REPUBLIC OF THE PHILIPPINES

DEPARTMENT OF
PUBLIC WORKS AND HIGHWAYS

THE DETAILED DESIGN STUDY FOR THE PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE IV)

FINAL REPORT (PRIOR RELEASE VERSION)

VOLUME-2
APPENDIX

AUGUST 2020

JAPAN INTERNATIONAL COOPERATION AGENCY

CTI ENGINEERING INTERNATIONAL CO., LTD.
JAPAN WATER AGENCY
NIPPON KOEI CO., LTD.
CTI ENGINEERING CO., LTD.

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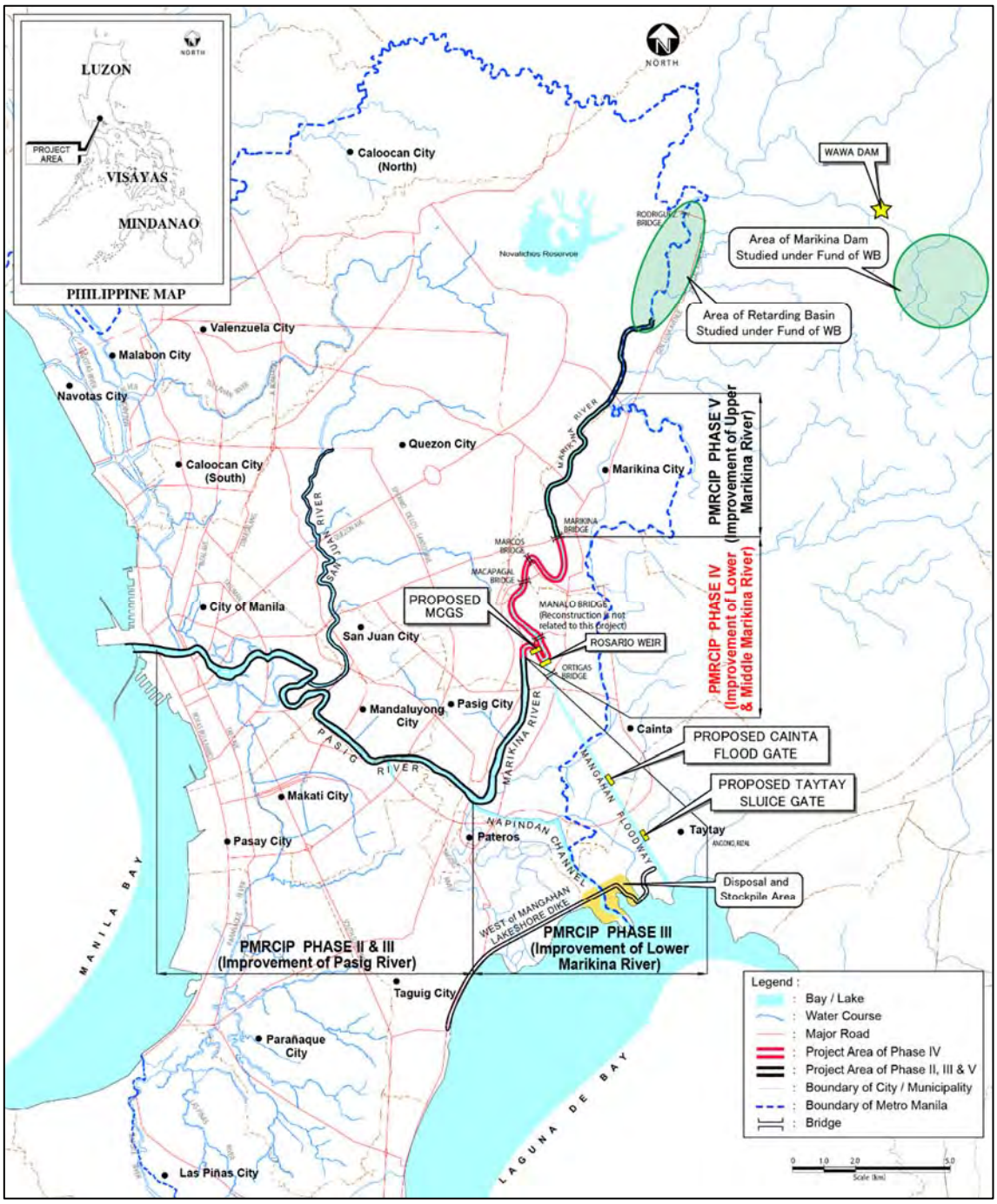
COMPOSITION OF FINAL REPORT
(PRIOR RELEASE VERSION)

VOLUME-1A	**:**	**MAIN REPORT (CHAPTER 1 to 6)**
VOLUME-1B	**:**	**MAIN REPORT (CHAPTER 7 / 7.1 to 7.3)**
VOLUME-1C	**:**	**MAIN REPORT (CHAPTER 7 / 7.4 to 7.6)**
VOLUME-1D	**:**	**MAIN REPORT (CHAPTER 8 to 12)**
VOLUME-2	**:**	**APPENDIX**
VOLUME-3	**:**	**APPENDIX FOR GEOTECHNICAL INVESTIGATION**

EXCHANGE RATES USED IN THE REPORT:
PHP 1.0 = JPY 2.15
US $1.0 = JPY 108.9 = PHP 50.7
(November 2019)



PROJECT LOCATION MAP

THE DETAILED DESIGN STUDY FOR THE PASIG-MARIKINA RIVER CHANNEL IMPROVEMENT PROJECT (PHASE IV)

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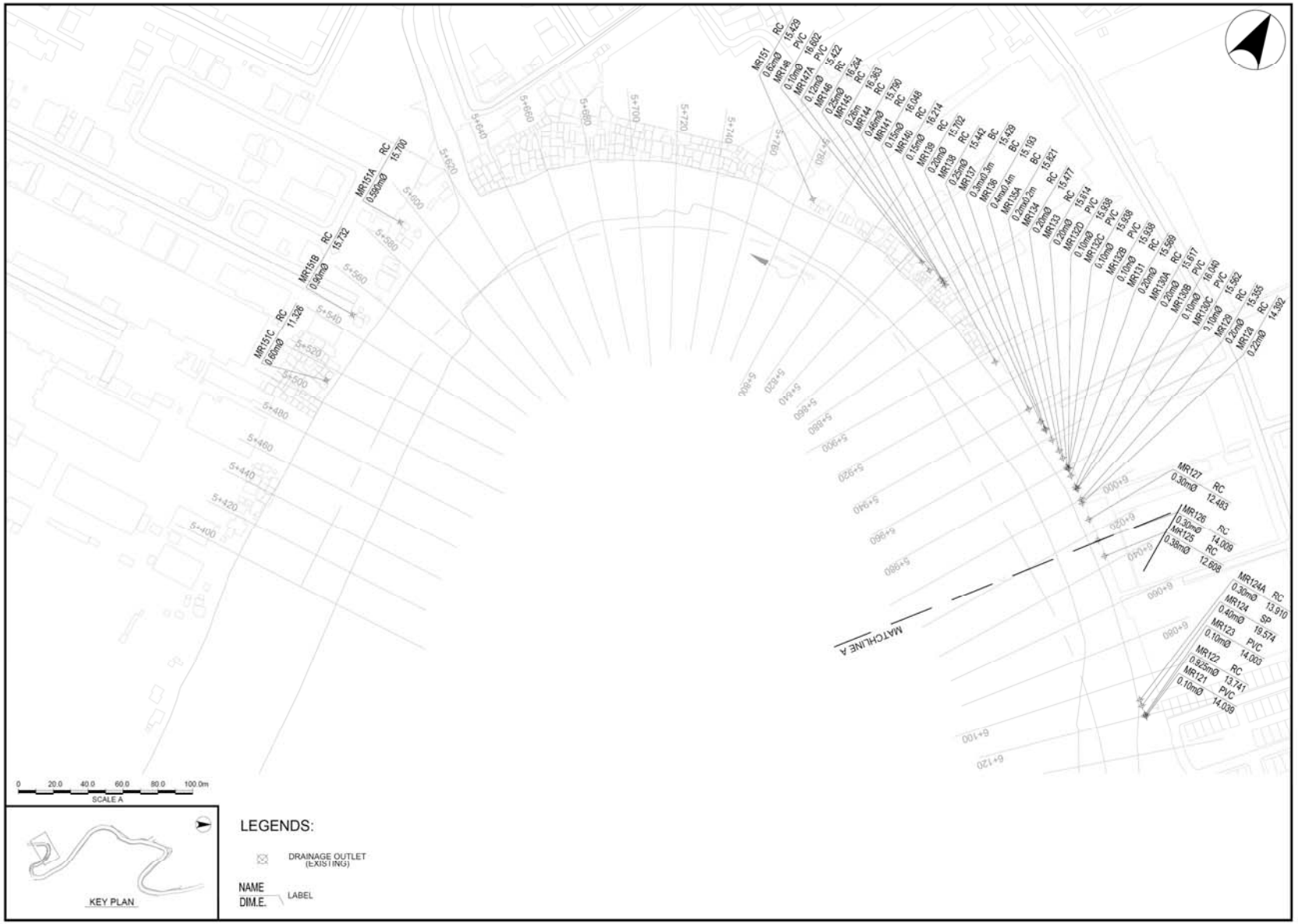

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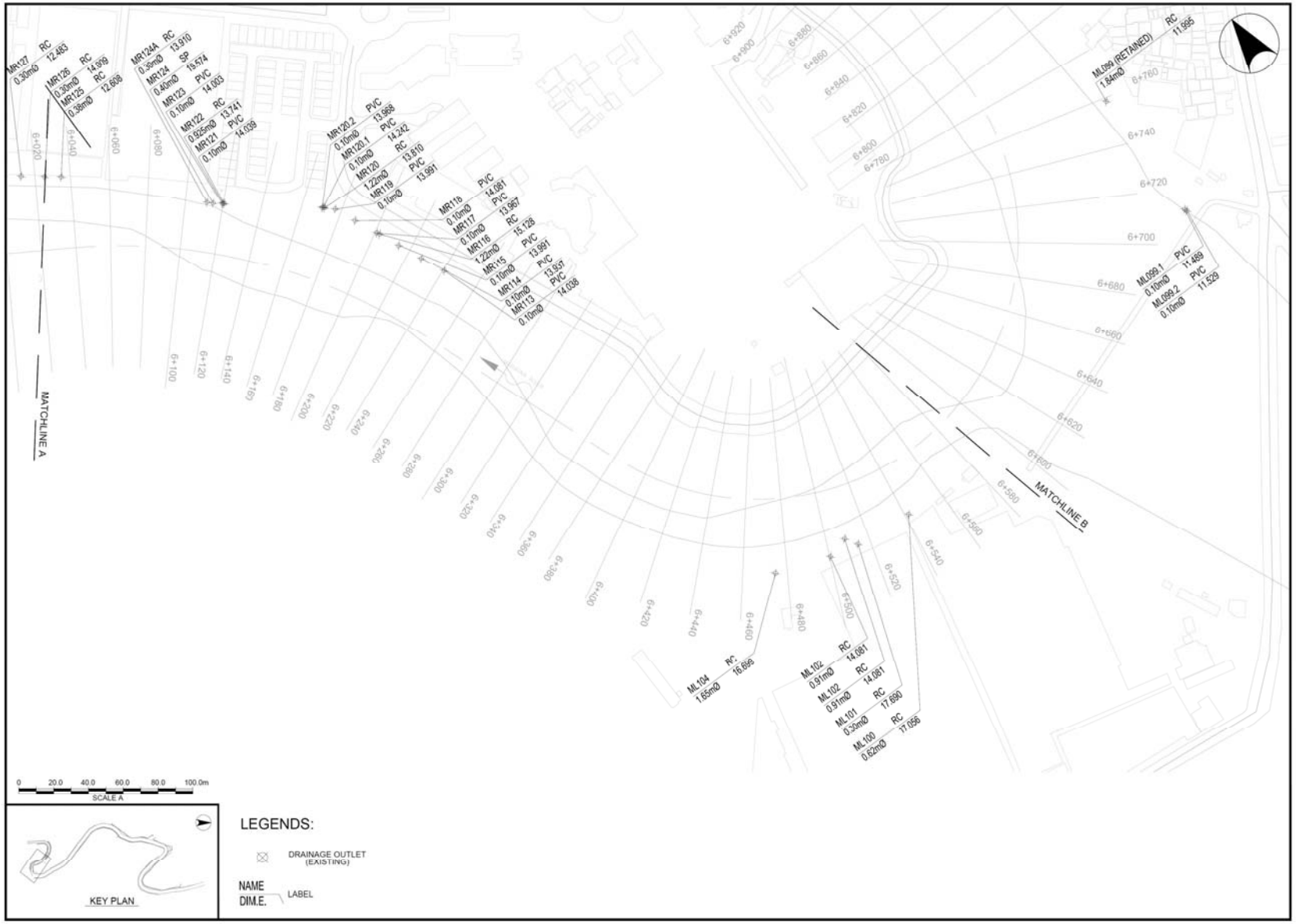

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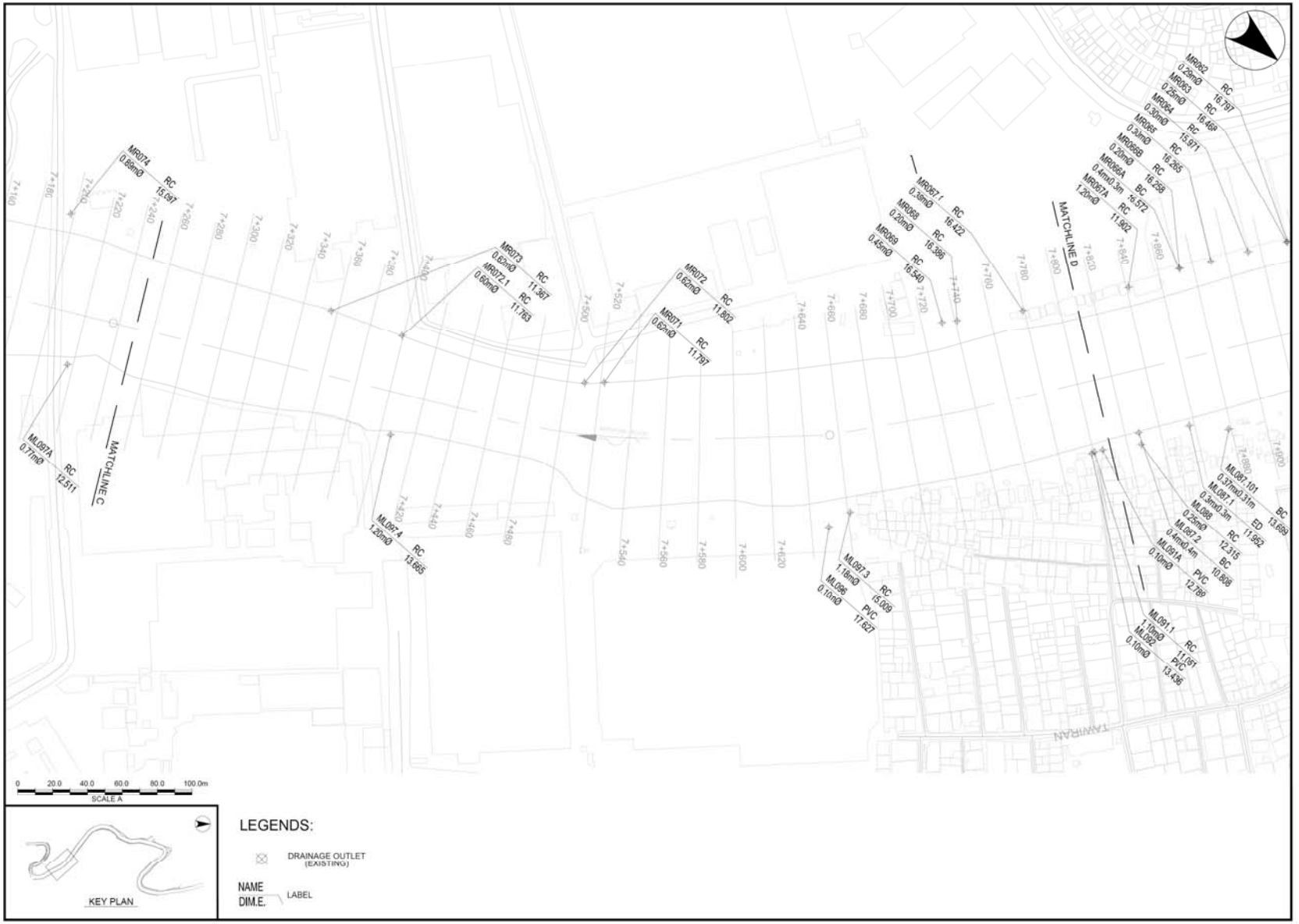

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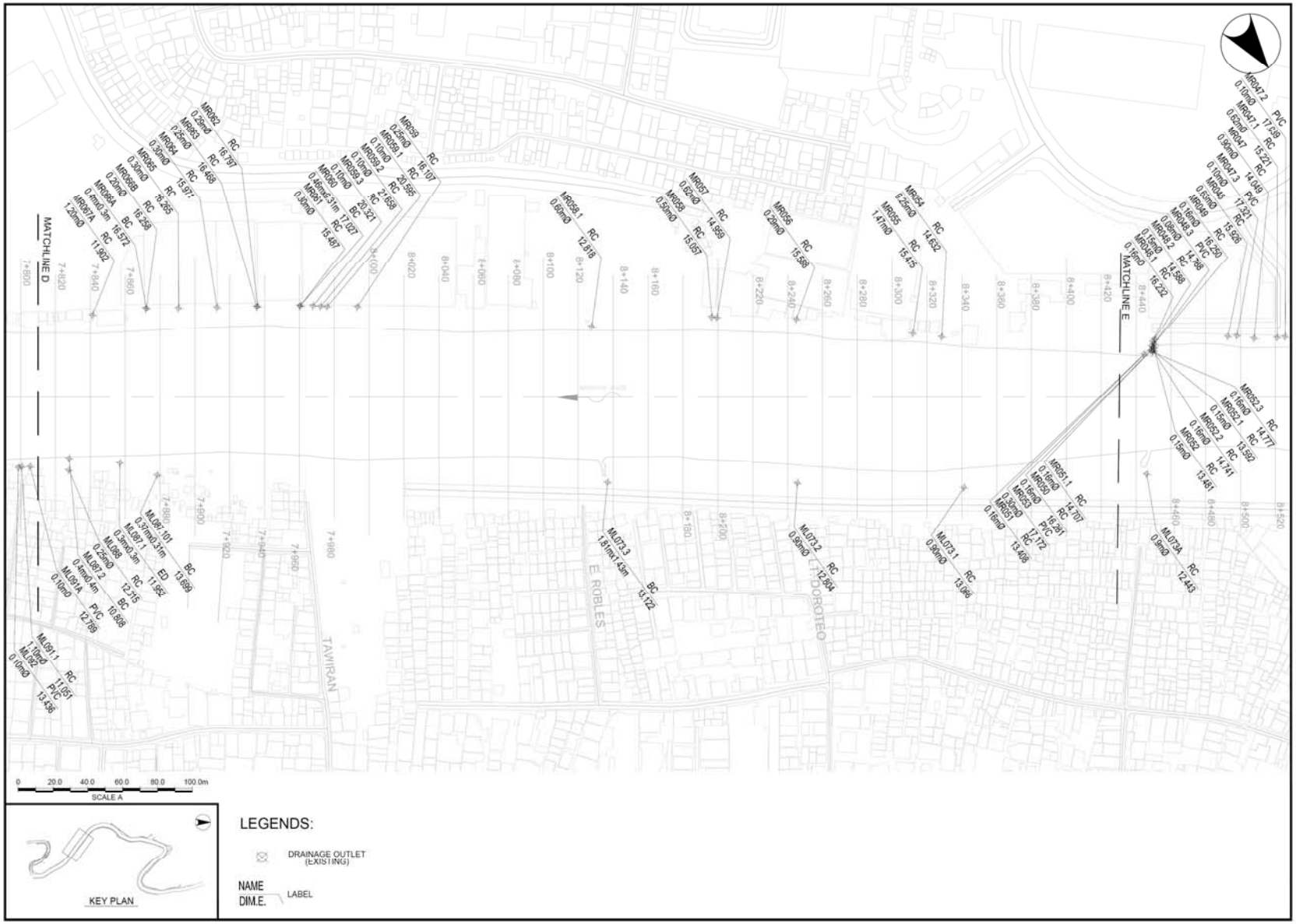

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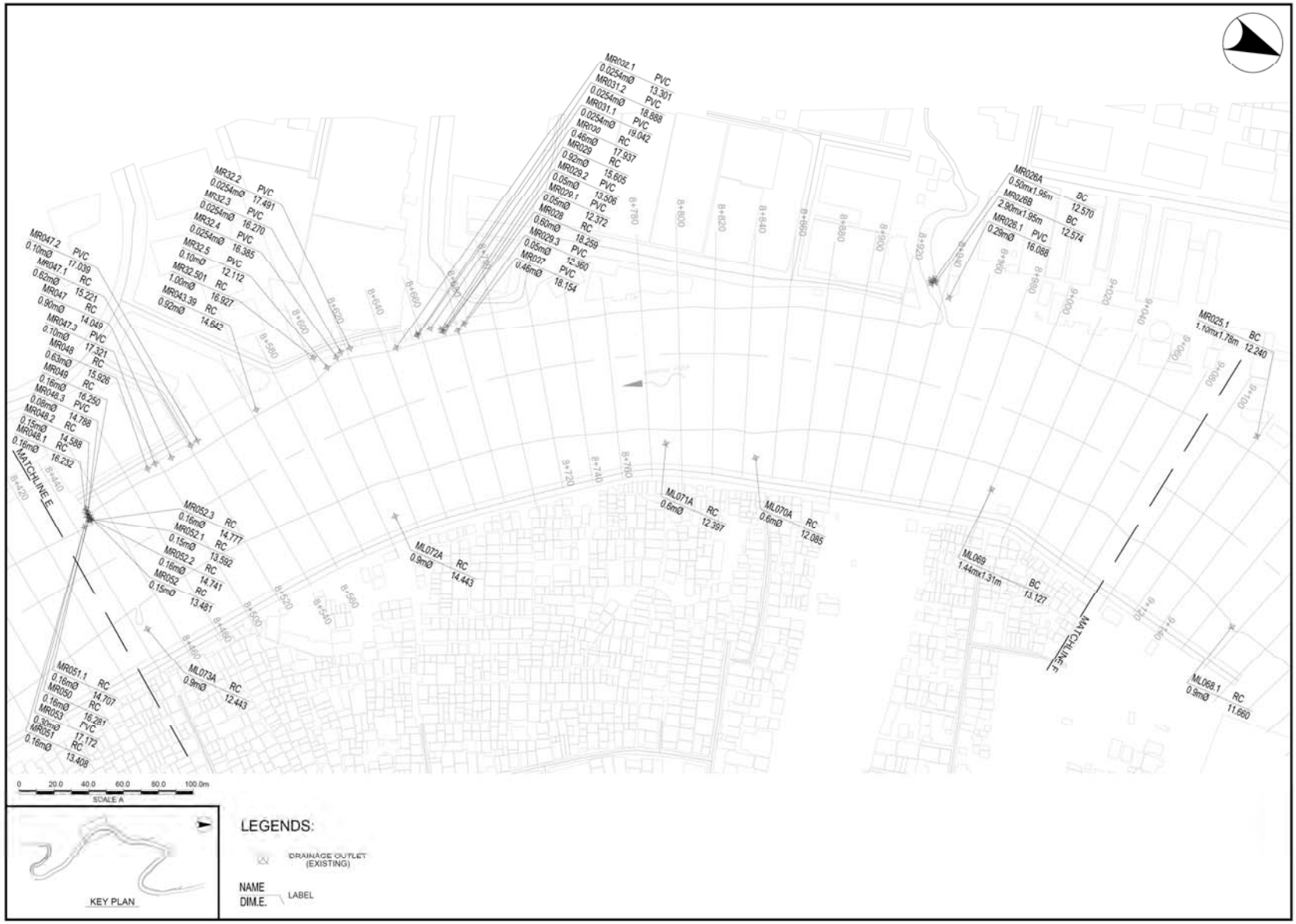

