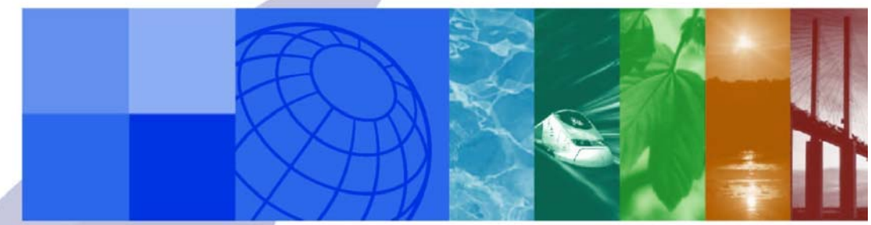
CPIP Consortium

Port of New York & New Jersey
Comprehensive Port Improvement Plan



Volume 2: Toolkit

August 2005

Halcrow
with
Gannett Fleming
and
MDS Transmodal
Duncan Maritime
Moffatt & Nichol Engineers
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1 Introduction

1 Introduction

1.1 Toolkit

To aid in the evaluation and assessment of future proposed port projects, a toolkit of information for each of the CPIP designated sites has been prepared, based on the site Options identified and assessed during the course of the CPIP study.

This Toolkit forms Volume Two of the CPIP.

Information for each site, including existing and proposed land use & capacity, navigational details, and Option financial & economic analysis are provided in this toolkit, together with general information and a summary of parameters used in the CPIP study.

The information presented in the toolkit pages has been summarised, for ease of reference. Details and derivations of the values and parameters used are provided in Volume One of the CPIP.

1.2 Toolkit Structure

The toolkit is divided into chapters.

The first chapter contains this introduction and also details of port wide, and general parameters used in the study. It also provides a summary of the all the Options proposed.

Chapters Two to Nine provide site specific information, and are set out on a site by site basis.

Chapter Ten provides a summary of highway traffic levels and improvement proposals.

Chapter Eleven provides a summary of assessed rail constraints and improvement proposals.

Chapter Twelve contains details of the Scenarios, where the proposed Options are combined to form an arrangement that meets, or exceeds, the overall forecast demand.

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Forecast demand	
Cargo type	**Year 2060**
Containers	11,300,000 TEU
Automobiles	1,100,000 units
General Cargo	2,530,000 Tons
Dry Bulk Cargo	6,170,000 Tons
Liquid Bulk Cargo	5,090,000 Tons

Table 1.1
Ref : Chapter 3, Volume 1, CPIP.

Area requirements for 2060			
Cargo type	**Land productivity**	**Forecast demand**	**Land area requirement (acres)**
Containers	5,000 lifts/acre/year	6,650,000 lifts[1]	1,330
Automobiles	1,900 units/acre/year	1,100,000 units	580
General Cargo	20,100 tons/acre/year	2,530,000 tons	130
Dry Bulk Cargo	71,500 tons/acre/year	6,170,000 tons	90
Liquid Bulk Cargo	285,000 tons/acre/year	5,090,000 tons	20
		Total required for Cargo	**2,150**
		Road and Rail[2]	350
		Warehousing[2]	140
		Support[2]	140
		Total	**2,780**

Table 1.2
[1] 11.3m TEU converted at 1.7 TEU per lift.
[2] Areas allocated vary according to the space available in the particular arrangement
Ref : Chapter 6, Volume 1, CPIP.

CPIP sites				
Site	**Existing operational & support area (acres)**	**Potential acquisition area (acres)**	**Potential waterfront fill (acres)**	**Total area (acres)**
Port Newark North (PNN)	380	0	0	380
Port Newark South (PNS)	580	0	0	580
Port Elizabeth (PE)	1120	230	0	1350
Port Jersey (PJ)	246	0	20	266
Bayonne Peninsula	150	0	0	150
Howland Hook (HH)	147	118	3	268
North Brooklyn (NB)	80	50	0	130
South Brooklyn (SB)	80	112	130	322
Total Available	**2,783**	**510**	**153**	**3,446**

Table 1.3
Ref : Ref : Chapter 7, Volume 1, CPIP.

Future berth productivity values	
Cargo type	
Containers	Crane rate increased from 25 lifts per hour to 35 and, exceptionally 40 lifts per hour.
Automobiles	Typical rate of 100 units per hour.
General Cargo	169 tons per berth per hour.
Dry Bulk Cargo	10,000 tons per berth per day
Liquid Bulk Cargo	4,000 tons per berth per hour.

Table 1.4
Ref : Chapter 6, Volume 1, CPIP.

2060 vessel parameters							
Type	**Length (ft)**	**Beam (ft)**	**Draft (ft)**	**Capacity / size**	**Berth length (ft)**	**Berth depth (ft)**	**Berth pocket width (ft)**
Container Ship	1214	141	47.5	12,000 TEU	1,300	50	180
Auto Carrier	656	105	33	6,000 units	750	37	150
General Cargo Ship	600	88	36	27,000 DWT	650	40	100
Dry Bulk Cargo Ship	617	92	36	36,000 DWT	700	40	130
Liquid Bulk Cargo Ship	710 (longest)	92	36	36,000 DWT	800 to 870	40	130

Table 1.5
Ref : Chapter 4, Volume 1, CPIP.

