODUCT	COMPANY AND LOCATION	START-UP YEAR	INITIAL CAPACITY (kt/yr)	REFERENCE YEAR	CAPACITY IN REFERENCE YEAR (kt/yr)	CURRENT STATUS	CAPACITY RATIO Q_2/Q_1	TIME PERIOD (Yrs)	EQUIVALENT RATE OF CAPACITY GROWTH (% per annum)	REFERENCE
Polypropylene	Shell Clyde	1971	25	1983	35	0 1985	1.4	12	2.8	20
	Hoechst Altona	1973	24	1985	34	0 1985	1.4	12	2.8	20
	I.C.I. Botany	1979	40	1985	0	0 1985	1.4	12	2.8	20
	Shell Geelong	1979	30	1984	45	0 1985	1.5	5	8.1	20
	A.C.B. Altona	1959	27	1980	45	0 1985	1.67	21	2.4	8
Carbon Black	Cont. Carbon Kurnell	1965	13.5	1982	23.5	0 1985	1.74	17	3.3	8,C
	Phillips Kurnell	1966	13.5	1980	16	0 1985	1.19	14	1.2	8
	I.C.I. Botany	1963	0	1980	30	0 1985	1.5	24	1.4	1,20
Synthetic Rubber	A.S.R. Altona	1961	30	1985	45	0 1985	1.5	24	1.4	1,20
Styrene	Dow Altona	1961	15-20	0	0 1985	0 1985	1.5	24	1.4	6
	HPPL Footscray	1976	100	0	0 1985	0 1985	1.5	24	1.4	18
Phenol	Monsanto Footscray	1942	1.4	1968	3.9	S 1968	2.8	26	4.0	C
	Monsanto Footscray	1969	15	1982	16.8	0 1985	1.12	13	0.9	C
Oxo alcohols	C.S.R.C. Rhodes	1967	20	1980	28	0 1985	1.4	13	2.6	8
Acetaldehyde	C.S.R.C. Rhodes	1970	15	1980	15	0 1985	1.0	10	Nt1	8
Vinyl Acetate	C.S.R.C. Rhodes	1971	12	1980	12	0 1985	1.0	9	Nt1	8
Acetic Acid	C.S.R.C. Rhodes	1974	21	1980	21	0 1985	1.0	6	Nt1	8
Phthallic Anhydride	C.S.R.C. Rhodes	1968	14	1983	18	0 1985	1.3	15	1.8	8

APPENDIX 1.1 CAPACITY DATA FOR CHEMICAL PLANTS (Continued)

PRODUCT	COMPANY AND LOCATION	START-UP YEAR	INITIAL CAPACITY (kt/yr)	REFERENCE YEAR	CAPACITY IN REFERENCE YEAR (kt/yr)	CURRENT STATUS	CAPACITY RATIO Q_2/Q_1	TIME PERIOD (Yrs)	EQUIVALENT RATE OF CAPACITY GROWTH (% per annum)	REFERENCE
Anhydrous Ammonia	C.F. Gibson Is.	1969	192	1980	195	0 1985	1.02	11	N:1	8
	C.F. Kooragang	1969	175	1980	180	0 1985	1.03	11	N:1	8
	K.N. Kwinana	1966	100	1980	90	0 1985	0.9	14	N:1	8
Ammonium Nitrate	C.F. Kooragang	1969	150	1980	158	0 1985	1.05	11	N:1	8
	K.N. Kwinana	1966	110	1980	110	0 1985	1.0	14	N:1	8
Urea	C.F. Kooragang	1969	209	1980	202	0 1985	0.97	11	N:1	8
Ammonium Phosphates	C.F. Gibson Is.	1969		1980	95	0 1985				8

NOTES

1. Combined capacity of two APC Ethylene plants reported as 165,000 tonnes/yr in 1984 (20)
2. 'C' in Reference column indicates company provided data for relevant row of table.
3. Capacity ratio (Q_2/Q_1) represents the ratio of the expanded to the initial capacity over the time period stipulated.
4. '0' denotes plants still operating in 1985. 'S' denotes shutdown in year specified.
5. Age of plants (see Section 1.1 in main text) has been estimated from start up year to latest year of operation (1985 in most cases).

APPENDIX 1.2 - CAPACITY DATA FOR MINERAL PROCESSING PLANTS

PRODUCT	COMPANY AND LOCATION	START-UP YEAR	INITIAL CAPACITY (kt/yr)	REFERENCE YEAR	CAPACITY IN REFERENCE YEAR (kt/yr)	CURRENT STATUS	CAPACITY RATIO Q ₂ /Q ₁	TIME PERIOD (yrs)	EQUIVALENT RATE OF CAPACITY GROWTH (% per annum)	REFERENCE
Nickel Matte (Smelter)	W.M.C. No. 1 Flash Furnace	1970	200	1978	360	0 1985	1.8	8	7.3	C
	Kalgoorlie No. 2 Flash Furnace	1978	350	1985	474	0 1985	1.35	7	4.3	C
Nickel (Refinery)	W.M.C. Kwinana	1970	15	1980	30	0 1985	2.0	10	4.6	13
Aluminium (Smelters)	Comalco, Bell Bay	1955	12	1984	120	0 1985	10.0	29	7.9	C
	Alcoa, Point Henry	1963	20	1980	100	0 1985	5.0	17	9.5	13
	Tomago	1983	110			0 1985				
	Boyne Island	1982	103			0 1985				
Alumina (Refineries)	QAL, Gladstone	1967	720	1980	2400	0 1985	3.3	13	9.2	C
	Nabalco, Gove	1972	600	1980	1200	0 1985	2.0	8	8.7	13
	Alcoa, Pinjarra	1972	420	1980	2400	0 1985	5.7	8	21.8	13
Copper	ECR, Townsville	1958	40	1980	155	0 1985	3.9	22	6.2	13
Iron Ore (Pellet Plants)	BHP, Whyalla	1968	1520	1980	2000	0 1985	1.3	12	2.2	13
	Hammersley, Dampier	1968	2000	1980	3000	0 1985	1.5	12	3.4	13
Iron (Blast Furnaces)	BHP, Whyalla (No.1)	1941	210	1980	385	S	1.83	39	1.6	13
	BHP, Kwinana	1968	750	1980	928	S 1982	1.24	12	1.8	13
Zinc (Blast Furnace)	CRA, Cockle Creek	1961	35.5	1980	68	0 1985	1.9	19	3.4	13
Titanium dioxide	Laporte, Bunbury	1964	10	1980	36	0 1985	3.6	16	8.0	13