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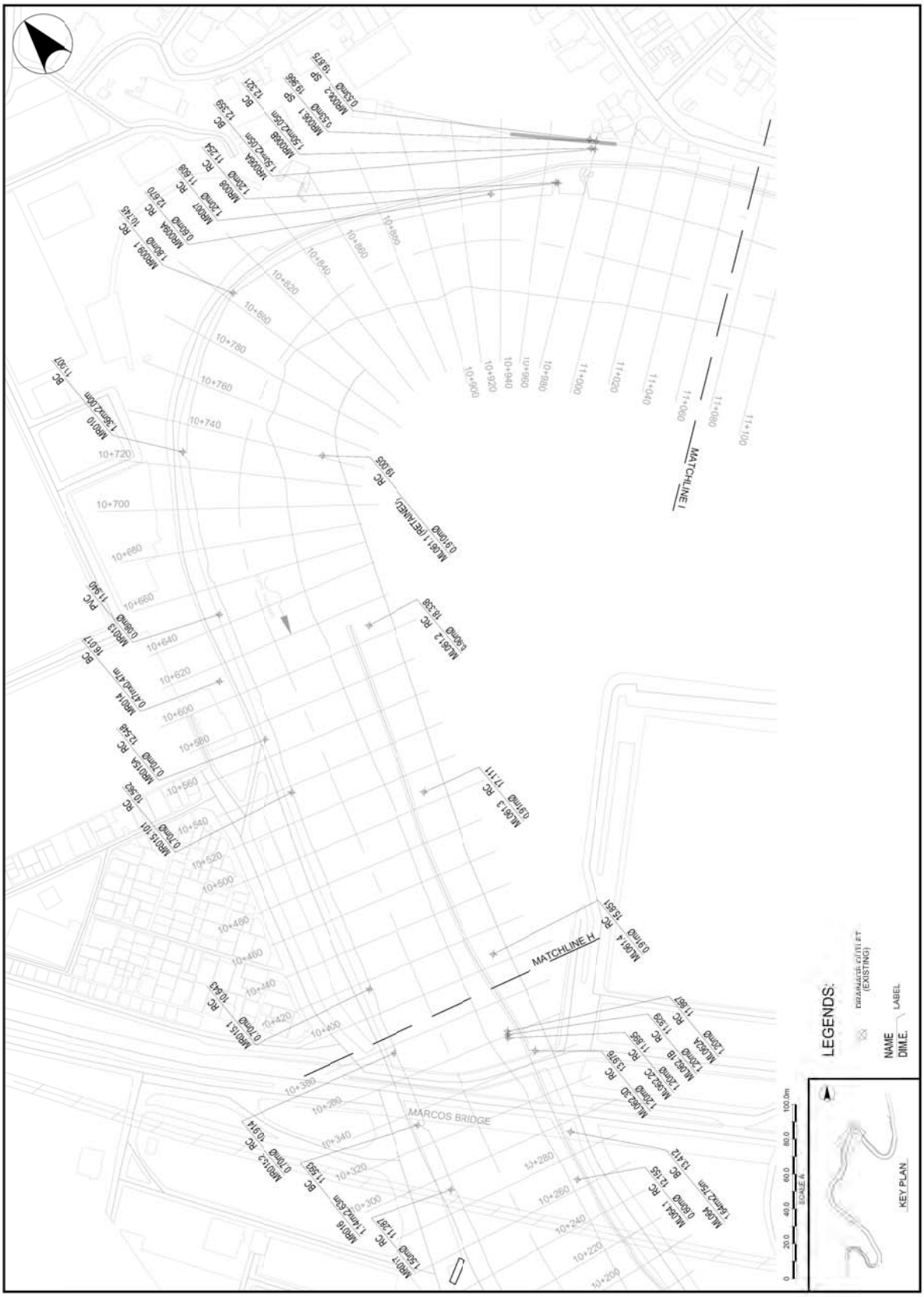

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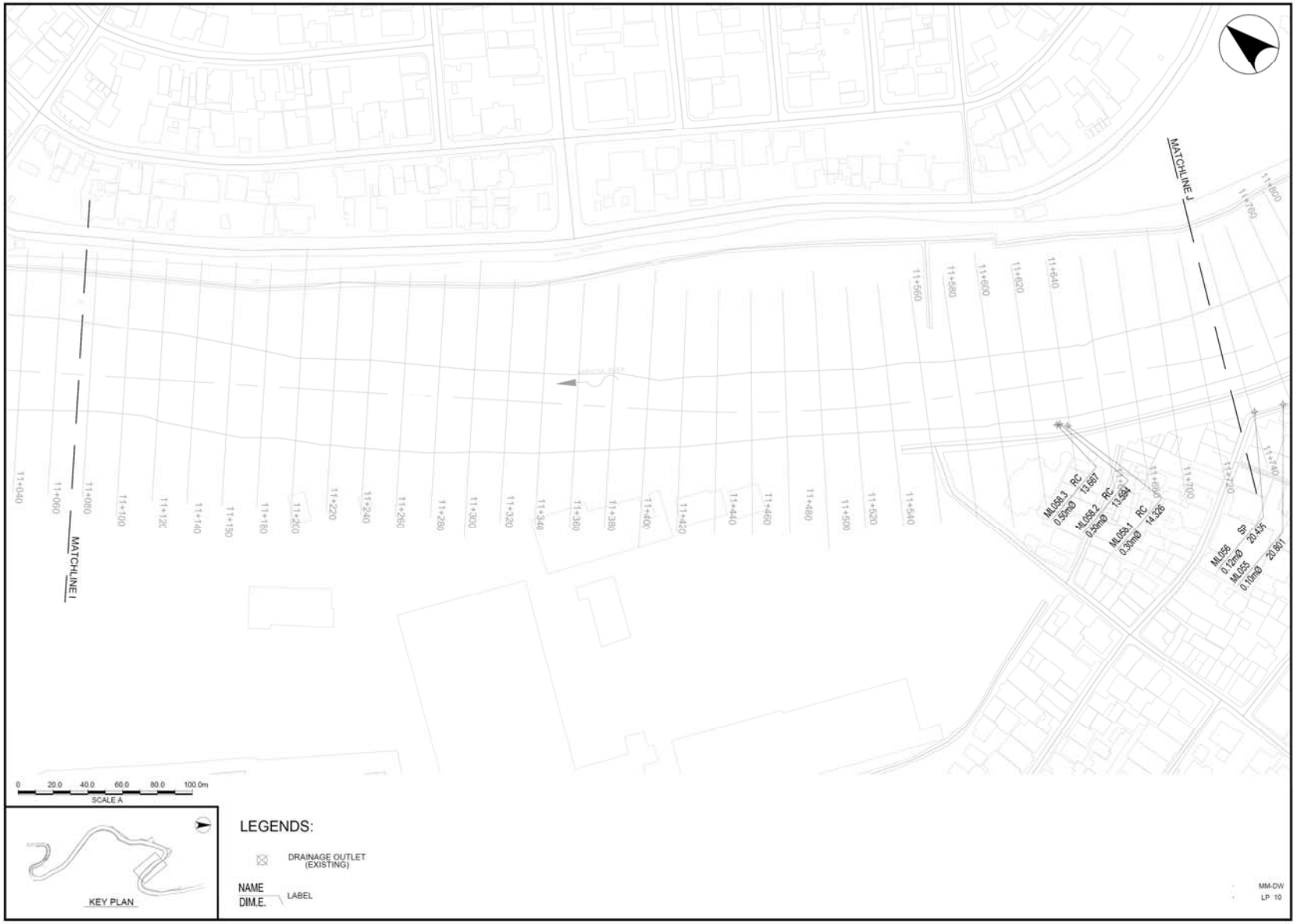

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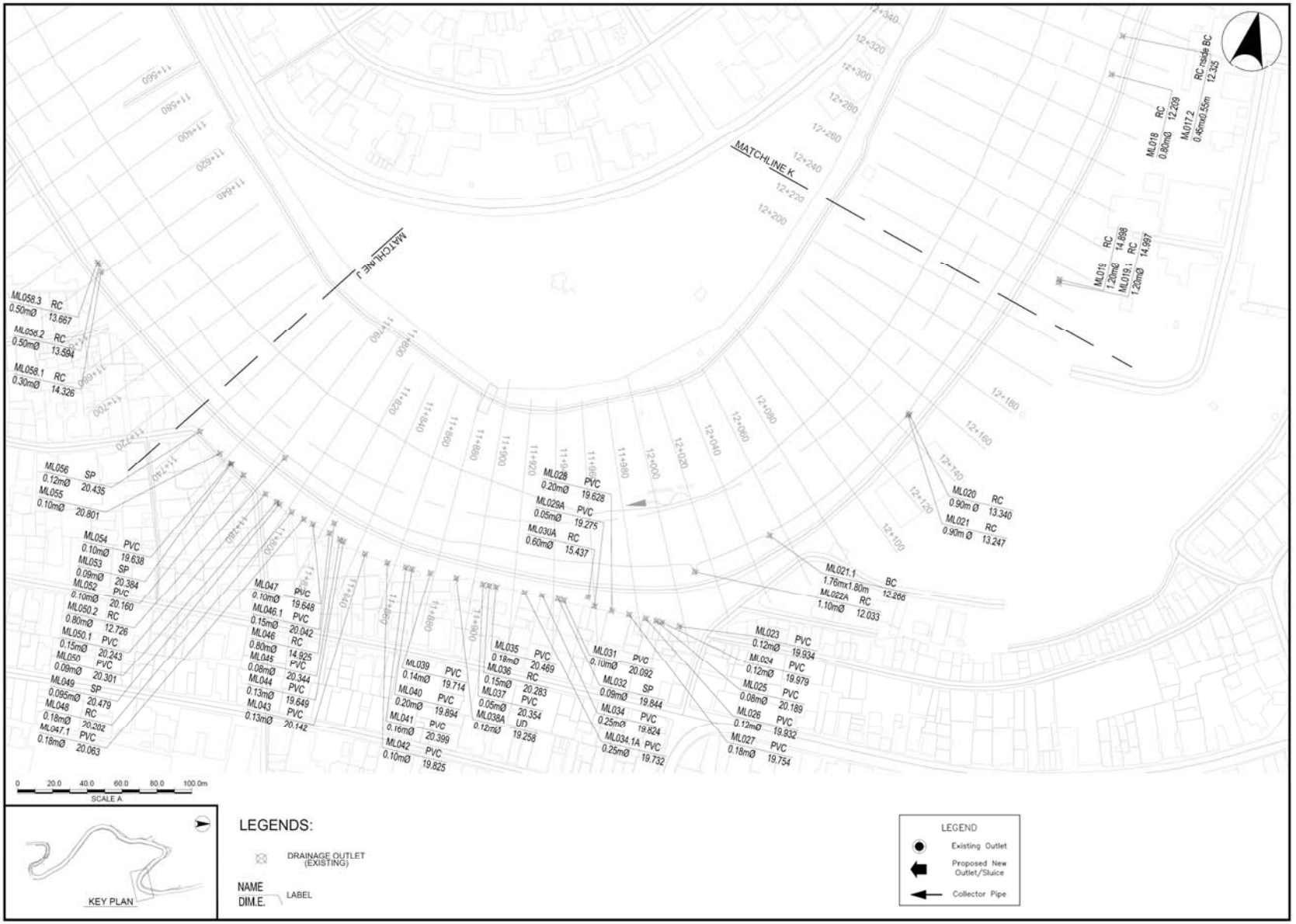

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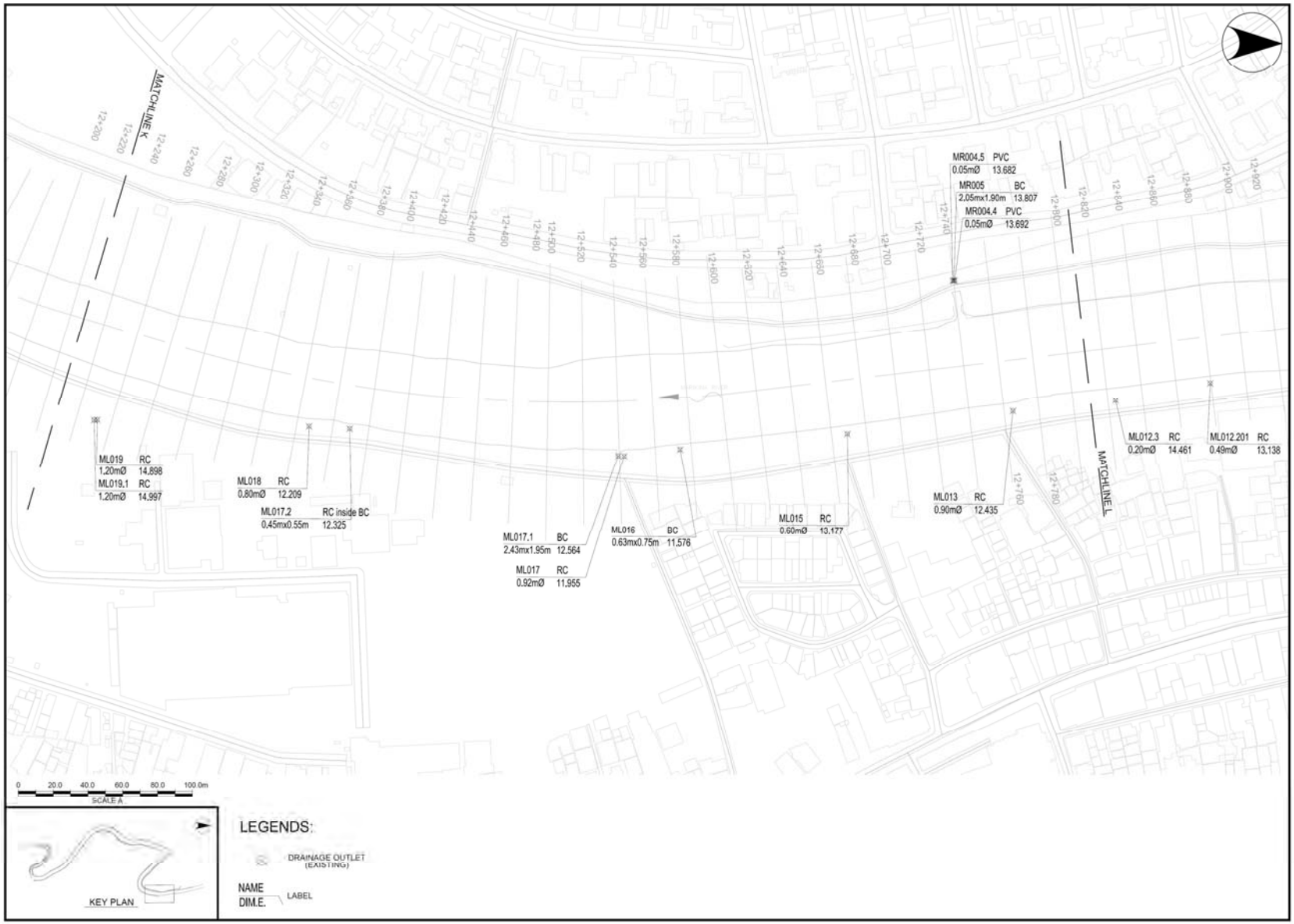

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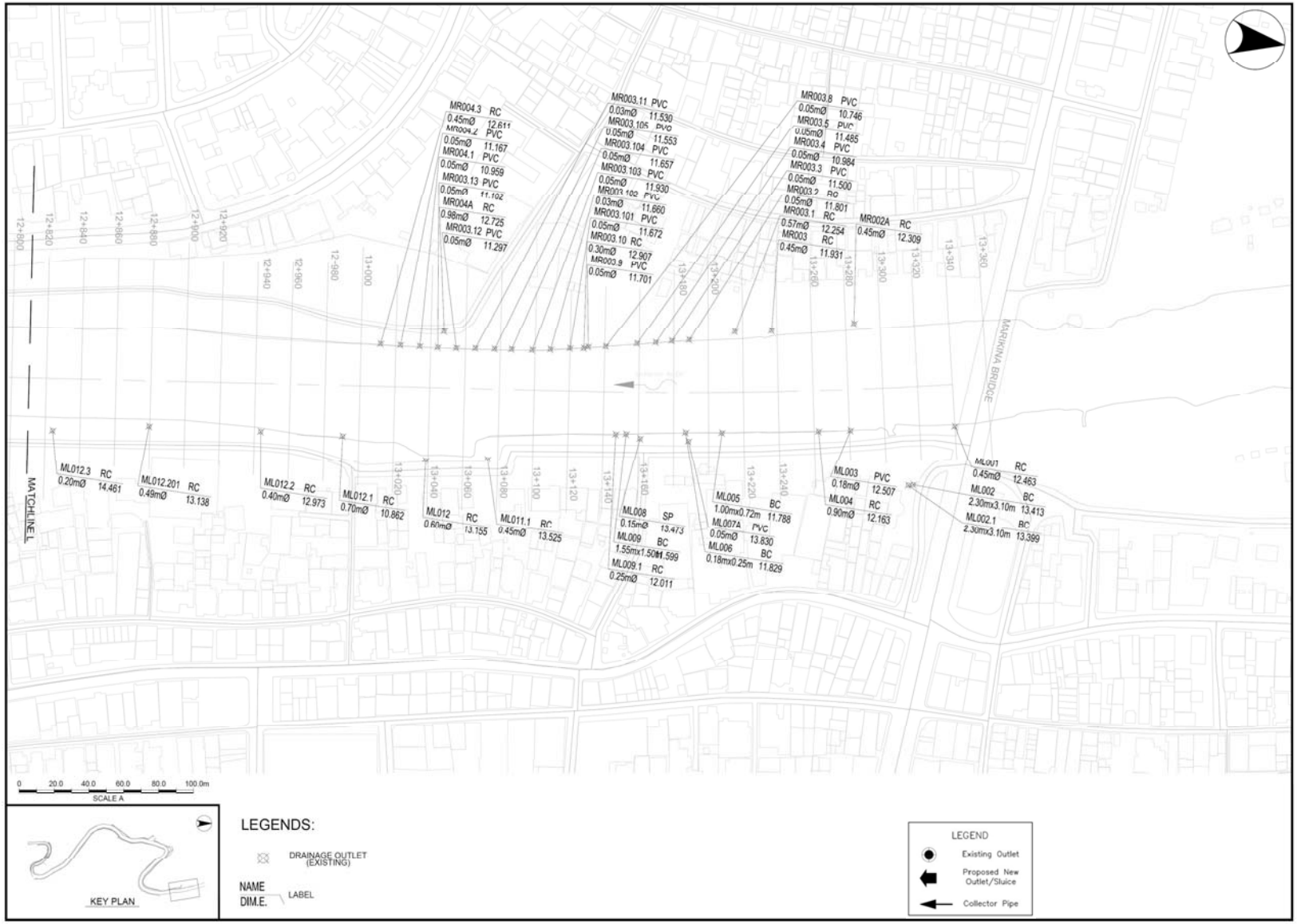

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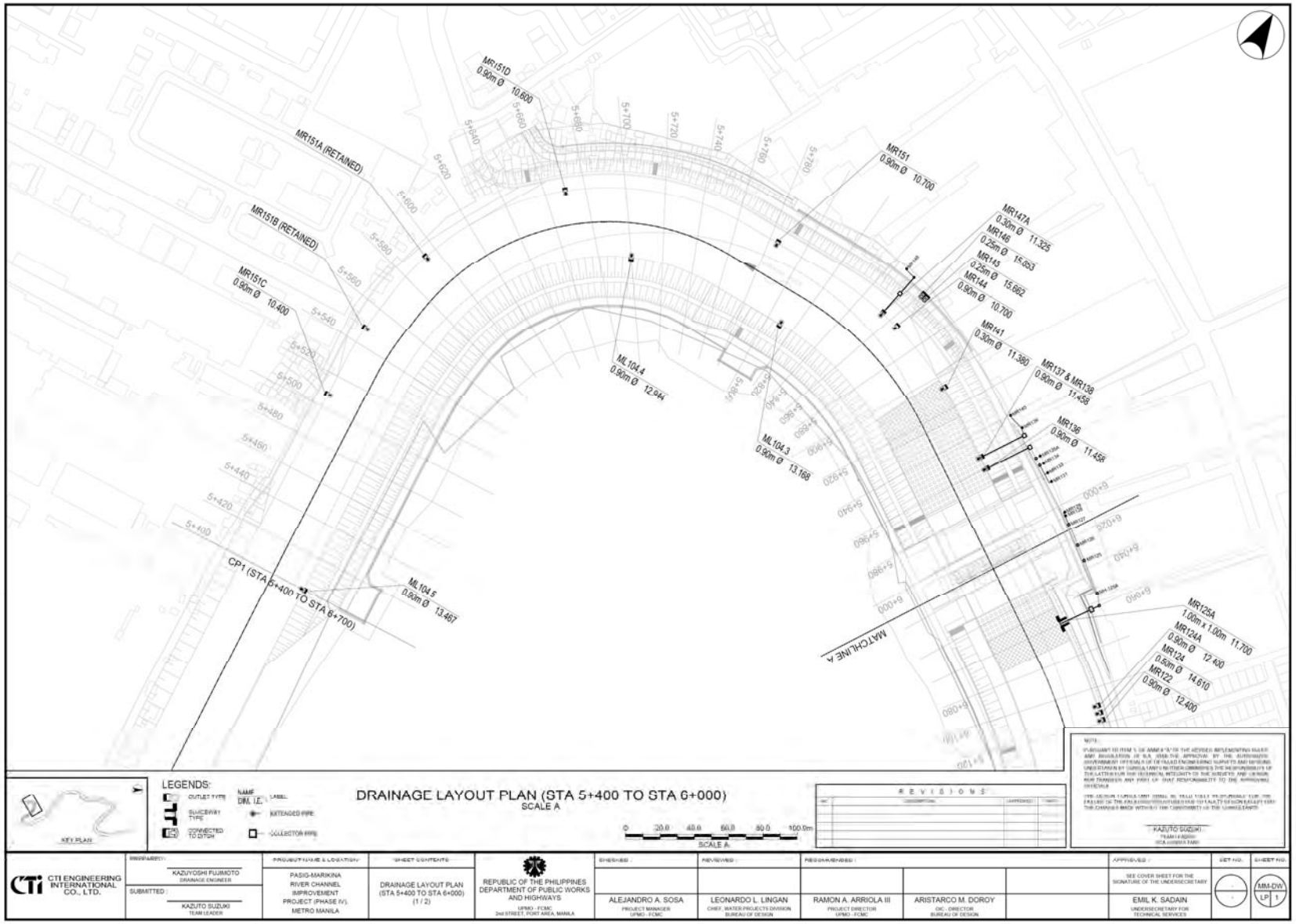