Options data								
Option	**Cargo type**	**Area**	**Location**	**Number of berths**	**Capacity**	**Infrastructure cost ($m)**	**Financial assessment ranking (per cargo)**	**Breakeven price ($)**
C1	Container	180 acres	Port Newark South	3	1,530,000 TEU/year	24.3	7	157 per TEU
C2	Container	260 acres	Port Newark South	3	2,210,000 TEU/year	96.6	5	151 per TEU
C3	Container	480 acres	Port Elizabeth	5	4,080,000 TEU/year	133.0	3	146 per TEU
C4	Container	510 acres	Port Elizabeth	5.2	4,340,000 TEU/year	93.8	4	148 per TEU
C5	Container	101 acres	Port Jersey	2	859,000 TEU/year	73.6	14	213 per TEU
C6	Container	90 acres	Port Jersey	2	765,000 TEU/year	186.5	10	168 per TEU
C7	Container	191 acres	Port Jersey	3	1,624,000 TEU/year	217.2	11	174 per TEU
C8	Container	100 acres	Bayonne Peninsula	2	850,000 TEU/year	178.5	8	162 per TEU
C9	Container	150 acres	Bayonne Peninsula	2	1,280,000 TEU/year	215.4	6	156 per TEU
C10	Container	213 acres	Howland Hook	3	1,810,000 TEU/year	282.1	13	191 per TEU
C11	Container	147 acres	Howland Hook	2	1,250,000 TEU/year	55.0	9	168 per TEU
C12	Container	350 acres	Port Elizabeth	4	2,980,000 TEU/year	12.0	1	139 per TEU
C13	Container	475 acres	Port Elizabeth	5	4,040,000 TEU/year	33.1	2	143 per TEU
C14	Container	260 acres	South Brooklyn	4	2,210,000 TEU/year	890.1	12	187 per TEU
A1	Auto	210 acres	Port Newark North	2	399,000 units/year	11.1	10	263 per unit
A2	Auto	245 acres	Port Newark North	3	466,000 units/year	14.2	9	130 per unit
A4	Auto	270 acres	Port Newark South	3	513,000 units/year	23.8	2	36 per unit
A8	Auto	131 acres	Port Jersey	2	249,000 units/year	11.2	11	n/a
A9	Auto	150 acres	Bayonne Peninsula	2	285,000 units/year	62.6	5	55 per unit
A10	Auto	50 acres	Bayonne Peninsula	1	95,000 units/year	41.5	8	84 per unit
A11	Auto	50 acres	South Brooklyn	1	95,000 units/year	35.3	6	76 per unit
A12	Auto	80 acres	South Brooklyn	2	152,000 units/year	63.6	7	82 per unit
A13	Auto	190 acres	Port Newark South	2	361,000 units/year	12.4	1	35 per unit
A14	Auto	180 acres	Port Newark South	2	342,000 units/year	33.0	4	49 per unit
A15	Auto	335 acres	Port Newark South	3	636,500 units/year	67.4	3	46 per unit
G1	General Cargo	100 acres	North Brooklyn	10	2,010,000 tons/year	173.5	2	104 per ton
G2	General Cargo	130 acres	North Brooklyn	12	2,613,000 tons/year	393.4	3	167 per ton
G3	General Cargo	30 acres	South Brooklyn	4	603,000 tons/year	57.6	2	104 per ton
G4	General Cargo	130 acres	Port Newark South	12	2,613,000 units/year	282.6	1	22 per ton
D1	Dry Bulk	87 acres	Port Newark North	5	6,220,000 tons/year	39.8	1	8 per ton
D2	Dry Bulk	40 acres	Port Newark North	3	2,860,000 units/year	27.1	2	9 per ton
D4	Dry Bulk	50 acres	South Brooklyn	3	3,580,000 tons/year	86.1	3	11 per ton
L1	Liquid Bulk	18 acres	Port Newark North	2	5,130,000 tons/year	39.7	3	9 per ton
L2	Liquid Bulk	30 acres	Port Newark North	2	6,490,000 tons/year	36.1	2	8 per ton
L3	Liquid Bulk	20 acres	Port Newark South	2	5,700,000 tons/year	56.2	4	10 per ton
L4	Liquid Bulk	20 acres	Port Newark South	1	1,800,000 tons/year	23.0	1	-1 per ton

Table 1.6
Ref : Chapters 7 & 11, Volume 1, CPIP.

Wetland usage and compensation			
Option	**Estimated Wetland Area (acres)**	**Area to be Provided in Compensation (acres)**	**Cost ($m)**
C3 - Port Elizabeth	27	81	10.4
C5 - Port Jersey	1	3	0.4
C6 - Port Jersey	7	21	2.7
C7- Port Jersey	7	21	2.7
C9 - Bayonne Peninsula	17	51	6.5
C10 - Howland Hook	15	45	18.1
C14 - South Brooklyn	14	42	17.0
A8 - Port Jersey	1	3	0.4
A9 - Bayonne Peninsula	17	51	6.5
A10 - Bayonne Peninsula	17	51	6.5

Table 1.7
Ref : Chapter 12, Volume 1, CPIP

Areas of wetland in scenarios	
Scenario	**Area of Wetland (acres)**
Orange	67
Red	51
Yellow	19
Blue	33

Table 1.8
Ref : Chapter 12, Volume 1, CPIP