14031

APPENDIX 1.3 - CAPACITY DATA FOR PETROLEUM PROCESSING PLANTS

PRODUCT	COMPANY AND LOCATION	START-UP YEAR	INITIAL CAPACITY ('000 bpsd)	REFERENCE YEAR	CAPACITY IN REFERENCE YEAR ('000 bpsd)	CURRENT STATUS	CAPACITY RATIO Q_2/Q_1	TIME PERIOD (yrs)	EQUIVALENT RATE OF CAPACITY GROWTH (% per annum)	REFERENCE
Catalytic Cracking	Amoco Bulwer Is.	1965	10	1981	11.5	0 1985	1.12	16	0.7	8,14
	Ampol Lytton	1965	19	1981	26	0 1985	1.37	16	2.0	8,14
	B.P. Kwinana	1955	12.5	1981	22	0 1985	1.92	28	2.3	8,14
	P.R.A. Altona	1955	16.5	1981	30	0 1985	1.82*	26	2.3	8,14
	Shell Clyde	1955	14.5	1981	25	0 1985	1.19	11	1.6	8,14
	Shell Geelong	1955	14.5	1981	24	0 1985	1.65	26	1.9	8,14
Alkylation	Ampol Lytton	1965	2.5	1981	4.0	0 1985	1.6	16	2.9	8,14
	P.R.A. Altona			1981	2.9	0 1985	1.32*	11	2.5	8,14
	Shell Clyde			1981	3.6	0 1985	1.5	11	3.7	8,14
Crude Distillation	B.P. Crib Point	1955	70	1981	60	S 1984	1.2	11	1.7	8,14
	B.P. Kwinana	1955		1981	110	0 1985	1.57*	26	1.7	8,14
	P.R.A. Altona	1955		1981	100	0 1985	1.18	11	1.5	8,14

-404-

NOTES.

1. Capacities of all units detailed for 1970 (14). Reference (14) has extensive capacity data for refinery units for 1970, 1981.
2. Capacities expressed in terms of feedstock processed.
3. * indicates capacity increase achieved over time interval 1970 to 1981.

REFERENCES TO DATA LISTED IN APPENDIX 1

1. H. Hudson 'Cooper Basin - Exploration, Development and Pricing Issues' Paper presented at a Conference on 'Natural Gas in Australia' Melbourne, November 1980.
2. ICI Forum Newsheet on FM21 Membrane Cell Technology, March 1983.
3. A. Hunter and L. R. Webb 'The Chemical Industry'. Chapter 9 in 'The Economics of Australian Industry. Studies in Environment and Structure.' Ed. A. Hunter, Melbourne University Press, 1963.
4. R. Aitala 'Exports of Natural Soda Ash from the U.S.A. explode in 1984.' Proceedings of the 6th 'Industrial Minerals' International Congress. RAI to RAI1.
5. I.C.I. (Aust.) Circle, 15 May 1981.
6. International Technical Services Ltd. 'A Study of the Rate of Diffusion of New Technology within Australian Industry. Section 10. The Heavy Organic Chemical Industry.' Australian Govt. Publishing Service, 1972.
7. Australian Chemical Industry Council, Annual Report 1983.
8. Australian Institute of Petroleum. 'The Figures Behind the Facts. Annual Issues.
9. Shell Chemical (Aust.) P.L. Submission to Industries Assistance Commission on Government Enquiry into Chemicals and Plastics Industries, 1985.
10. European Chemical News, 28 January, 1972.
11. European Chemical News, 13 July 1981.
12. European Chemical News, 12 February 1979.
13. Australian Institute of Mining and Metallurgy. 'Mining and Metallurgical Practice in Australia.' Monograph No.11, Aus.I.M.M. 1980.
14. Dept. of National Development and Energy 'Oil Refining Technology in Australia - Status and Outlook' Australian Govt. Publishing Service, 1983.
15. Bureau of Industry Economics. Submission to Industries Assistance Commission on Government Enquiry into Chemicals and Plastics Industries, 1985.
16. Altona Petrochemical Company. Submission to Industries Assistance Commission on Government Enquiry into Chemicals and Plastics Industries, 1985.
17. Australian Financial Review. Feature on 'Altona Petrochemical Complex' October 18, 1971.
18. D. Magasanik and I. J. Robinson, 'Recent Development of the Process and Mineral Industries in Australia.' The Chemical Engineer, September 1977, pp. 620-623 and 628.
19. I. H. Lehrner 'The Australian Chemicals Industry' Process and Chemical Engineering, December 1976, pp. 13-17.
20. Industries Assistance Commission 'Draft Report on The Chemicals and Plastics Industries' Australian Government Publishing Service, December 1985.