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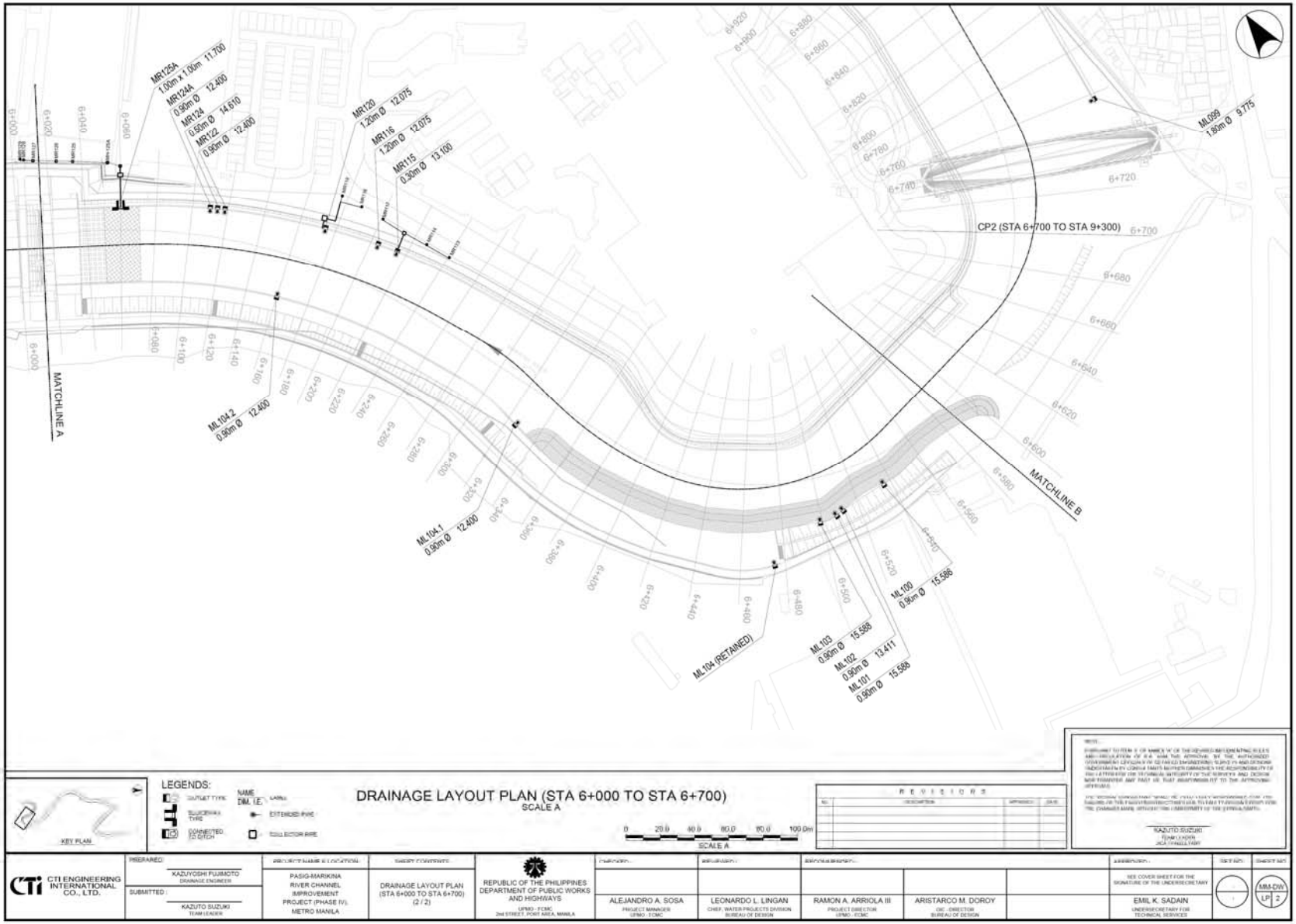

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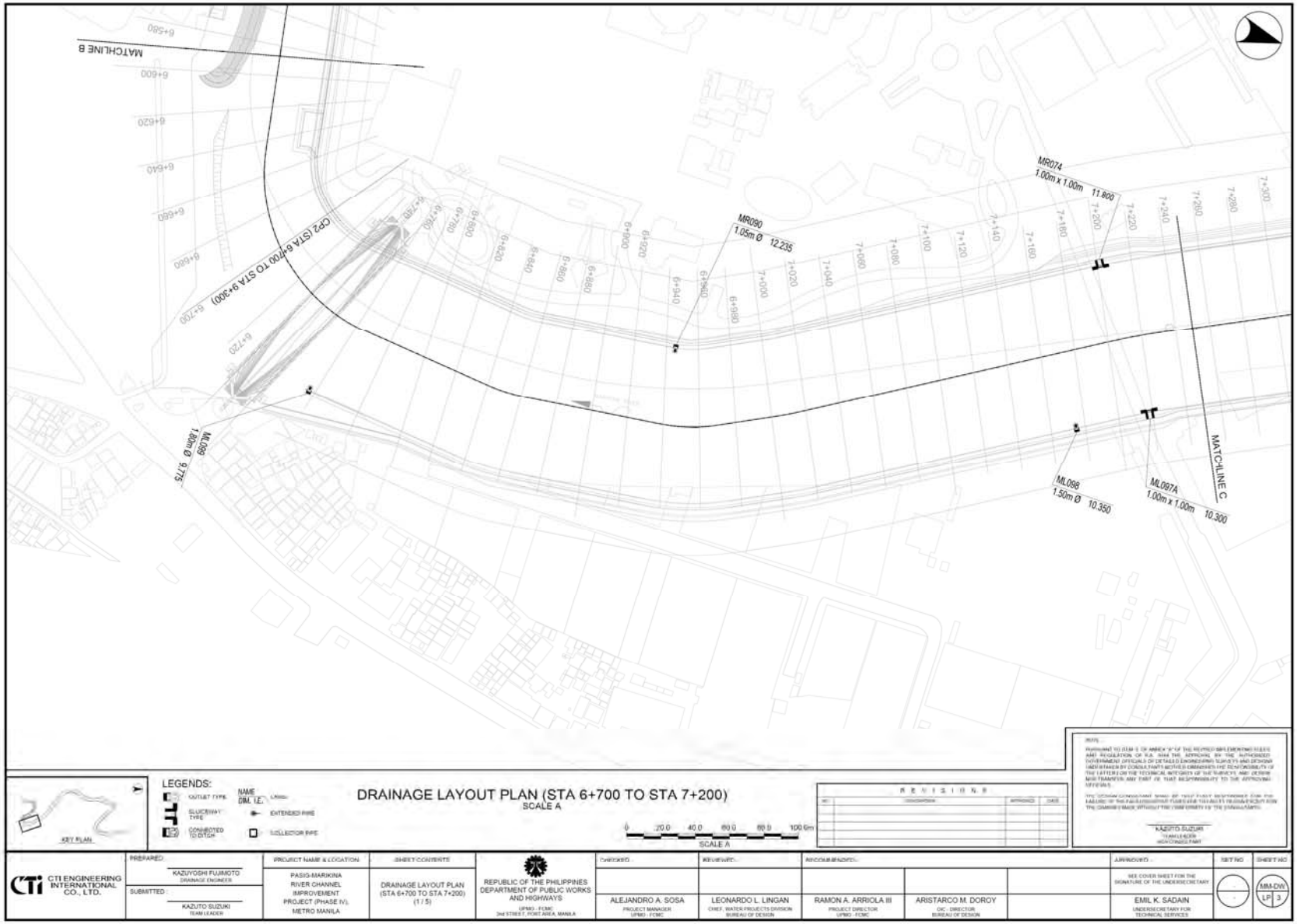

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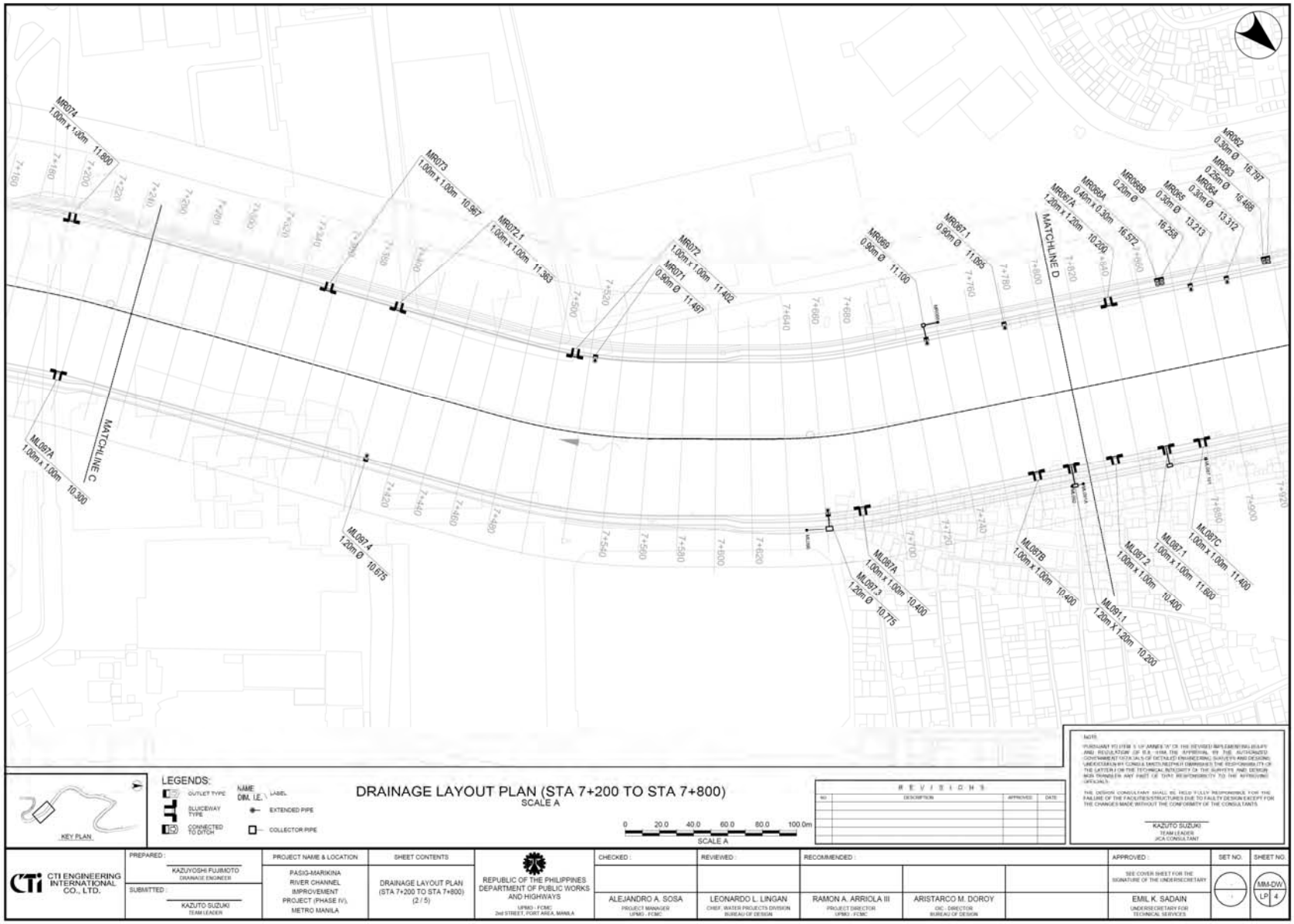

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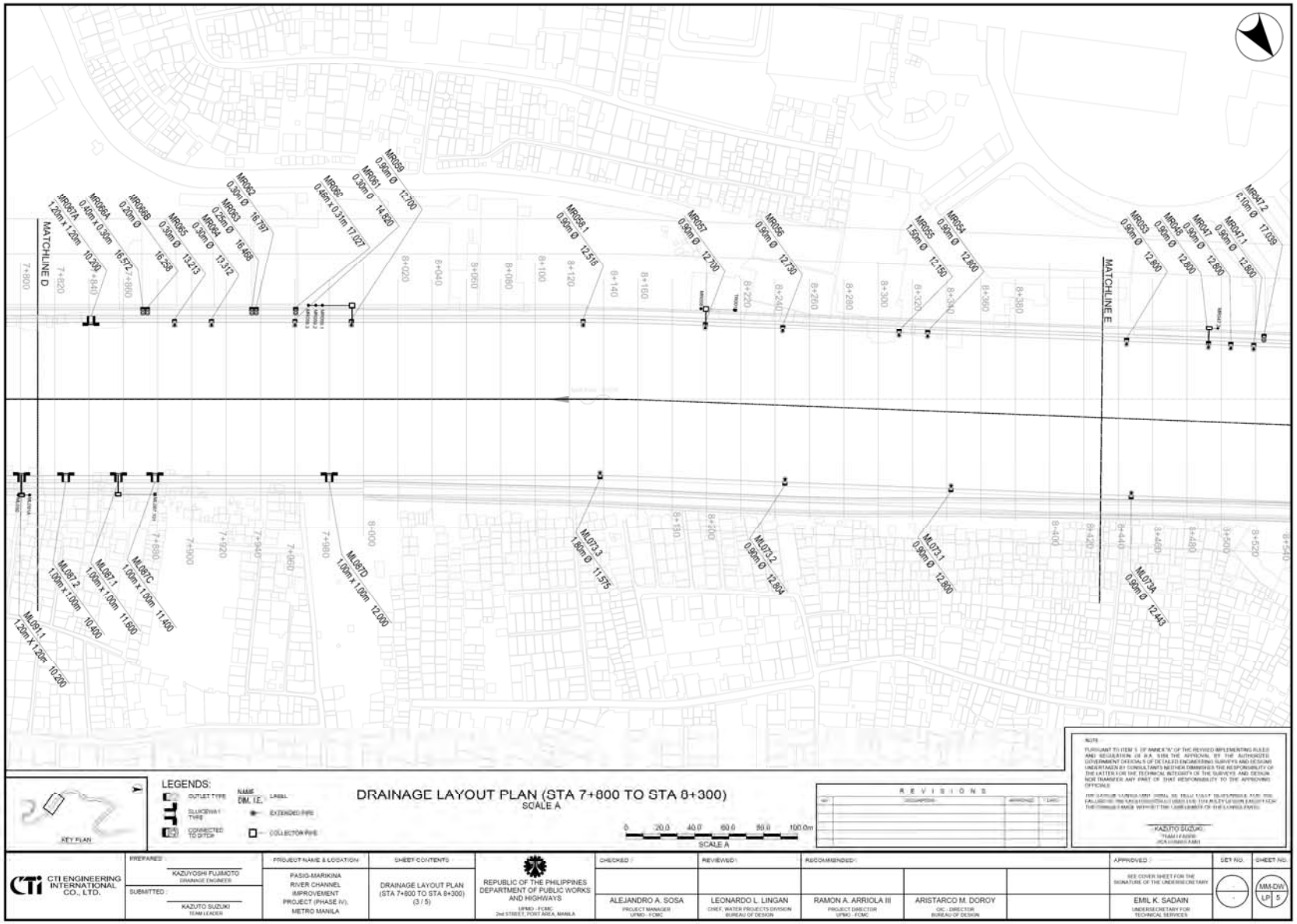

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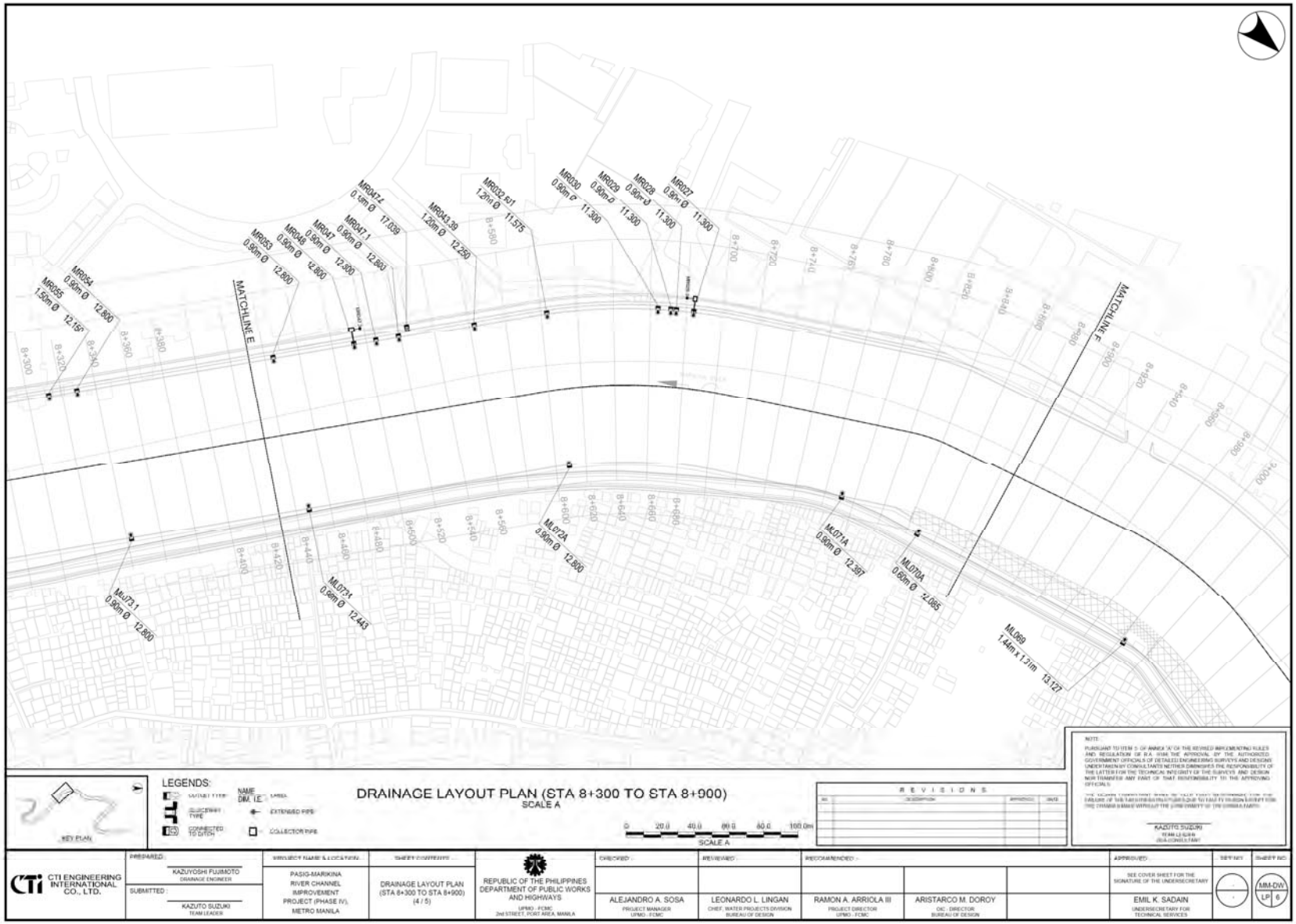

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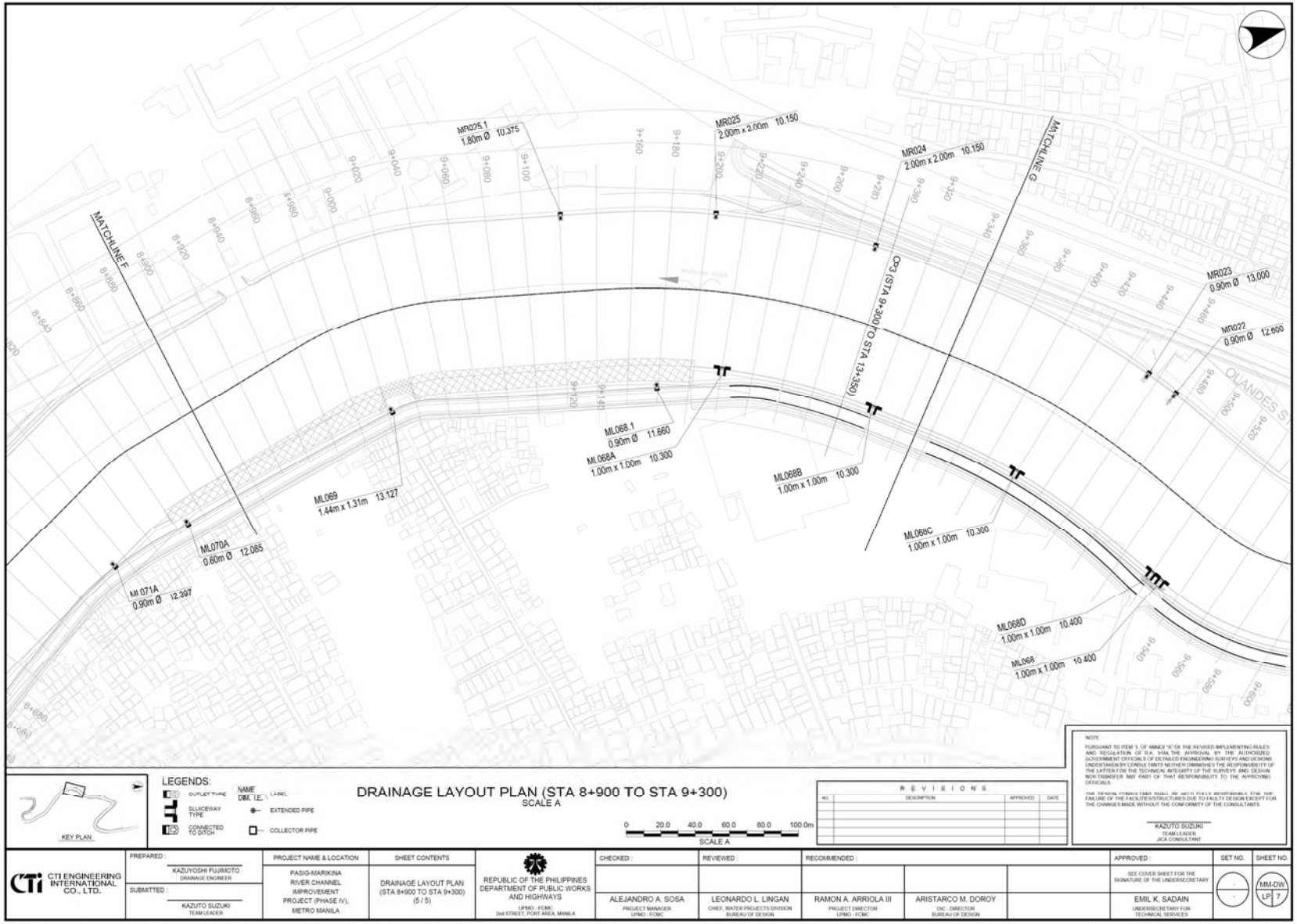

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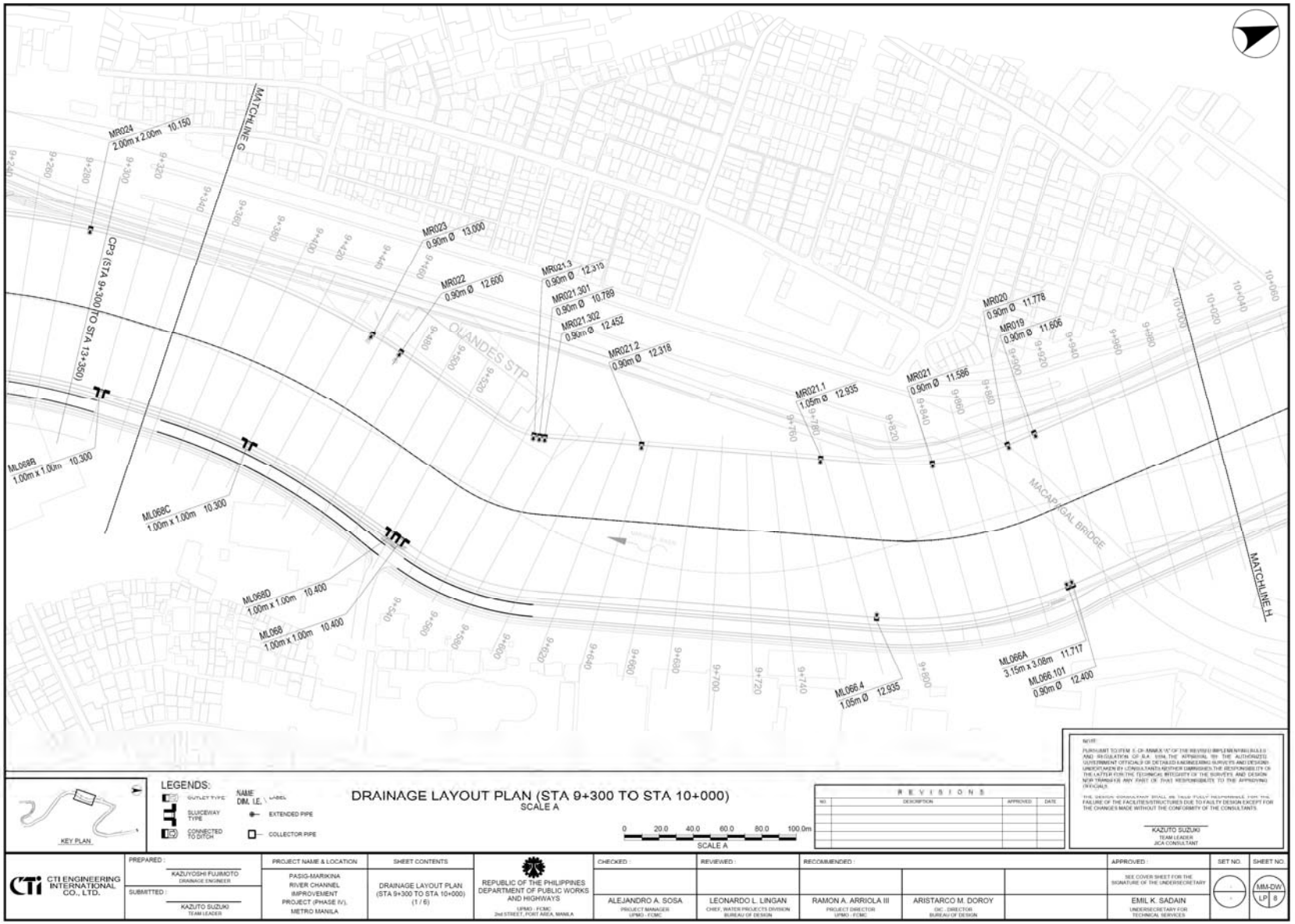

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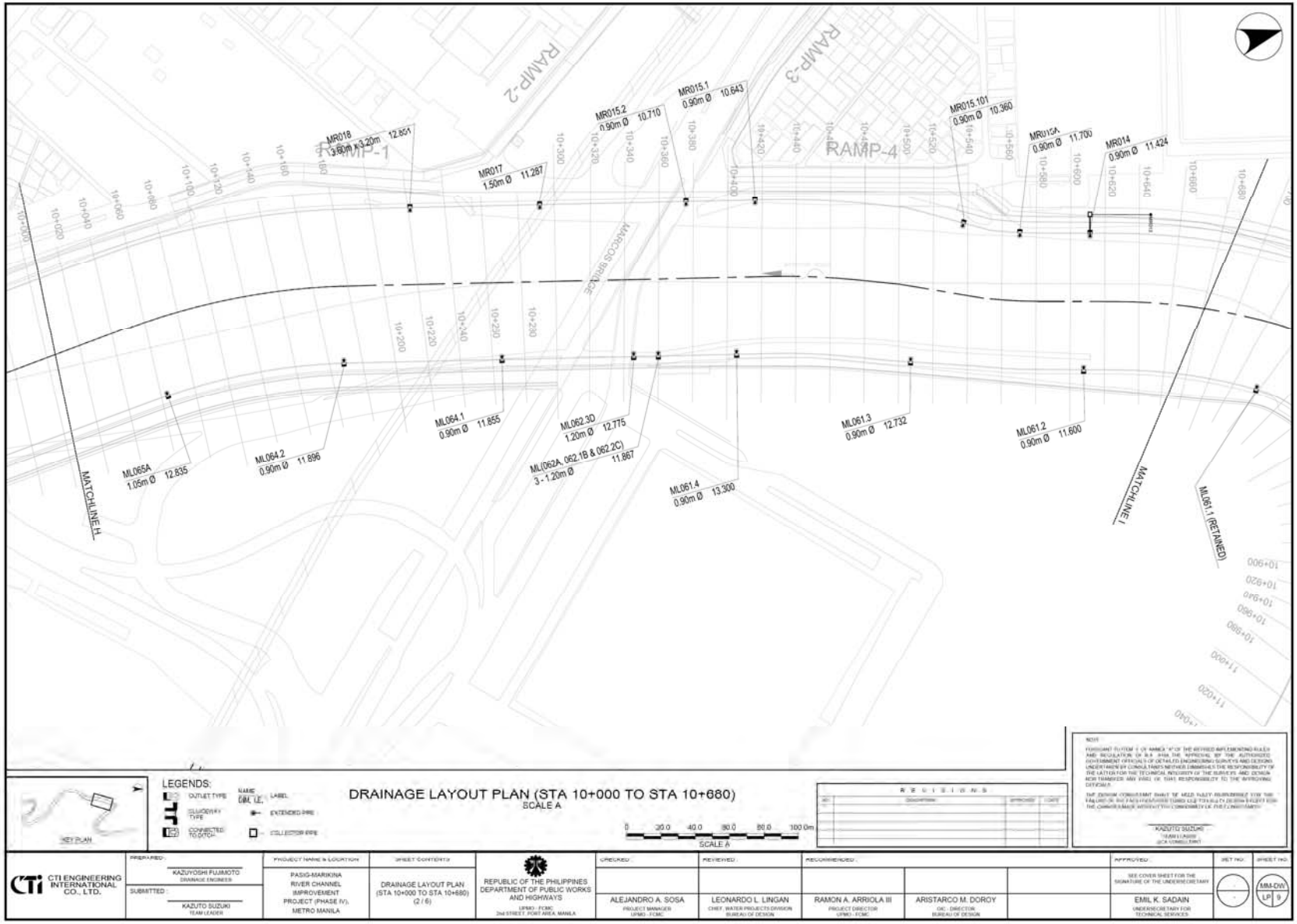

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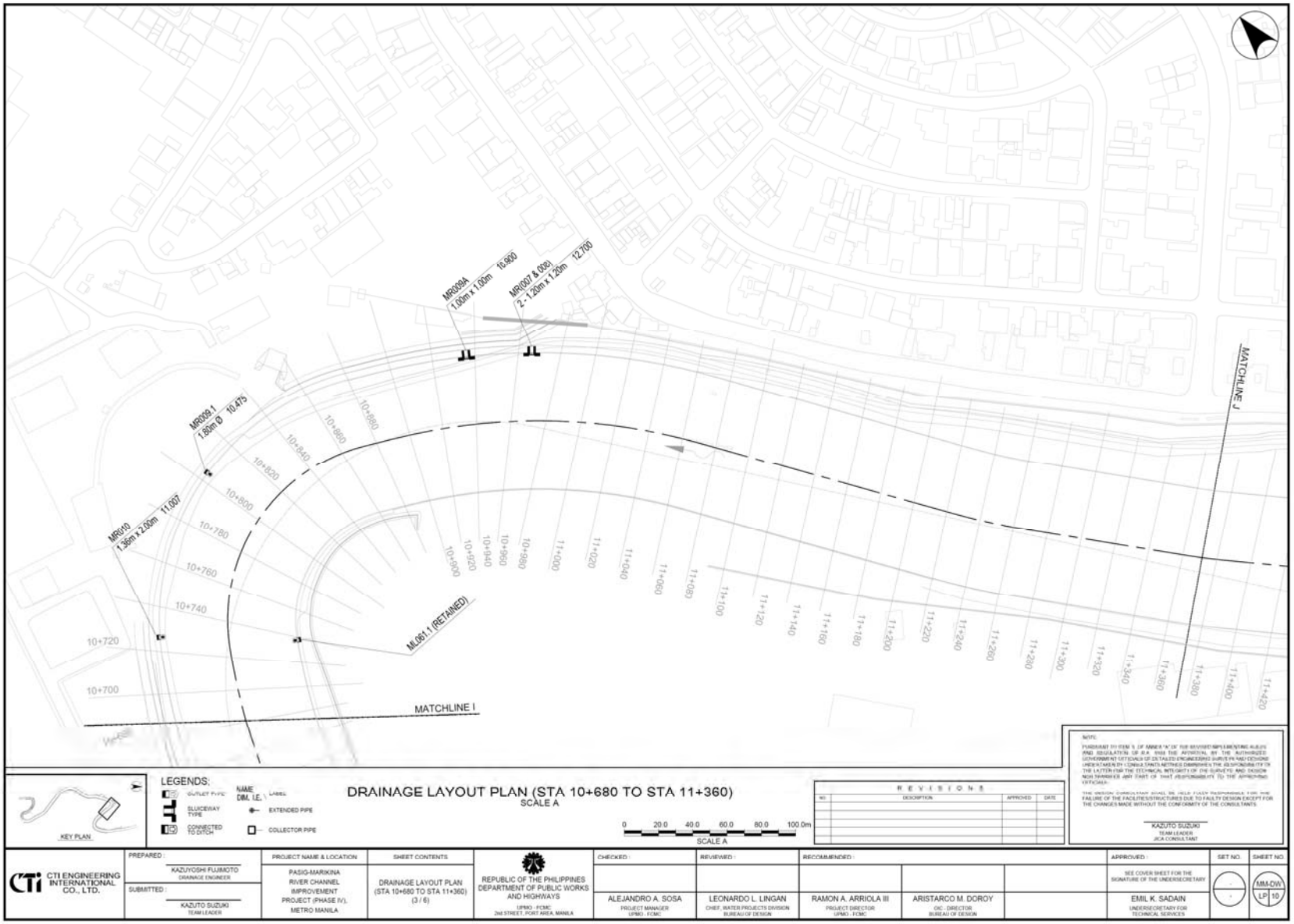

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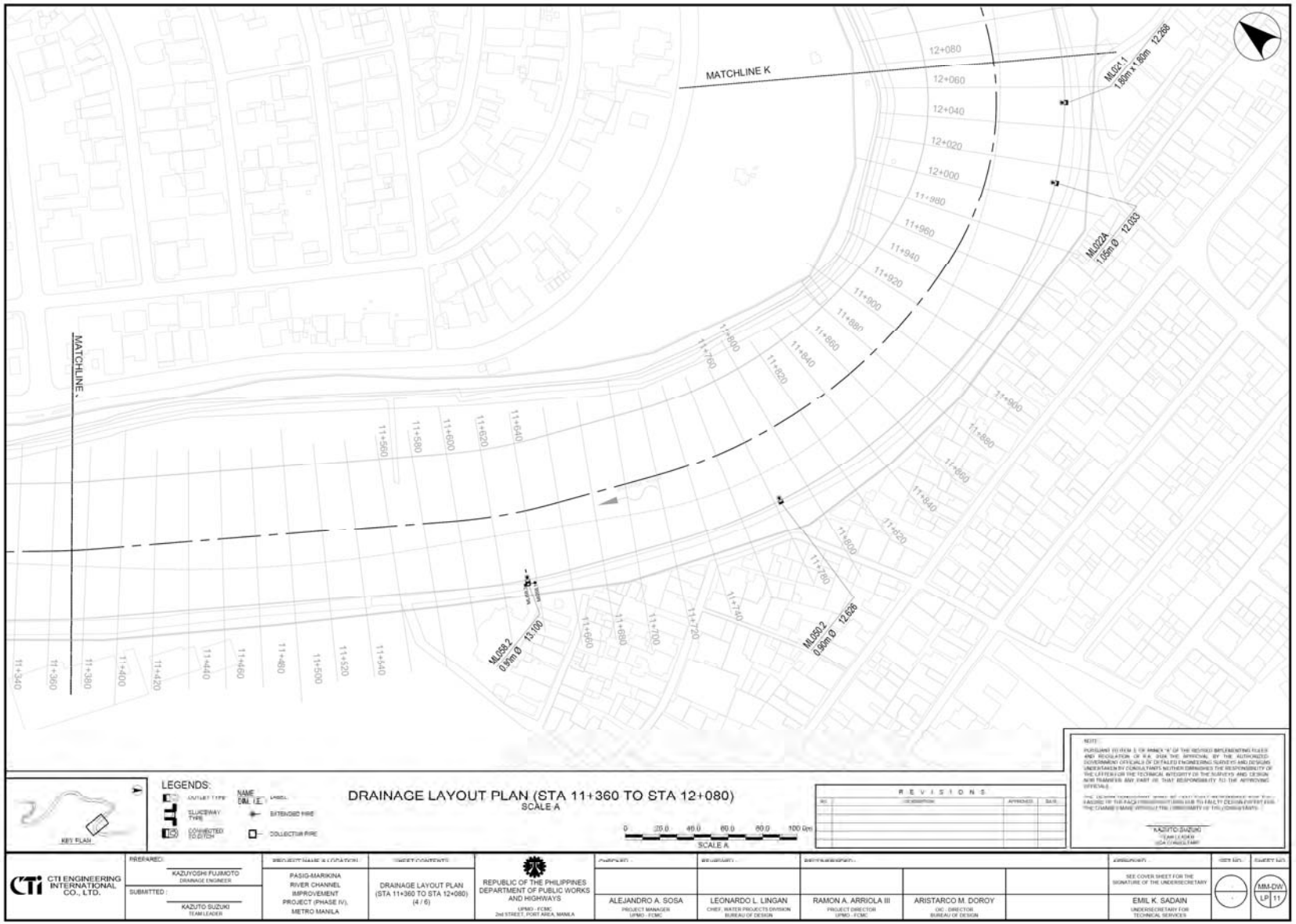

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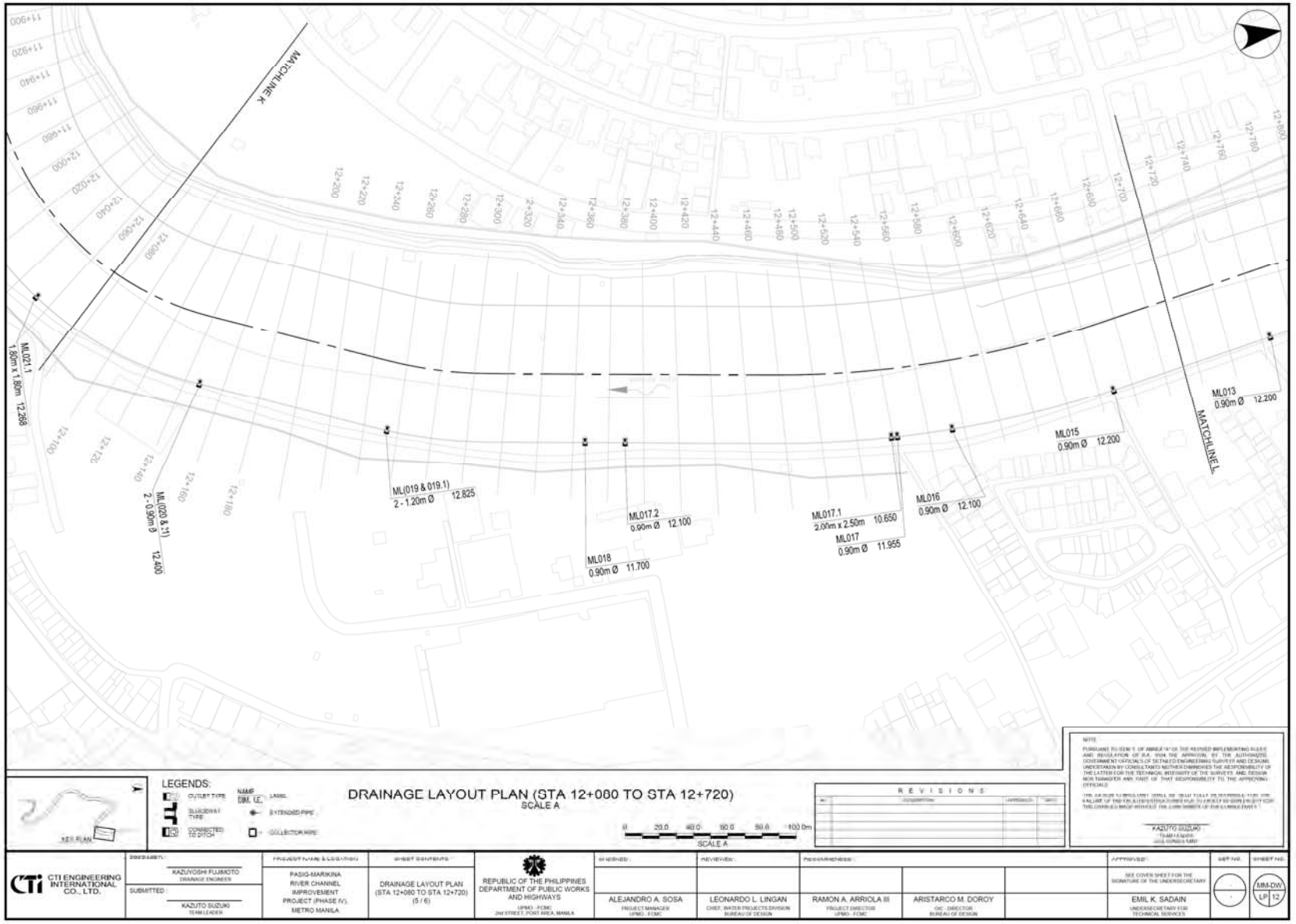

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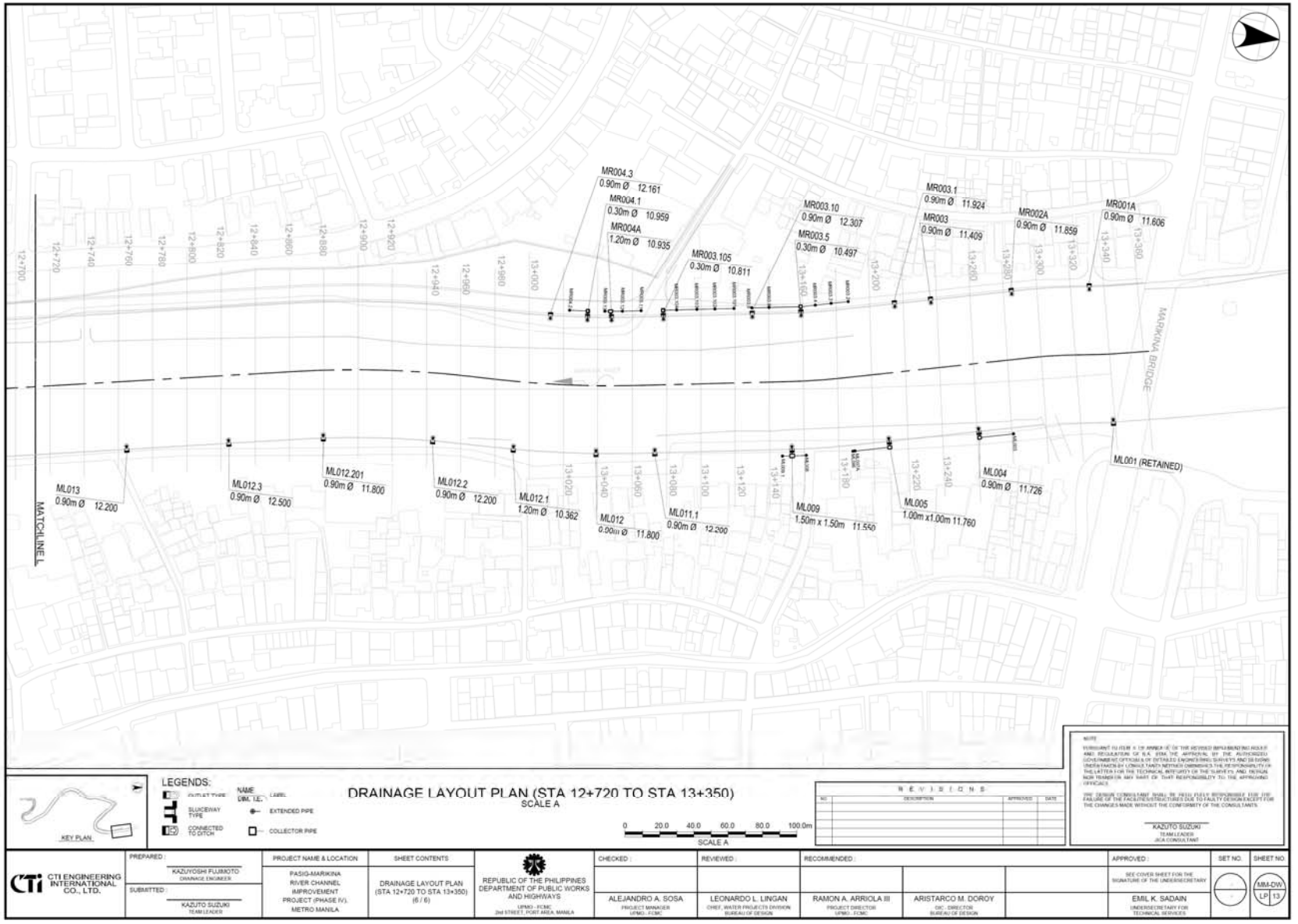

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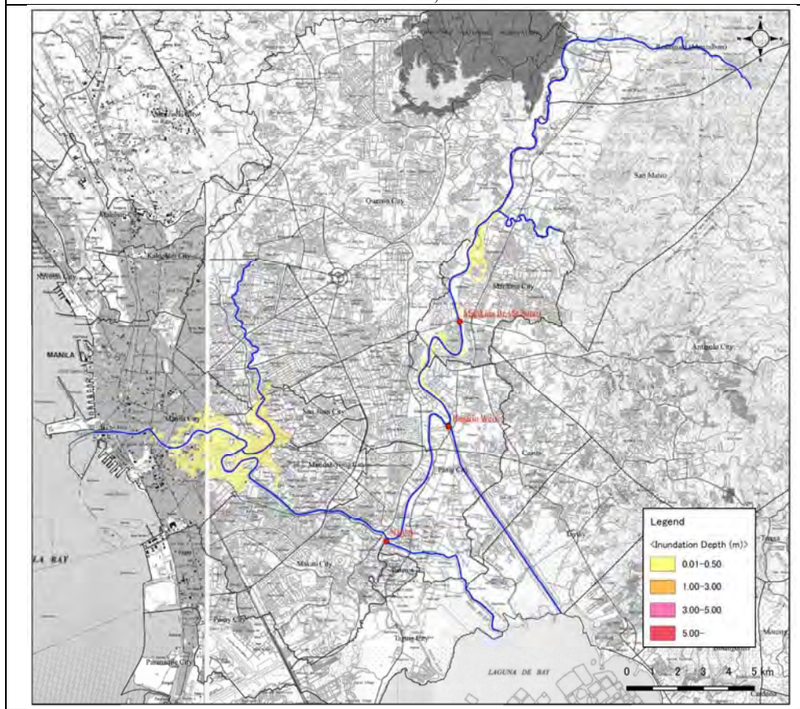
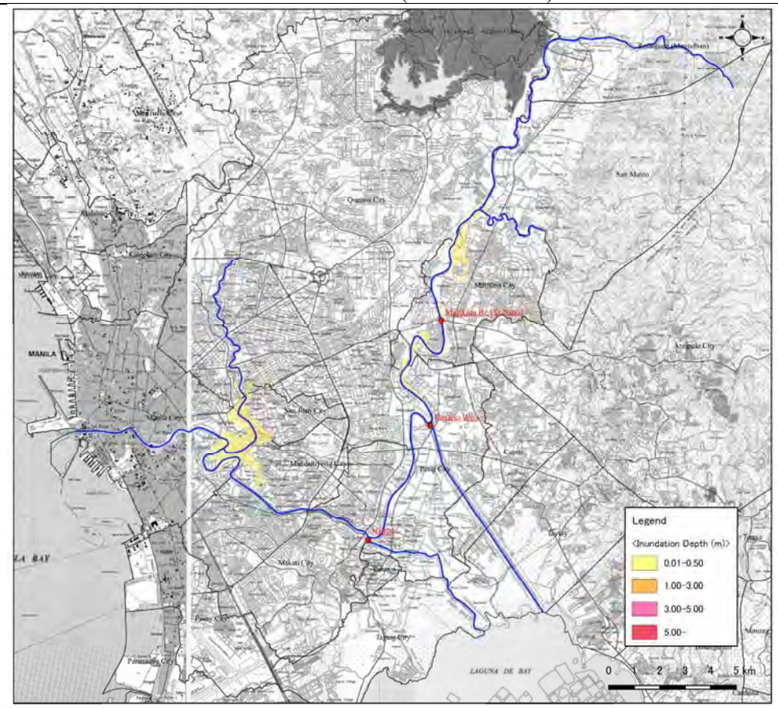
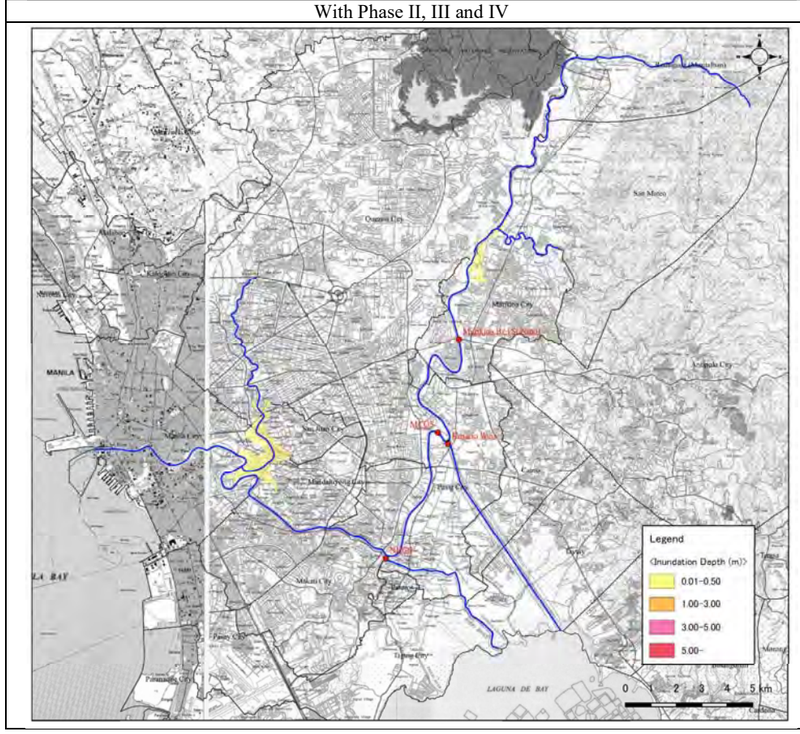
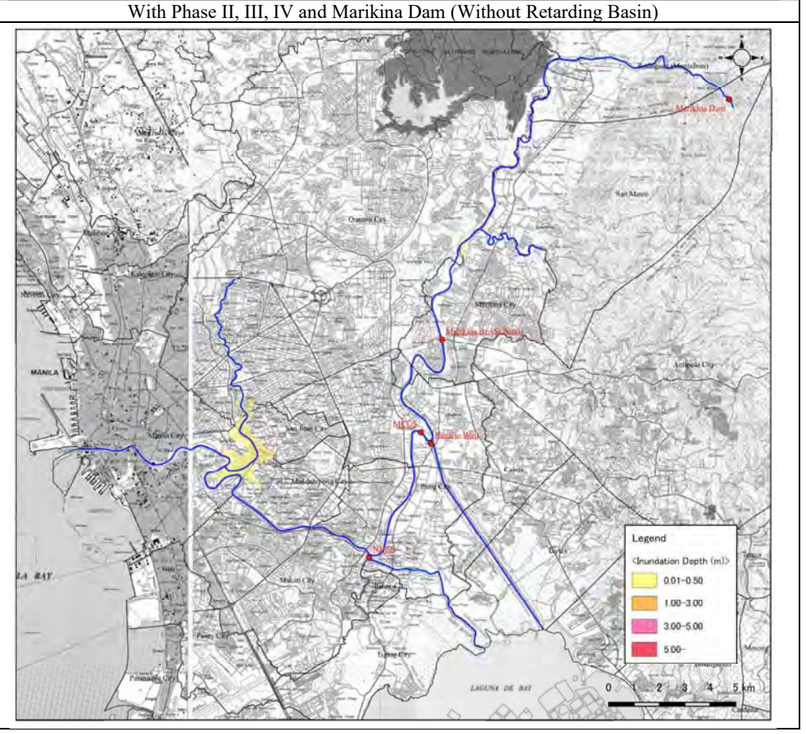
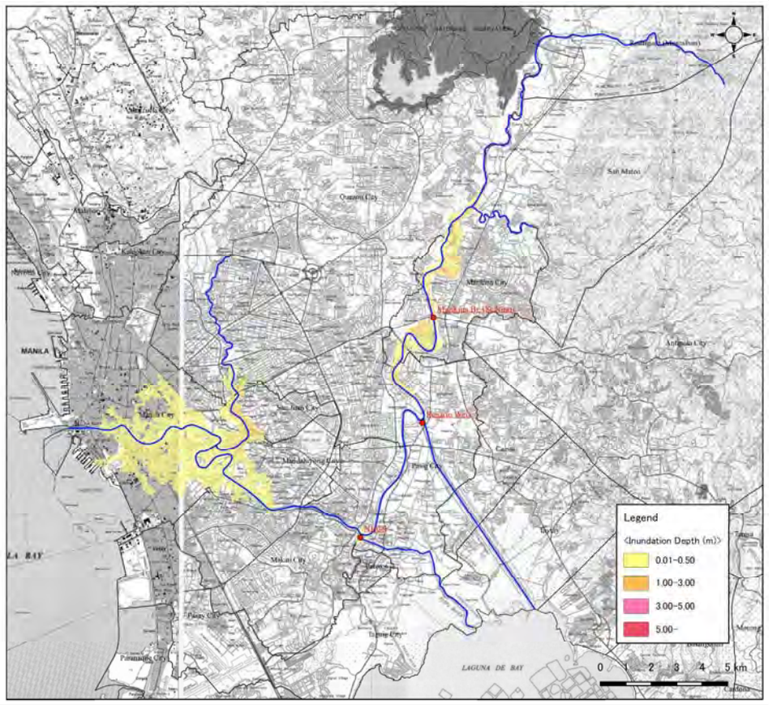
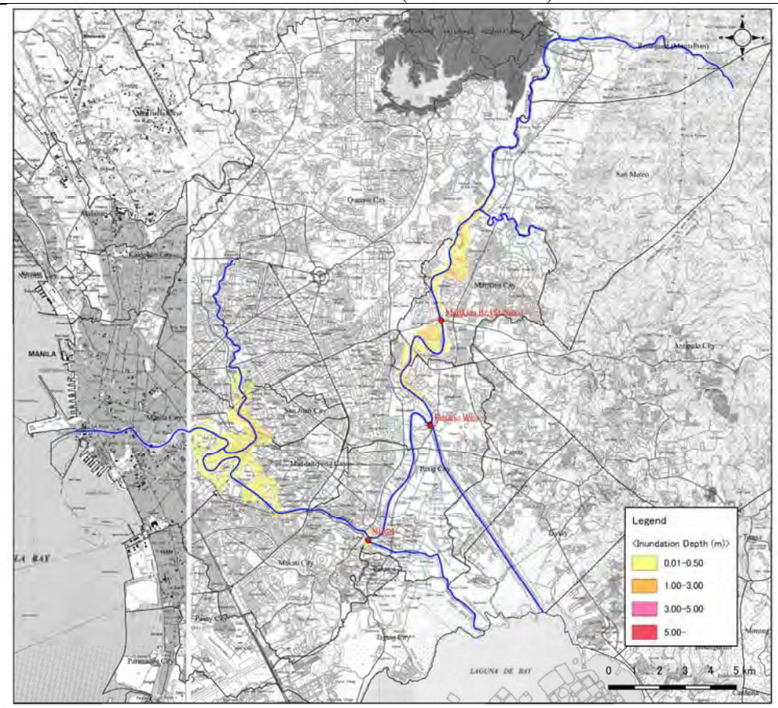
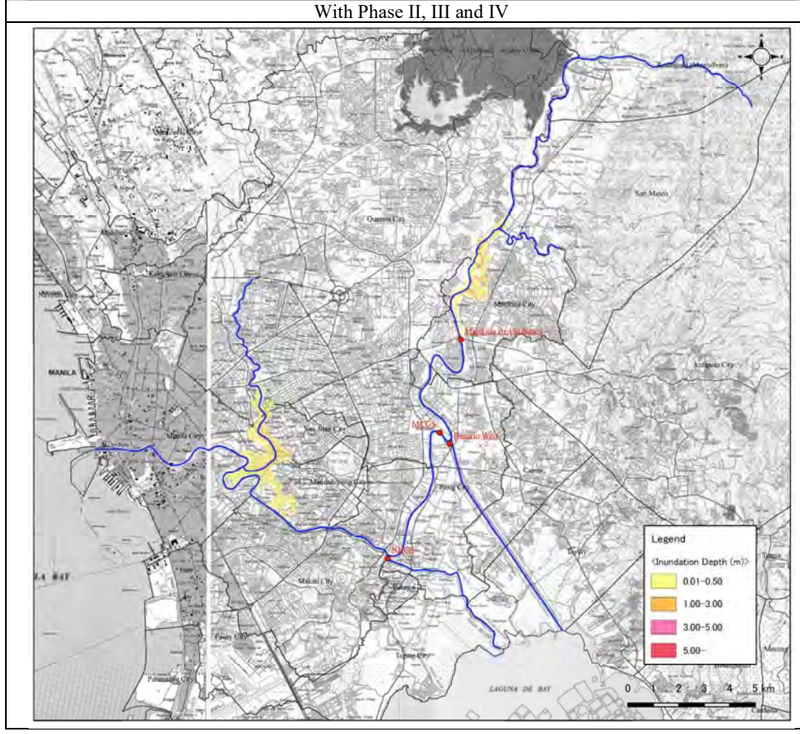
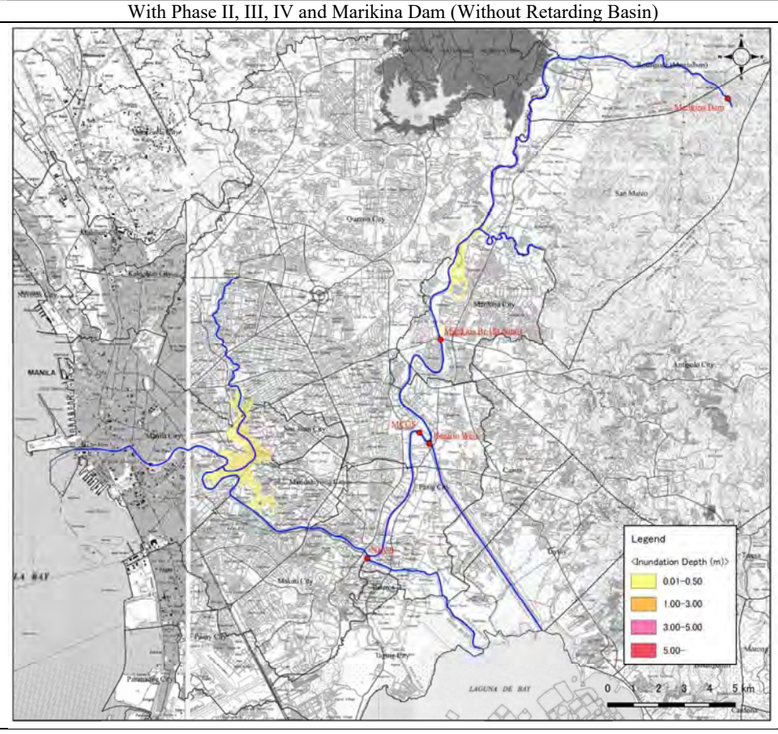
	
With Phase II, III and IV	With Phase II, III, IV and Marikina Dam (Without Retarding Basin)
	

Source: Study Team

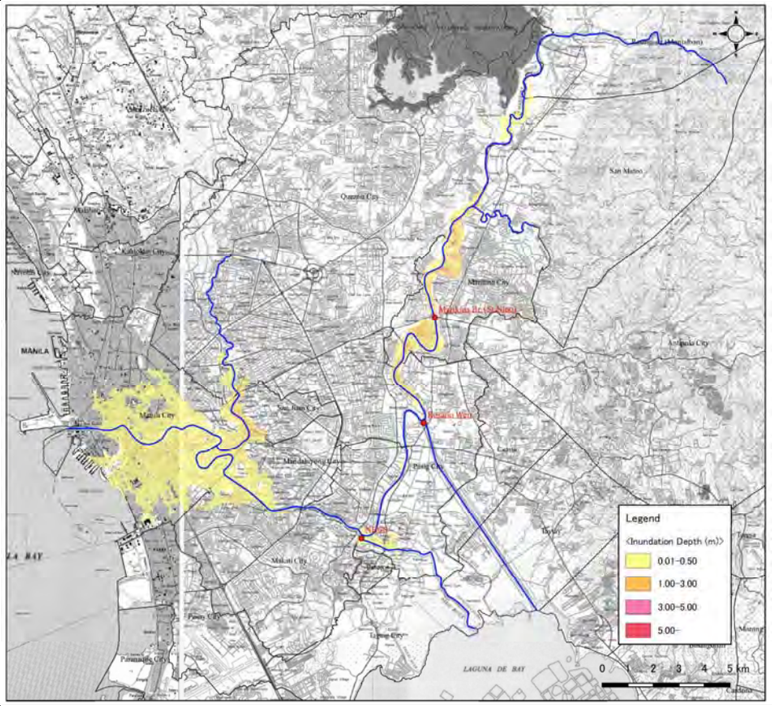
Figure 14.1 Comparison of Inundation Area (2-year Flood)

Without Phase II, III and IV	With Phase II and III (Without Phase IV)
	
With Phase II, III and IV	**With Phase II, III, IV and Marikina Dam (Without Retarding Basin)**
	

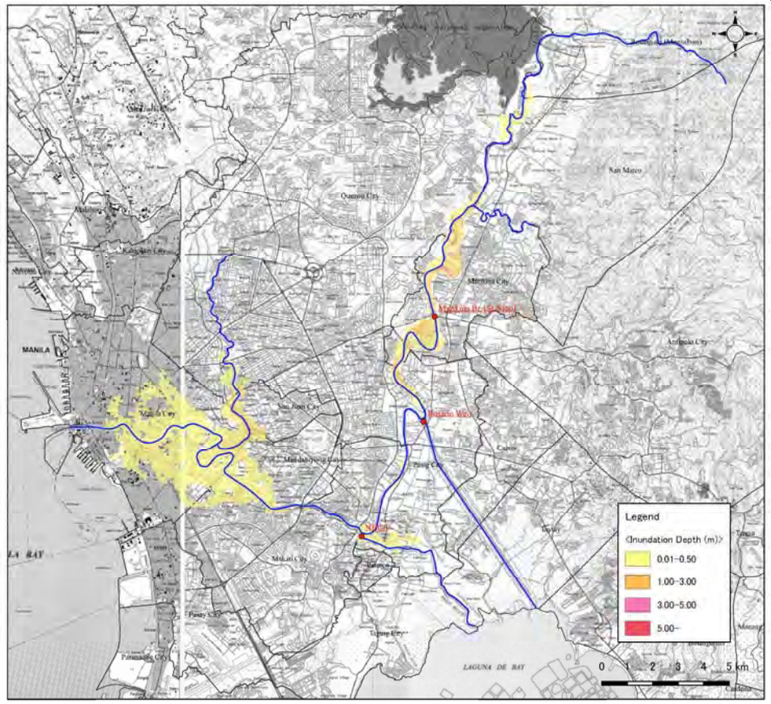
Source: Study Team

Figure 14.2　Comparison of Inundation Area（5-year Flood）

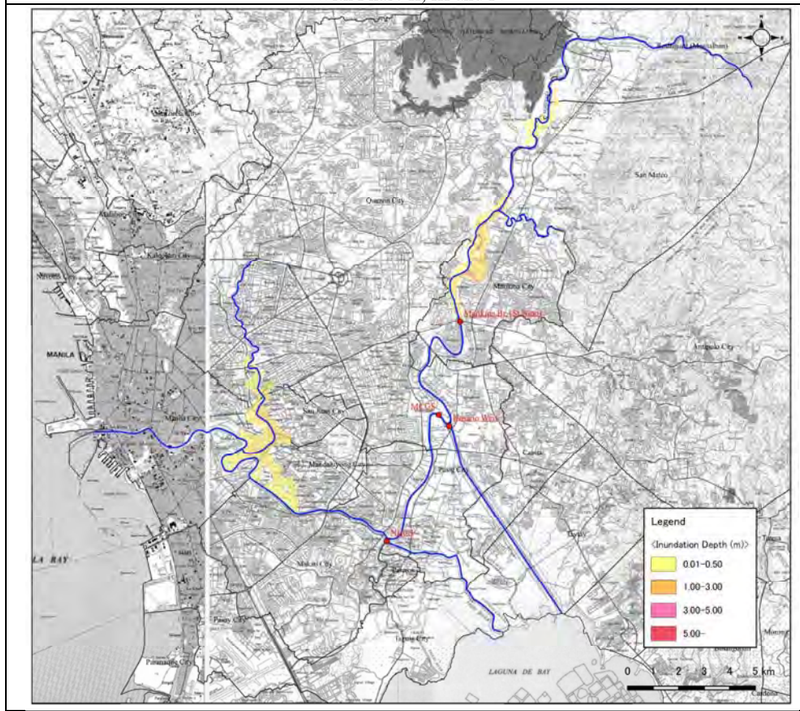
Without Phase II, III and IV



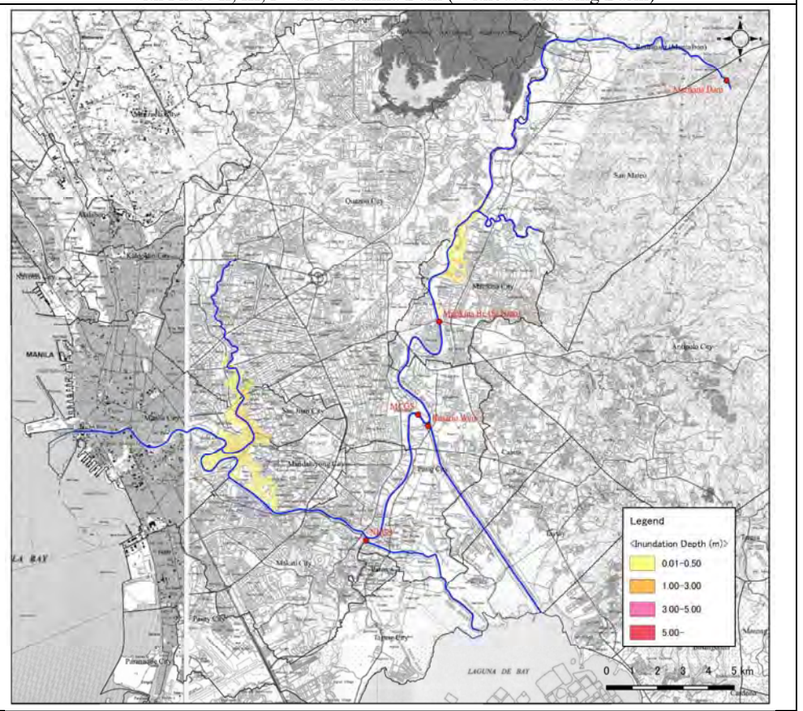
With Phase II and III (Without Phase IV)



With Phase II, III and IV

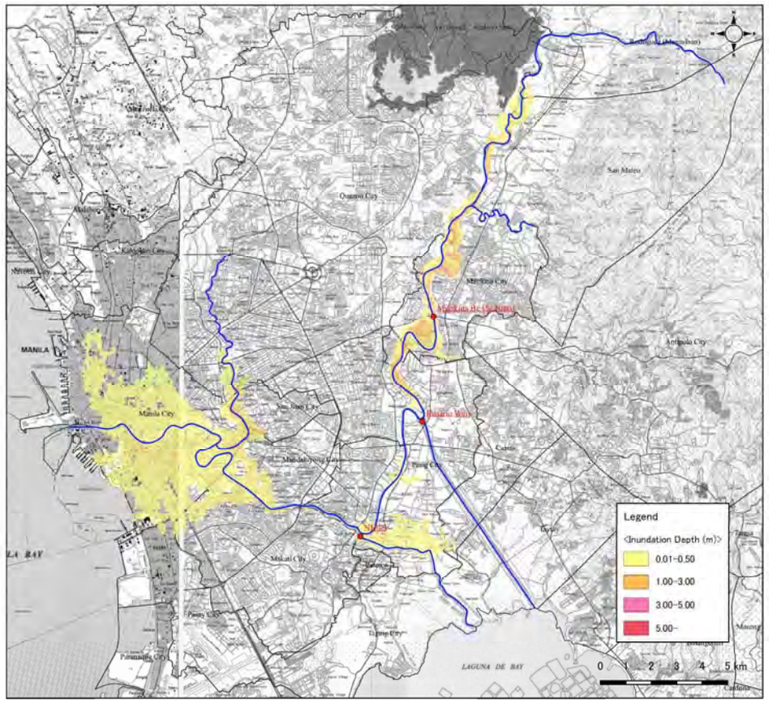
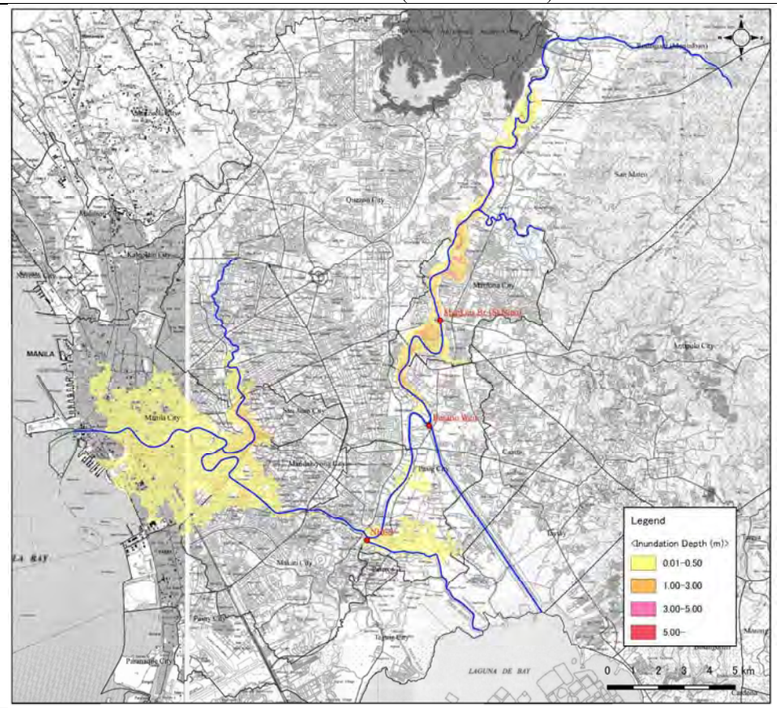
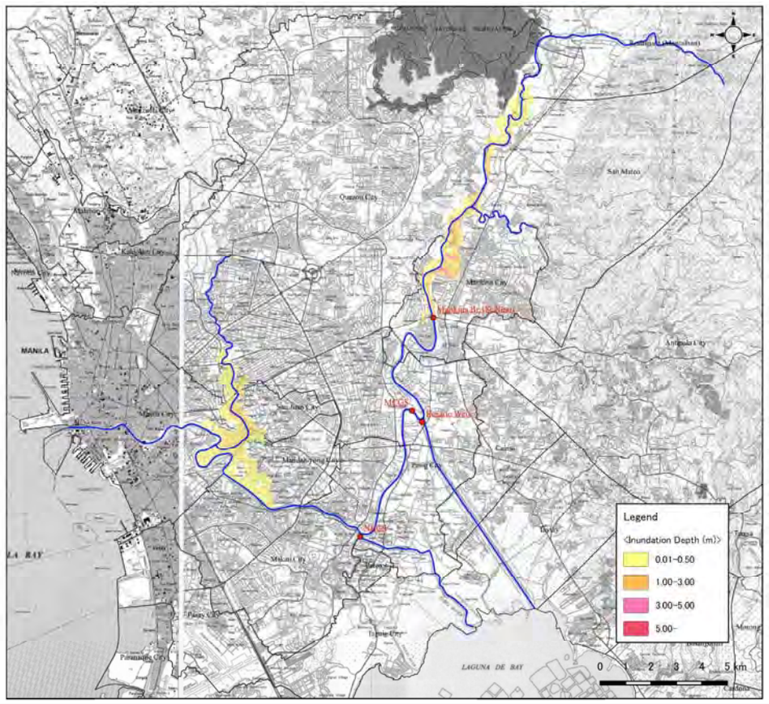
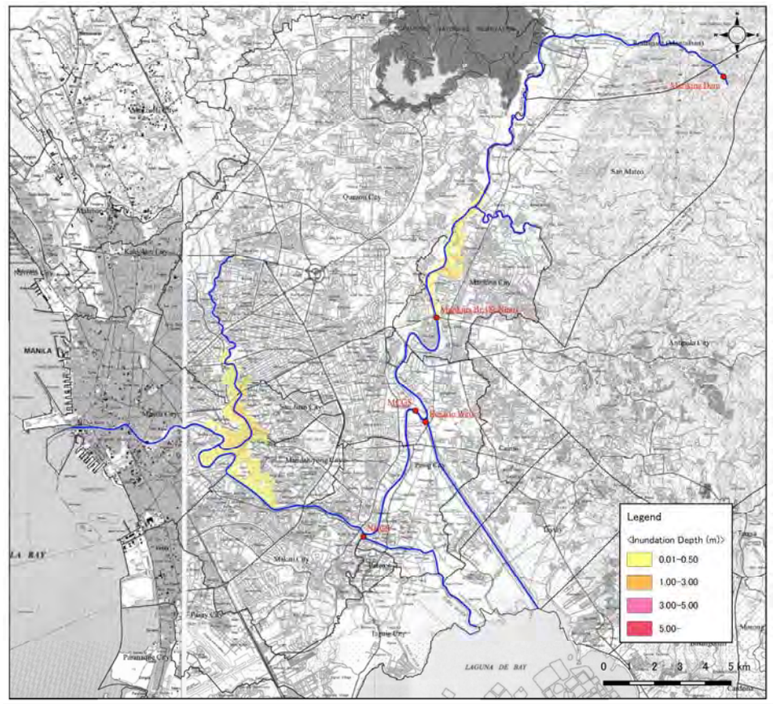


With Phase II, III, IV and Marikina Dam (Without Retarding Basin)



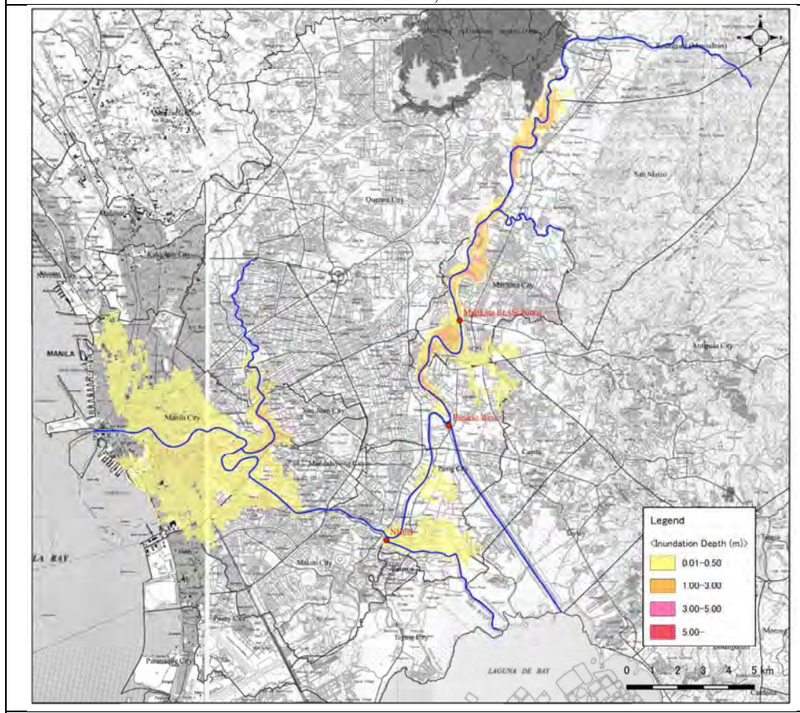
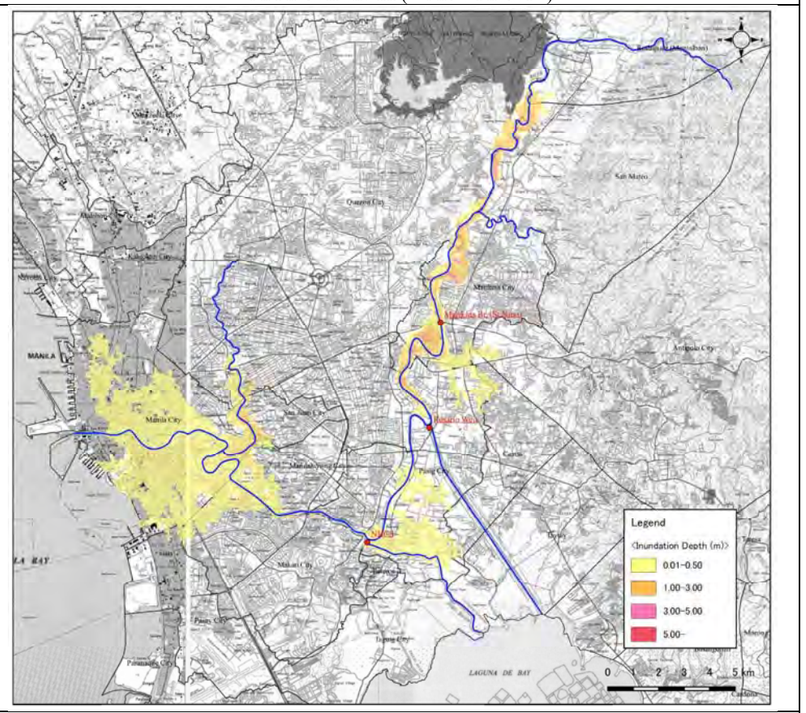
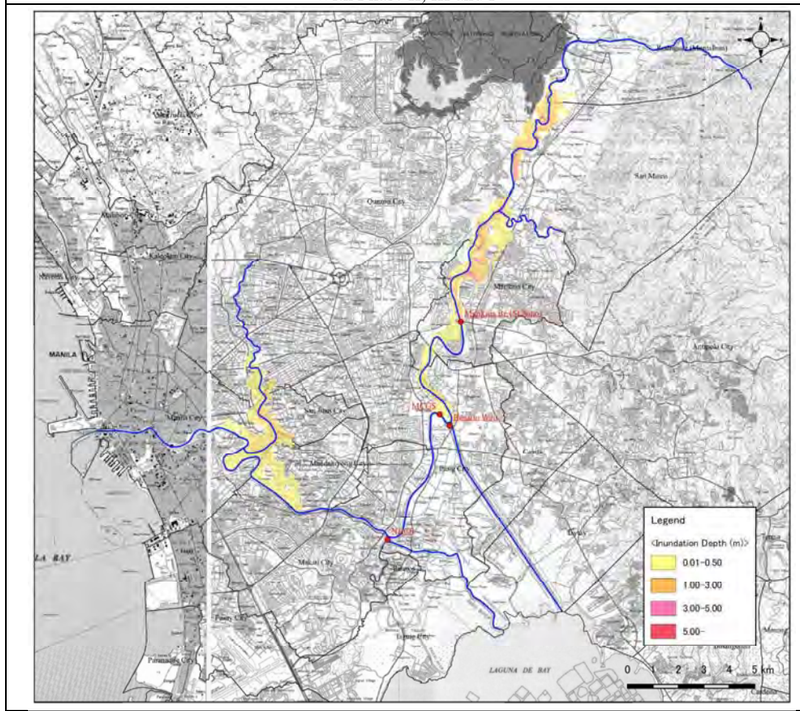
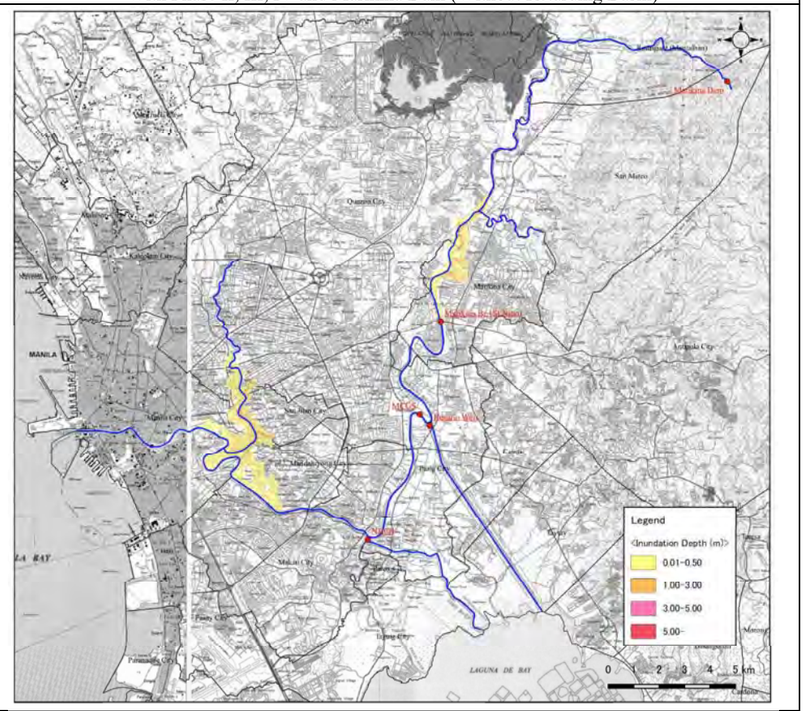
Source: Study Team

Figure 14.3　Comparison of Inundation Area（10-year Flood）

Without Phase II, III and IV	With Phase II and III (Without Phase IV)
	
With Phase II, III and IV	With Phase II, III, IV and Marikina Dam (Without Retarding Basin)
	

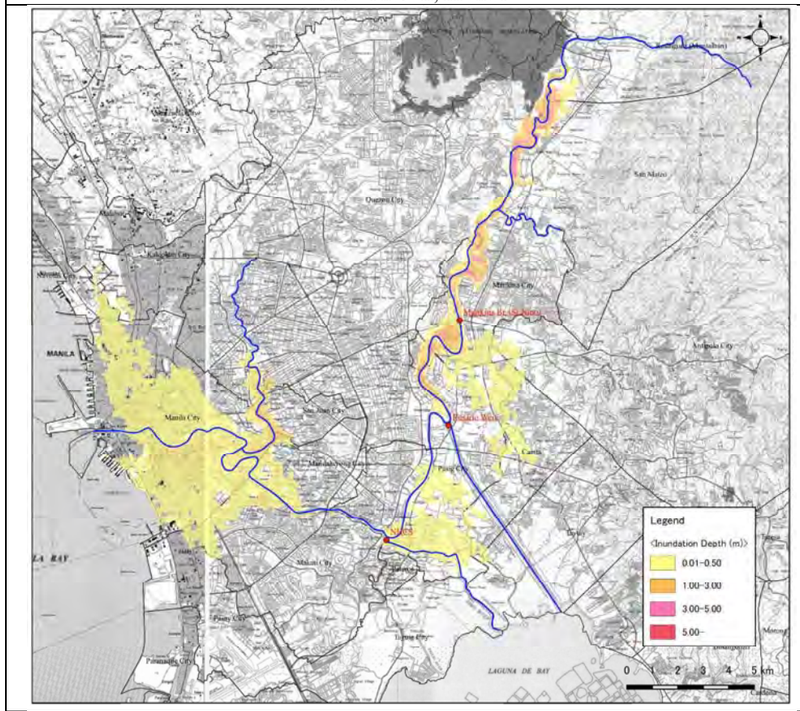
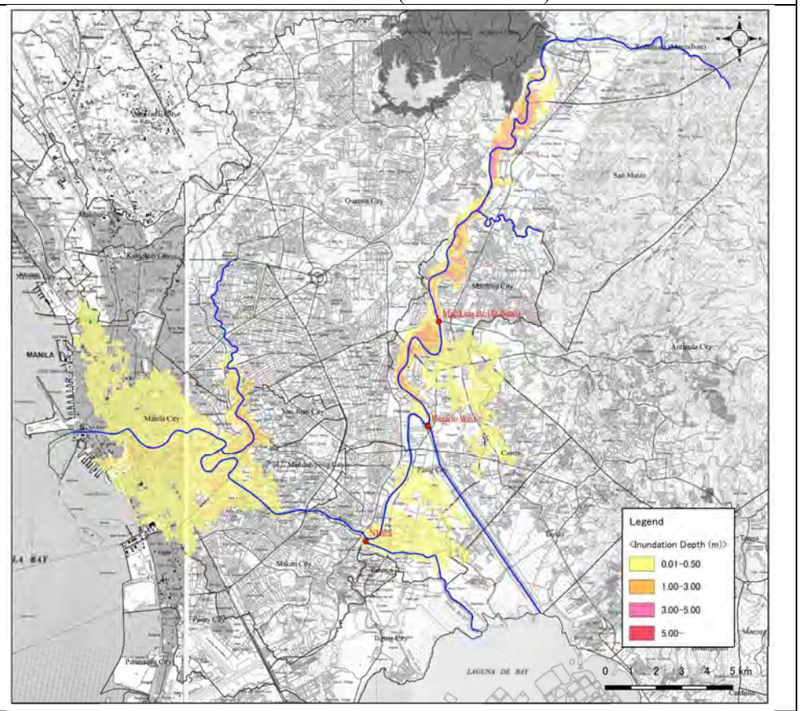
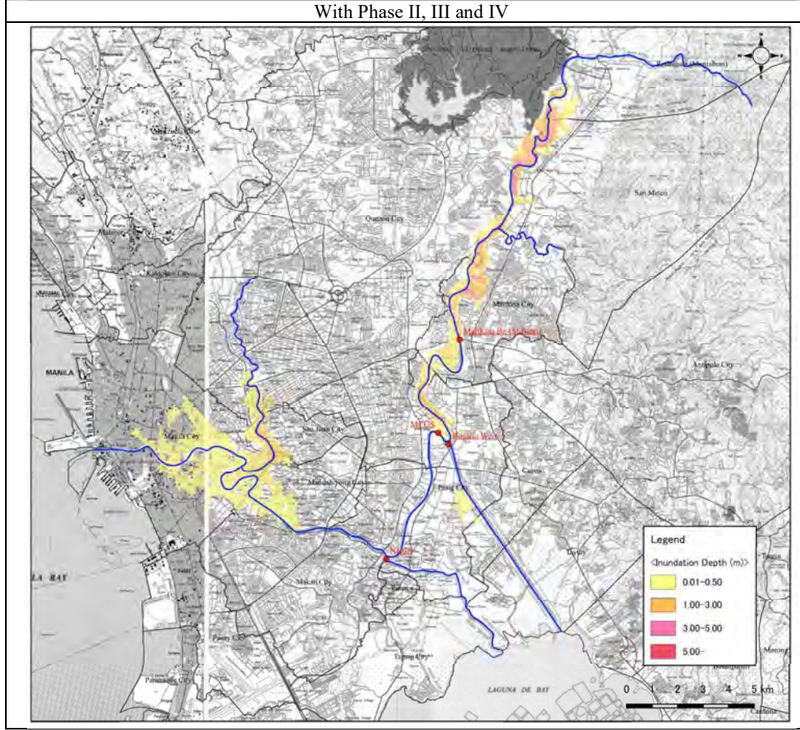
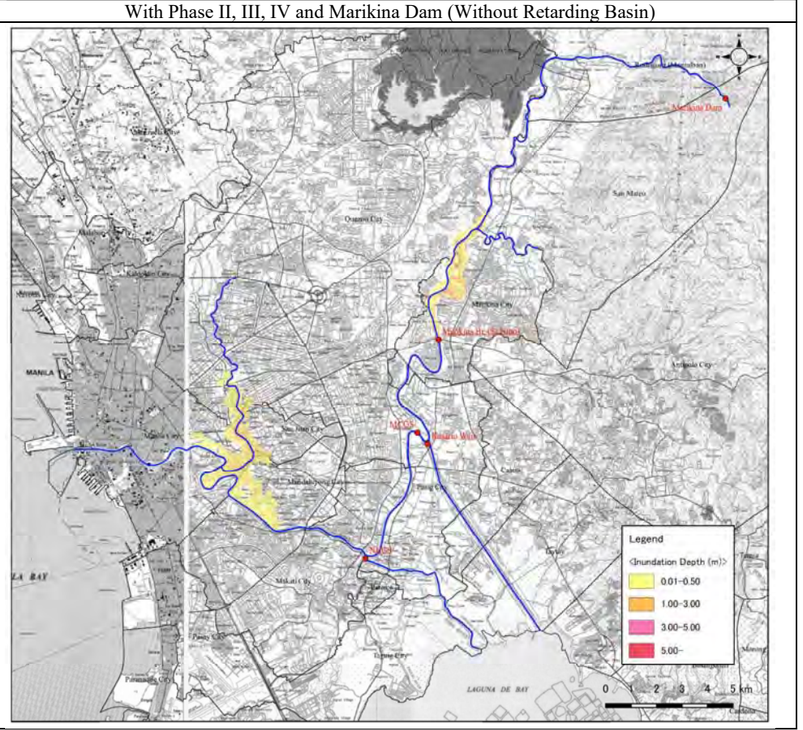
Source: Study Team

Figure 14.4　Comparison of Inundation Area（20-year Flood）

Without Phase II, III and IV	With Phase II and III (Without Phase IV)
	
With Phase II, III and IV	**With Phase II, III, IV and Marikina Dam (Without Retarding Basin)**
	

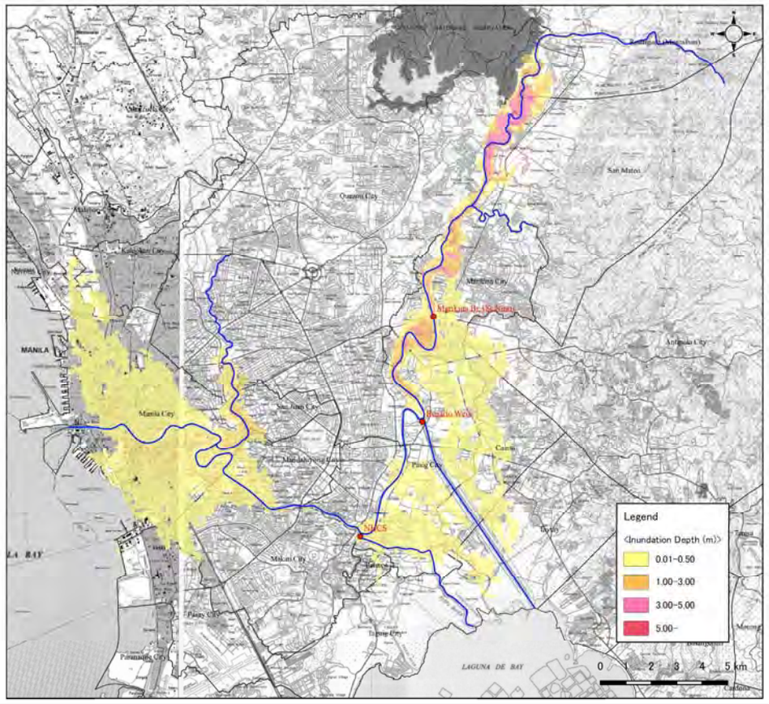
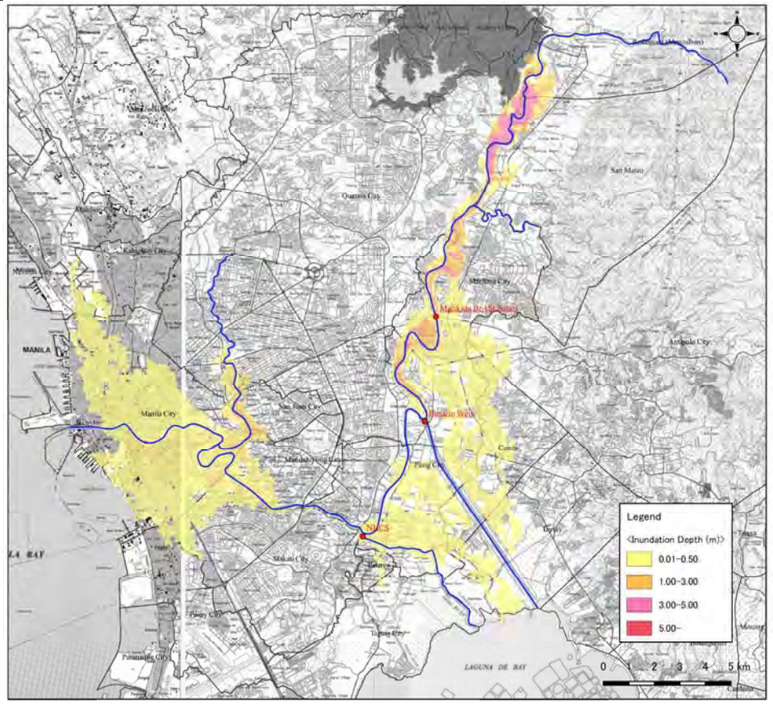
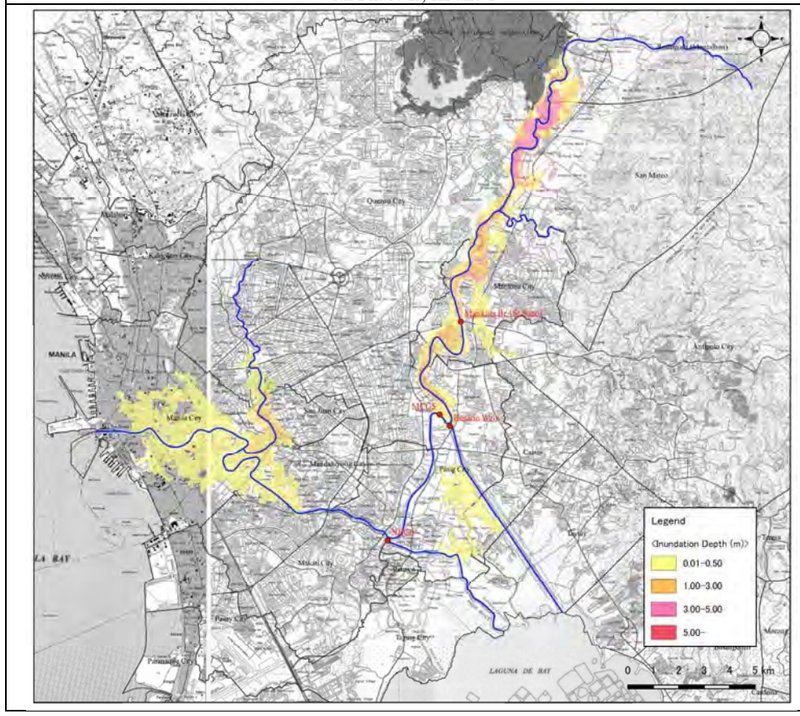
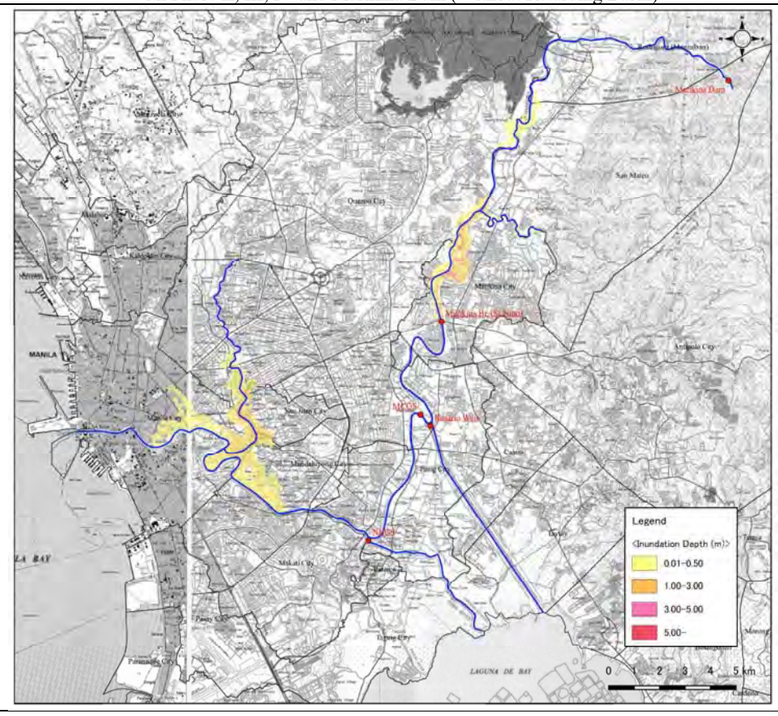
Source: Study Team

Figure 14.5　Comparison of Inundation Area（30-year Flood）

Without Phase II, III and IV	With Phase II and III (Without Phase IV)
	
With Phase II, III and IV	**With Phase II, III, IV and Marikina Dam (Without Retarding Basin)**
	

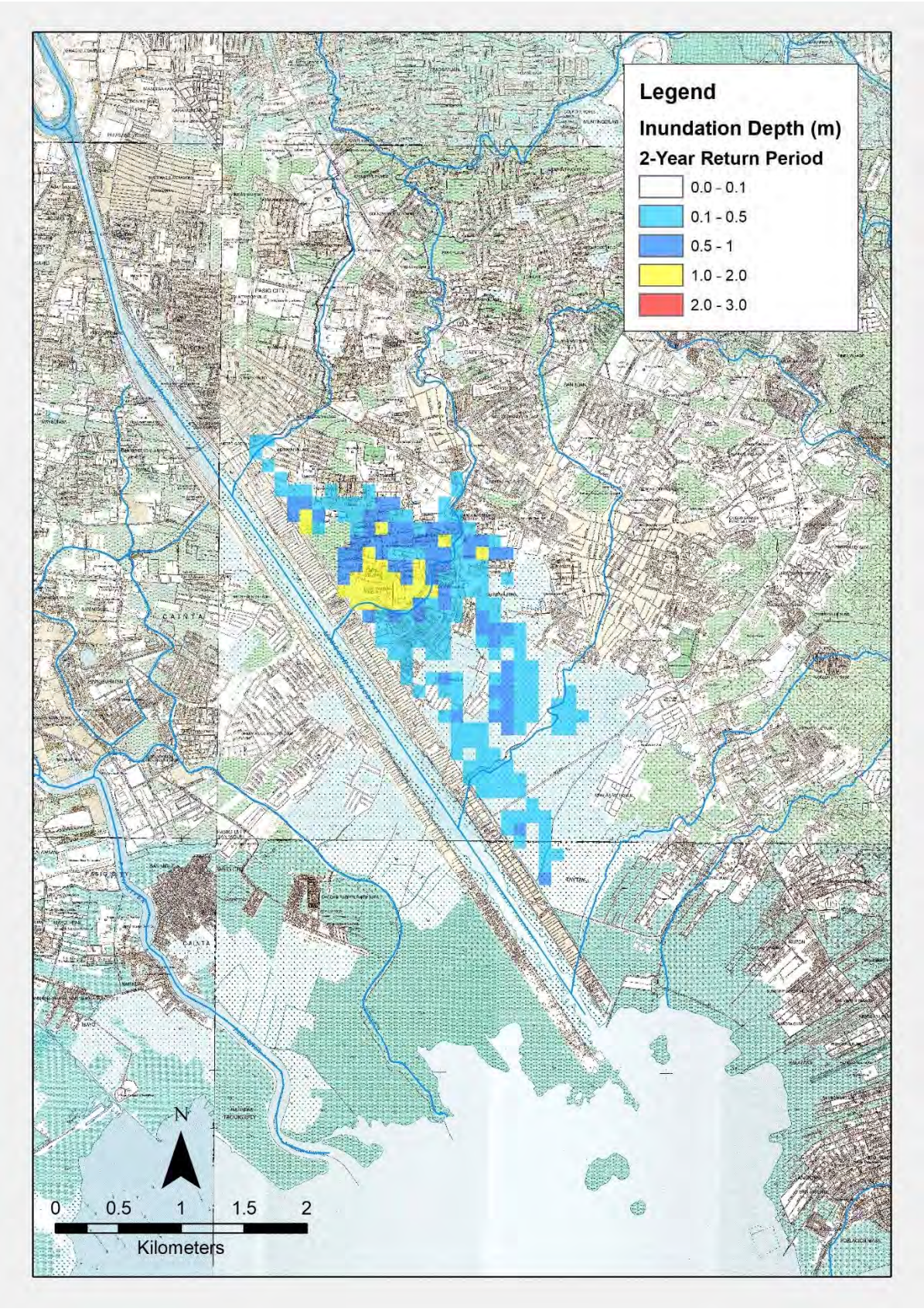
Source: Study Team

Figure 14.6　Comparison of Inundation Area（50-year Flood）

Without Phase II, III and IV	With Phase II and III (Without Phase IV)
	
With Phase II, III and IV	**With Phase II, III, IV and Marikina Dam (Without Retarding Basin)**
	

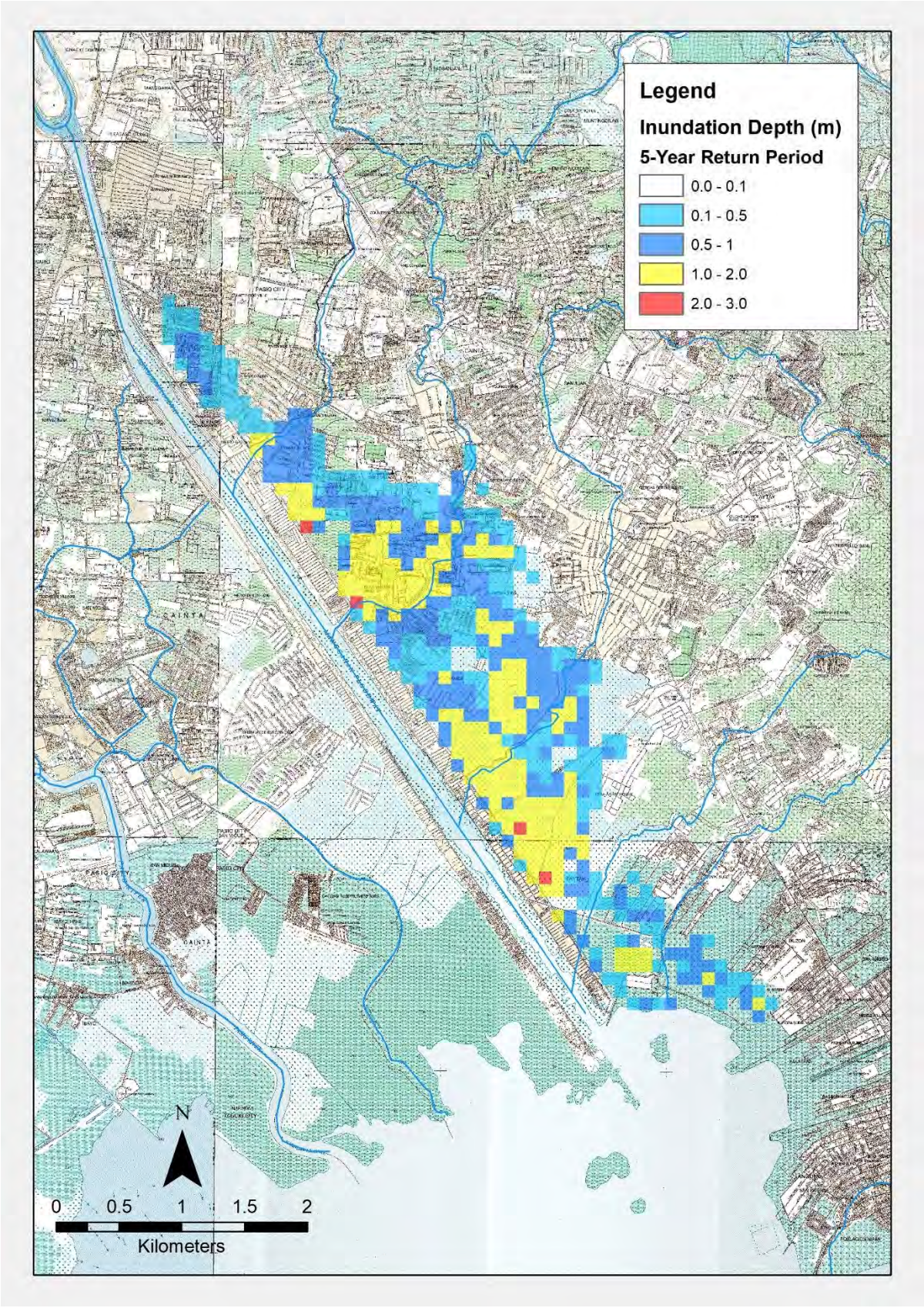
Source: Study Team

Figure 14.7　Comparison of Inundation Area（100-year Flood）



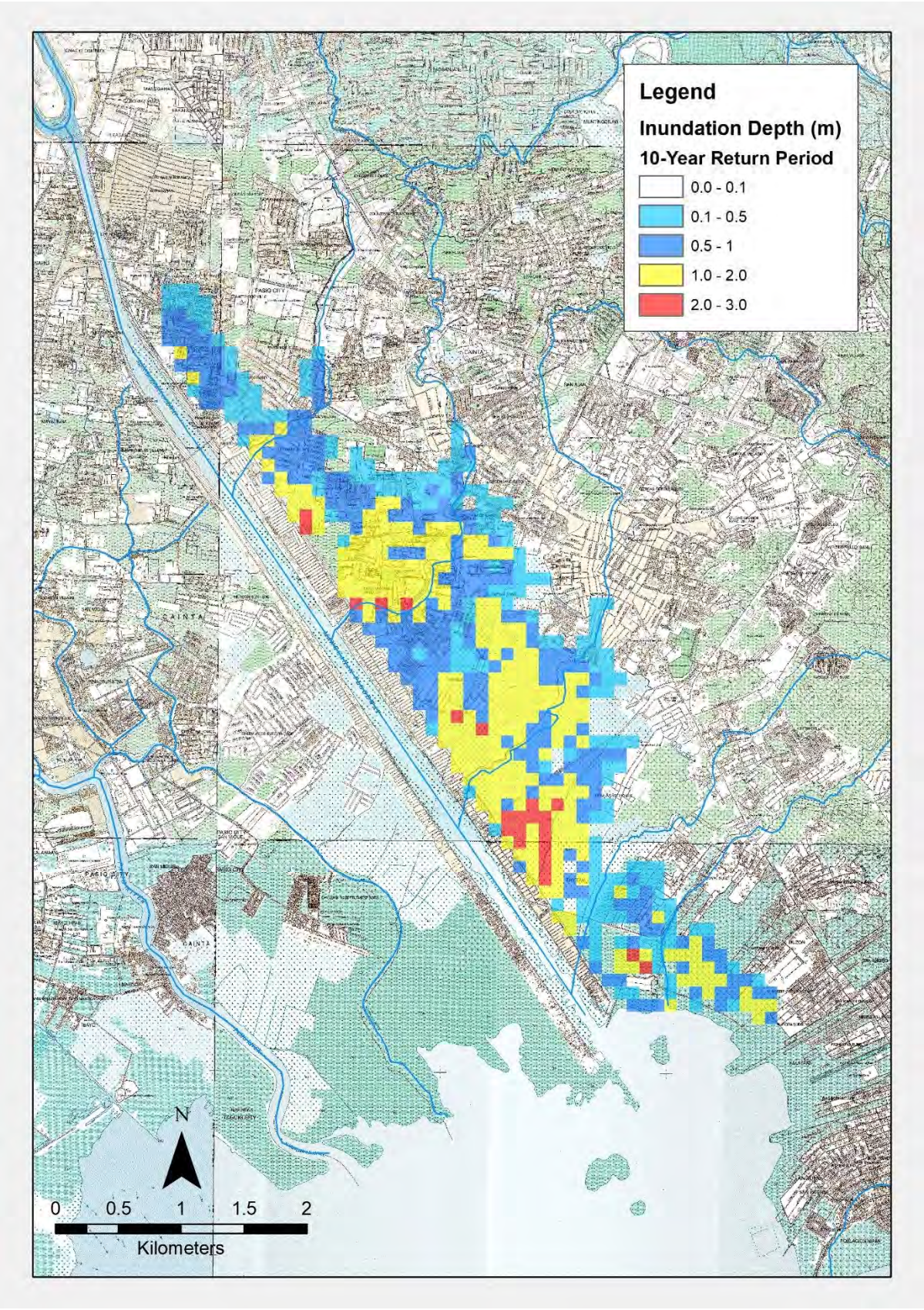
Source: Implementation Program

Figure 14.8　Inundation Area（2-year Flood）



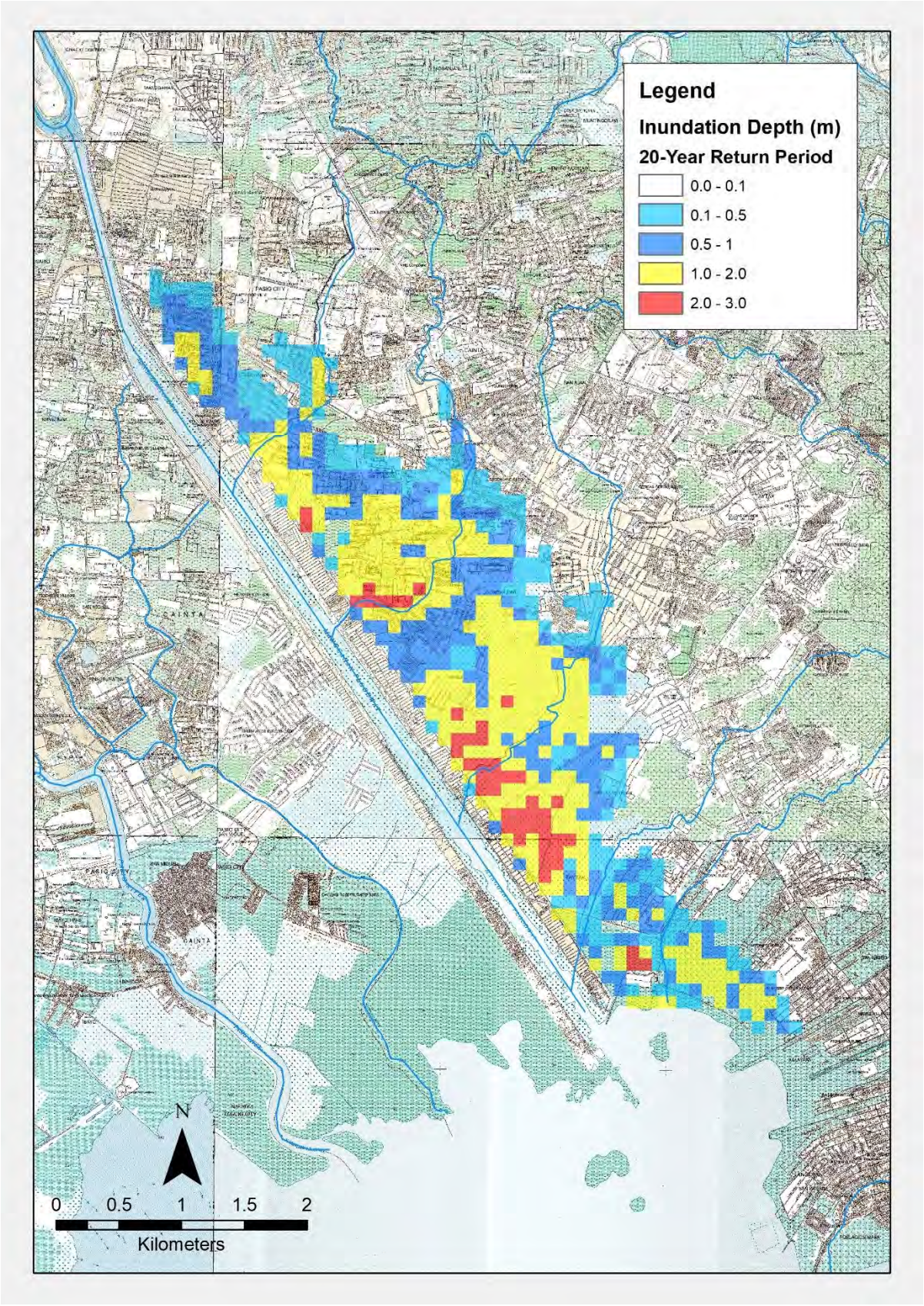
Source: Implementation Program

Figure 14.9　Inundation Area（5-year Flood）



Source: Implementation Program

Figure 14.10　Inundation Area（10-year Flood）



Source: Implementation Program

Figure 14.11　Inundation Area（20-year Flood）

TABLES

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（1/30）

Photo (distant view)	Photo (short range view)	NEW OUTLET
		Drainage Outlet No.= MR001A Northing= 1618661.915 Easting= 509853.144 Elevation= 11.606 Dimension= D450mm T50mm Type= RC Date= 2020/1/8 Station no.= 13+327 REMARKS: CLOGGED RC inside BC BC dimensions: H: 550mm W: 800mm Distance from mouth of BC to RC: 2 meters
Photo (distant view)	Photo (short range view)	NEW OUTLET
		Drainage Outlet No.= MR002A Northing= 1618618.9 Easting= 509862.436 Elevation= 12.309 Dimension= D450mm T85mm Type= RC Date= 2019/10/2 Station no.= 13+283
Photo (distant view)	Photo (short range view)	
		Drainage Outlet No.= MR003 Northing= 1618572.76 Easting= 509873.784 Elevation= 11.931 Dimension= D450mm T80mm Type= RC Date= 2019/10/8 Station no.= 13+236
Photo (distant view)	Photo (short range view)	NEW OUTLET
		Drainage Outlet No.= MR003.1 Northing= 1618552.032 Easting= 509877.448 Elevation= 12.254 Dimension= D570mm T70mm Type= RC Date= 2019/6/18 Station no.= 13+215
Photo (distant view)	Photo (short range view)	NEW OUTLET
		Drainage Outlet No.= MR003.2 Northing= 1618526.831 Easting= 509885.993 Elevation= 11.801 Dimension= D50mm Type= RC Date= 2019/10/18 Station no.= 13+188
Photo (distant view)	Photo (short range view)	NEW OUTLET
		Drainage Outlet No.= MR003.3 Northing= 1618517.027 Easting= 509888.093 Elevation= 11.5 Dimension= D50mm Type= PVC Date= 2019/10/18 Station no.= 13+178

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（2/30）

Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR003.4 Northing= 1618508.088 Easting= 509890.399 Elevation= 10.984 Dimension= D50mm Type= PVC Date= 2019/6/17 Station no.= 13+169 Remarks:
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR003.5 Northing= 1618497.537 Easting= 509892.562 Elevation= 11.485 Dimension= D50mm Type= PVC Date= 2019/10/18 Station no.= 13+158
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR003.6 Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Underwater during observation Remarks: Photo will be added when water level decreases
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR003.8 Northing= 1618480.047 Easting= 509896.832 Elevation= 10.746 Dimension= D50mm Type= PVC Date= 2019/6/17 Station no.= 13+140
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR003.9 Northing= 1618470.153 Easting= 509898.61 Elevation= 11.701 Dimension= D50mm Type= PVC Date= 2019/10/18 Station no.= 13+130
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR003.10 Northing= 1618467.774 Easting= 509899.777 Elevation= 12.907 Dimension= D300mm T70mm Type= RC Date= 2019/9/3 Station no.= 13+128

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（3/30）

Photo (distant view)	Photo (short range view)	NEW OUTLET
		Drainage Outlet No.= MR003.101 Northing= 1618459.858 Easting= 509900.95 Elevation= 11.672 Dimension= D50mm Type= PVC Date= 2019/11/29 Station no.= 13+119
Photo (distant view)	Photo (short range view)	NEW OUTLET
		Drainage Outlet No.= MR003.102 Northing= 1618448.95 Easting= 509903.264 Elevation= 11.66 Dimension= D30mm Type= PVC Date= 2019/10/22 Station no.= 13+108
Photo (distant view)	Photo (short range view)	NEW OUTLET
		Drainage Outlet No.= MR003.103 Northing= 1618438.607 Easting= 509905.146 Elevation= 11.93 Dimension= D50mm Type= PVC Date= 2019/10/23 Station no.= 13+097
Photo (distant view)	Photo (short range view)	NEW OUTLET
		Drainage Outlet No.= MR003.104 Northing= 1618426.862 Easting= 509906.512 Elevation= 11.657 Dimension= D50mm Type= PVC Date= 2019/11/29 Station no.= 13+085
Photo (distant view)	Photo (short range view)	NEW OUTLET
		Drainage Outlet No.= MR003.105 Northing= 1618417.173 Easting= 509907.733 Elevation= 11.553 Dimension= D50mm Type= PVC Date= 2019/10/18 Station no.= 13+075
Photo (distant view)	Photo (short range view)	NEW OUTLET
		Drainage Outlet No.= MR003.11 Northing= 1618406.23 Easting= 509909.015 Elevation= 11.53 Dimension= D30mm Type= PVC Date= 2019/10/23 Station no.= 13+064

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（4/30）

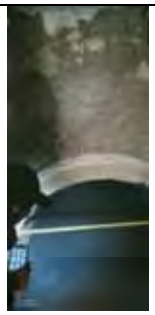
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR003.12 Northing= 1618395.363 Easting= 509910.544 Elevation= 11.297 Dimension= D50mm Type= PVC Date= 2019/6/17 Station no.= 13+054
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR003.13 Northing= 1618384.794 Easting= 509911.758 Elevation= 11.012 Dimension= D50mm Type= PVC Date= 2019/6/17 Station no.= 13+043
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR004A Northing= 1618387.071 Easting= 509902.024 Elevation= 12.725 Dimension= D980mm T100mm Type= RC Date= 2019/10/19 Station no.= 13+046 REMARKS RC is inside BC
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR004.1 Northing= 1618374.492 Easting= 509912.662 Elevation= 10.959 Dimension= D50mm Type= PVC Date= 2019/6/17 Station no.= 13+033
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR004.2 Northing= 1618363.443 Easting= 509913.62 Elevation= 11.167 Dimension= D50mm Type= PVC Date= 2019/6/17 Station no.= 13+021
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR004.3 Northing= 1618352.055 Easting= 509914.629 Elevation= 12.611 Dimension= D450mm T80mm Type= RC Date= 2019/6/17 Station no.= 13+010

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（5/30）

Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR004.4 Northing= 1618080.379 Easting= 509923.747 Elevation= 13.692 Dimension= D50mm Type= PVC Date= 2019/6/18 Station no.= 12+739 Remarks: Covered by soil
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR004.5 Northing= 1618079.262 Easting= 509923.842 Elevation= 13.682 Dimension= D50mm Type= PVC Date= 2019/6/18 Station no.= 12+738 Remarks: Covered by soil
Photo (distant view) 	Photo (short range view) 	CROSS SECTION Drainage Outlet No.= MR005 Northing= 1618079.924 Easting= 509923.546 Elevation= 13.807 Dimension= W1900mm H2050mm Type= BC Date= 2019/10/19 Station no.= 12+739
Photo (Distant View) 	Photo (Short Range View) 	Drainage Outlet No.= MR006A Northing= 1618030.222 Easting= 509116.002 Elevation= 12.359 Dimension= H1500mm W2050mm Type= BC Date= 2019/10/23 Station no.= 10+979
Photo (Distant View) 	Photo (Short Range View) 	Drainage Outlet No.= MR006B Northing= 1618031.957 Easting= 509114.482 Elevation= 12.321 Dimension= H1500mm W2050mm Type= BC Date= 2019/10/23 Station no.= 10+977
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR006.1 Northing= 1618033.426 Easting= 509119.54 Elevation= 19.966 Dimension= D530mm Type= SP Date= 2019/10/11 Station no.= 10+979

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（6/30）

Photo (distant view)  	Photo (short range view)  	Drainage Outlet No.= MR006.2 Northing= 1618036.564 Easting= 509117.147 Elevation= 19.875 Dimension= D530mm Type= SP Date= 2019/10/11 Station no.= 10+975
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR007 Northing= 1618028.233 Easting= 509087.614 Elevation= 11.608 Dimension= D1200mm Type= RC Date= 2019/10/22 Station no.= 10+965 REMARKS MR007 elevation is not equal to MR008 elevation
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR008 Northing= 1618029.292 Easting= 509086.7559 Elevation= 11.254 Dimension= D1200mm Type= RC Date= 2019/6/13 Station no.= 10+964 REMARKS MR007 elevation is not equal to MR008 elevation
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR009A Northing= 1618047.719 Easting= 509053.68 Elevation= 12.67 Dimension= D600mm Type= RC Date= 2019/10/31 Station no.= 10+935
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR009.1 Northing= 1618097.061 Easting= 508902.953 Elevation= 10.745 Dimension= D1800mm Type= RC Date= 2019/10/11 Station no.= 10+804
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR010 Northing= 1618044.502 Easting= 508823.166 Elevation= 11.007 Dimension= H1360mm W2000mm Type= BC Date= 2019/10/11 Station no.= 10+726

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（7/30）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR013 Northing= 1617959.021 Easting= 508780.528 Elevation= 11.94 Dimension= D80mm Type= PVC Date= 2019/10/20 Station no.= 10+645
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR014 Northing= 1617929.173 Easting= 508756.44 Elevation= 16.017 Dimension= H470mm W470mm Type= BC Date= 2019/6/13 Station no.= 10+610
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR015A Northing= 1617886.822 Easting= 508755.923 Elevation= 12.548 Dimension= D700mm T100mm Type= RC Date= 2019/10/11 Station no.= 10+569
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR015.1 Northing= 1617738.032 Easting= 508711.6787 Elevation= 10.643 Dimension= D700mm T100mm Type= RC Date= 2019/6/13 Station no.= 10+414
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR015.101 Northing= 1617853.686 Easting= 508748.428 Elevation= 10.5622 Dimension= D700mm T100mm Type= RC Date= 2019/6/13 Station no.= 10+536
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR015.2 Northing= 1617700.773 Easting= 508699.2339 Elevation= 10.9142 Dimension= D700mm T100mm Type= RC Date= 2019/6/13 Station no.= 10+375

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（8/30）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR016 Northing= 1617659.907 Easting= 508684.078 Elevation= 11.593 Dimension= H1140mm W2630mm Type= BC Date= 2019/10/20 Station no.= 10+331
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR017 Northing= 1617619.436 Easting= 508675.282 Elevation= 11.287 Dimension= D1500mm T150mm Type= RC Date= 2019/10/11 Station no.= 10+292
Photo (distant view) 	Photo (short range view) 	CROSS SECTION Drainage Outlet No.= MR018 Northing= 1617551.445 Easting= 508635.232 Elevation= 12.851 Dimension= H4180mm W3900mm Type= BC Date= 2019/12/19 Station no.= 10+221
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR019 Northing= 1617227.46 Easting= 508635.693 Elevation= 11.856 Dimension= D640mm T80mm Type= RC Date= 2019/10/19 Station no.= 9+903
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR020 Northing= 1617210.548 Easting= 508634.704 Elevation= 11.778 Dimension= D900mm T110mm Type= RC Date= 2019/10/19 Station no.= 9+886
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR021 Northing= 1617165.169 Easting= 508627.422 Elevation= 11.736 Dimension= D760mm T80mm Type= RC Date= 2019/10/22 Station no.= 9+840

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（9/30）

Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR021.1 Northing= 1617101.156 Easting= 508620.834 Elevation= 13.189 Dimension= D1020mm T80mm Type= RC Date= 2019/8/13 Station no.= 9+774
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR021.2 Northing= 1616989.49 Easting= 508590.312 Elevation= 12.4522 Dimension= D800mm T100mm Type= RC Date= 2019/7/19 Station no.= 9+638
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR021.3 Northing= 1616944.141 Easting= 508548.098 Elevation= 12.3185 Dimension= D900mm T100mm Type= RC Date= 2019/7/19 Station no.= 9+569
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR021.301 Northing= 1616941.041 Easting= 508551.6347 Elevation= 11.2985 Dimension= D390mm T90mm Type= RC Date= 2019/7/19 Station no.= 9+570
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR021.302 Northing= 1616945.609 Easting= 508549.0274 Elevation= 12.4522 Dimension= D900mm T80mm Type= RC Date= 2019/7/19 Station no.= 9+571
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR022 Northing= 1616885.908 Easting= 508468.563 Elevation= 12.855 Dimension= D350mm T25mm Type= RC Date= 2019/10/20 Station no.= 9+471

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（10/30）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR023 Northing= 1616877.697 Easting= 508450.545 Elevation= 13.074 Dimension= D920mm Type= RC Date= 2019/10/20 Station no.= 9+453
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR024 Northing= 1616739.303 Easting= 508346.011 Elevation= 11.057 Dimension= H2030mm W2520mm Type= BC Date= 2019/10/20 Station no.= 9+291 REMARKS No other drainage inside BC
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR025 Northing= 1616658.151 Easting= 508292.814 Elevation= 12.044 Dimension= H2180mm W690mm Type= BC Date= 2019/10/22 Station no.= 9+202 REMARKS No other drainage inside BC
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR025.1 Northing= 1616572.678 Easting= 508260.954 Elevation= 12.24 Dimension= H1100mm W1780mm Type= BC Date= 2019/9/29 Station no.= 9+120
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR026A Northing= 1616366.694 Easting= 508255.334 Elevation= 12.57 Dimension= W1950mm H500 Type= BC Date= 2019/9/28 Station no.= 8+932 REMARKS No ditch beyond the gate
	Photo (short range view) 	Drainage Outlet No.= MR026D1 Northing= 1616365.222 Easting= 508253.522 Elevation= 12.136 Dimension= W1950mm Type= BC Date= 2019/11/29 Station no.= 8+932

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（11/30）

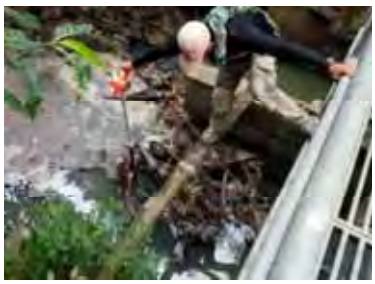
	Photo (short range view) 	Drainage Outlet No.= MR026D2 Northing= 1616366.107 Easting= 508254.463 Elevation= 12.115 Dimension= W1950mm Type= BC Date= 2019/11/29 Station no.= 8+932
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR026B Northing= 1616368.535 Easting= 508253.528 Elevation= 12.574 Dimension= H2900mm W1950mm T1400mm Type= BC Date= 2019/9/28 Station no.= 8+934 REMARKS No ditch beyond the gate
	Photo (short range view) 	Drainage Outlet No.= MR026C1 Northing= 1616366.884 Easting= 508251.971 Elevation= 12.174 Dimension= W1950mm Type= BC Date= 2019/11/29 Station no.= 8+934
	Photo (short range view) 	Drainage Outlet No.= MR026C2 Northing= 1616367.638 Easting= 508252.989 Elevation= 12.106 Dimension= W1950mm Type= BC Date= 2019/11/29 Station no.= 8+934
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR026.1 Northing= 1616378.949 Easting= 508258.539 Elevation= 16.088 Dimension= D290mm Type= PVC Date= 2019/10/23 Station no.= 8+943 REMARKS: PVC still existing at site but no water flow was observed
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR027 Northing= 1616129.692 Easting= 508383.089 Elevation= 18.154 Dimension= D460mm Type= PVC Date= 2019/10/22 Station no.= 8+684 REMARKS Old coordinates were off

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（12/30）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR028 Northing= 1616120.91 Easting= 508388.627 Elevation= 18.259 Dimension= D600mm Type= RC Date= 2019/10/20 Station no.= 8+674
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR029 Northing= 1616118.802 Easting= 508391.147 Elevation= 15.605 Dimension= D920mm Type= RC Date= 2019/10/24 Station no.= 8+671
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR029.1 Northing= 1616121.145 Easting= 508392.248 Elevation= 12.372 Dimension= D50mm Type= PVC Date= 2019/8/14 Station no.= 8+672
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR029.2 Northing= 1616119.919 Easting= 508392.59 Elevation= 13.506 Dimension= D50mm Type= PVC Date= 2019/8/14 Station no.= 8+671
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR029.3 Northing= 1616127.977 Easting= 508388.539 Elevation= 12.36 Dimension= D50mm Type= PVC Date= 2019/8/14 Station no.= 8+680
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR030 Northing= 1616112.894 Easting= 508393.589 Elevation= 17.937 Dimension= D460mm Type= RC Date= 2019/10/24 Station no.= 8+665

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（13/30）

Photo (distant view)	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR031.1 Northing= 1616107.939 Easting= 508400.392 Elevation= 19.042 Dimension= D25.4mm Type= PVC Date= 2019/8/14 Station no.= 8+657
Photo (distant view)	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR031.2 Northing= 1616107.506 Easting= 508399.967 Elevation= 18.888 Dimension= D25.4mm Type= PVC Date= 2019/8/14 Station no.= 8+657
Photo (distant view)  	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR032.1 Northing= 1616099.465 Easting= 508411.644 Elevation= 13.301 Dimension= D25.4mm Type= PVC Date= 2019/8/14 Station no.= 8+646
Photo (distant view)  	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR032.2 Northing= 1616075.288 Easting= 508422.353 Elevation= 17.491 Dimension= D25.4mm Type= PVC Date= 2019/8/14 Station no.= 8+621
Photo (distant view)  	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR032.3 Northing= 1616071.237 Easting= 508426.66 Elevation= 16.27 Dimension= D25.4mm Type= PVC Date= 2019/8/14 Station no.= 8+615
Photo (distant view)  	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR032.4 Northing= 1616070.32 Easting= 508430.242 Elevation= 16.385 Dimension= D25.4mm Type= PVC Date= 2019/8/14 Station no.= 8+612

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（14/30）

Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR032.5 Northing= 1616067.594 Easting= 508437.636 Elevation= 12.112 Dimension= D100mm Type= PVC Date= 2019/8/14 Station no.= 8+607
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR032.501 Northing= 1616058.14 Easting= 508435.754 Elevation= 16.927 Dimension= D1000mm T100mm Type= RC Date= 2019/8/14 Station no.= 8+603
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR043.39 Northing= 1616039.949 Easting= 508476.088 Elevation= 14.642 Dimension= D920mm T100mm Type= RC Date= 2019/10/23 Station no.= 8+563
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR047 Northing= 1616006.164 Easting= 508520.668 Elevation= 14.049 Dimension= D900mm H100mm Type= RC Date= 2019/10/24 Station no.= 8+507
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR047.1 Northing= 1616013.665 Easting= 508509.766 Elevation= 15.221 Dimension= D620mm Type= RC Date= 2019/10/24 Station no.= 8+521
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR047.2 Northing= 1616015.982 Easting= 508505.843 Elevation= 17.039 Dimension= D100mm Type= PVC Date= 2019/10/22 Station no.= 8+525

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（15/30）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR047.3 Northing= 1615999.104 Easting= 508527.843 Elevation= 17.321 Dimension= D100mm Type= PVC Date= 2019/9/10 Station no.= 8+597
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR048 Northing= 1615996.443 Easting= 508532.262 Elevation= 15.926 Dimension= D630mm T500mm Type= RC Date= 2019/7/27 Station no.= 8+492
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR048.1 Northing= 1615973.439 Easting= 508568.664 Elevation= 16.232 Dimension= D160mm Type= RC Date= 2019/9/29 Station no.= 8+449
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR048.2 Northing= 1615972.899 Easting= 508567.108 Elevation= 14.588 Dimension= D150mm Type= RC Date= 2019/9/29 Station no.= 8+450
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR048.3 Northing= 1615974.69 Easting= 508568.851 Elevation= 14.788 Dimension= D80mm Type= PVC Date= 2019/9/29 Station no.= 8+450
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR049 Northing= 1615975.179 Easting= 508570.83 Elevation= 16.25 Dimension= D160mm Type= RC Date= 2019/8/14 Station no.= 8+449

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（16/30）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR050 Northing= 1615977.129 Easting= 508572.661 Elevation= 16.281 Dimension= D160mm Type= RC Date= 2019/8/14 Station no.= 8+448
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR051 Northing= 1615975.337 Easting= 508569.301 Elevation= 13.408 Dimension= D160mm Type= RC Date= 2019/8/14 Station no.= 8+450
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR051.1 Northing= 1615976.199 Easting= 508570.457 Elevation= 14.707 Dimension= D160mm Type= RC Date= 2019/8/14 Station no.= 8+450
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR052 Northing= 1615976.752 Easting= 508570.52 Elevation= 13.481 Dimension= D150mm Type= RC Date= 2019/10/21 Station no.= 8+450
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR052.1 Northing= 1615977.92 Easting= 508571.712 Elevation= 13.592 Dimension= D150mm Type= RC Date= 2019/10/21 Station no.= 8+450
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR052.2 Northing= 1615977.42 Easting= 508571.568 Elevation= 14.741 Dimension= D160mm Type= RC Date= 2019/10/21 Station no.= 8+450

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（17/30）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR052.3 Northing= 1615978.246 Easting= 508572.366 Elevation= 14.777 Dimension= D160mm Type= RC Date= 2019/10/21 Station no.= 8+450 REMARKS Old coordinates were off
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR053 Northing= 1615976.368 Easting= 508577.192 Elevation= 17.172 Dimension= D300mm Type= PVC Date= 2019/10/21 Station no.= 8+443
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR054 Northing= 1615899.742 Easting= 508665.035 Elevation= 14.632 Dimension= D250mm Type= RC Date= 2019/9/29 Station no.= 8+328
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR055 Northing= 1615888.414 Easting= 508677.214 Elevation= 15.415 Dimension= D1470mm Type= RC Date= 2019/10/22 Station no.= 8+312 REMARKS RC is inside BC
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR055.1 Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks: Underwater during survey
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR055.2 Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks: Underwater during survey

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（18/30）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR056 Northing= 1615842.060 Easting= 508726.246 Elevation= 15.588 Dimension= D290mm T60mm Type= RC Date= 2019/10/22 Station no.= 8+245
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR057 Northing= 1615814.367 Easting= 508762.402 Elevation= 14.959 Dimension= D620mm T90mm Type= RC Date= 2019/10/22 Station no.= 8+199
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR058 Northing= 1615812.460 Easting= 508764.673 Elevation= 15.057 Dimension= D500mm T100mm Type= RC Date= 2019/10/22 Station no.= 8+196
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR058.1 Northing= 1615776.311 Easting= 508823.229 Elevation= 12.818 Dimension= D600mm Type= RC Date= 2019/7/16 Station no.= 8+128
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR059 Northing= 1615687.880 Easting= 508925.234 Elevation= 16.107 Dimension= D250mm T40mm Type= RC Date= 2019/7/17 Station no.= 7+993
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR059.1 Northing= 1615677.579 Easting= 508939.132 Elevation= 20.595 Dimension= D100mm Type= RC Date= 2019/7/17 Station no.= 7+976

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（19/30）

Photo (distant view)  	Photo (short range view)  	NEW OUTLET Drainage Outlet No.= MR059.2 Northing= 1615675.250 Easting= 508942.152 Elevation= 21.658 Dimension= D100mm Type= RC Date= 2019/7/17 Station no.= 7+972
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR059.3 Northing= 1615672.418 Easting= 508945.478 Elevation= 20.321 Dimension= D100mm Type= RC Date= 2019/7/17 Station no.= 7+968
Photo (distant view) 	Photo (short range view)  	Drainage Outlet No.= MR060 Northing= 1615667.911 Easting= 508951.375 Elevation= 17.027 Dimension= H460mm W310mm Type= BC Date= 2019/7/17 Station no.= 7+960
Photo (distant view) 	Photo (short range view)  	Drainage Outlet No.= MR061 Northing= 1615668.114 Easting= 508951.463 Elevation= 15.487 Dimension= D300mm T50mm Type= RC Date= 2019/7/17 Station no.= 7+960
Photo (distant view) 	Photo (short range view)  	Drainage Outlet No.= MR062 Northing= 1615653.958 Easting= 508971.436 Elevation= 16.797 Dimension= D290mm T50mm Type= RC Date= 2019/7/17 Station no.= 7+936
Photo (distant view) 	Photo (short range view)  	Drainage Outlet No.= MR063 Northing= 1615653.642 Easting= 508971.869 Elevation= 16.468 Dimension= D250mm T40mm Type= RC Date= 2019/7/17 Station no.= 7+935

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（20/30）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR064 Northing= 1615640.622 Easting= 508990.535 Elevation= 15.971 Dimension= D300mm T40mm Type= RC Date= 2019/10/24 Station no.= 7+912
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR065 Northing= 1615627.91 Easting= 509008.572 Elevation= 16.265 Dimension= D300mm T40mm Type= RC Date= 2019/7/17 Station no.= 7+890
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR066A Northing= 1615617.001 Easting= 509023.634 Elevation= 16.572 Dimension= H400mm W300mm Type= BC Date= 2019/10/31 Station no.= 7+872 REMARKS: Easting was corrected. Typo error
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR066B Northing= 1615617.107 Easting= 509023.621 Elevation= 16.258 Dimension= D200mm, T60mm Type= RC Date= 2019/12/7 Station no.= 7+872 REMARKS: Easting was corrected. Typo error
Photo (distant view) 	Photo (short range view)  	Drainage Outlet No.= MR067A Northing= 1615601.939 Easting= 509050.841 Elevation= 11.902 Dimension= D1200mm Type= RC Date= 2019/10/24 Station no.= 7+840 Remarks: RC inside BC BC dimensions: H1320mm W1240mm

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（21/30）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR067.1 Northing= 1615564.586 Easting= 509100.385 Elevation= 16.422 Dimension= D380mm Type= RC Date= 2019/10/24 Station no.= 7+779
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR068 Northing= 1615539.636 Easting= 509129.263 Elevation= 16.386 Dimension= D200mm T30mm Type= RC Date= 2019/7/17 Station no.= 7+740
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR069 Northing= 1615533.722 Easting= 509135.633 Elevation= 16.54 Dimension= D450mm T70mm Type= RC Date= 2019/7/17 Station no.= 7+732
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR071 Northing= 1615409.088 Easting= 509287.588 Elevation= 11.797 Dimension= D620mm T100mm Type= RC Date= 2019/10/24 Station no.= 7+523
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR072 Northing= 1615400.677 Easting= 509295.132 Elevation= 11.802 Dimension= D620mm T80mm Type= RC Date= 2019/10/24 Station no.= 7+509
Photo (distant view) 	Photo (short range view) 	NEW OUTLET Drainage Outlet No.= MR072.1 Northing= 1615303.811 Easting= 509342.958 Elevation= 11.763 Dimension= D600mm T70mm Type= RC Date= 2019/9/12 Station no.= 7+399

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（22/30）

Photo (distant view)	Photo (short range view)	
		Drainage Outlet No.= MR073 Northing= 1615263.368 Easting= 509358.207 Elevation= 11.367 Dimension= D620mm T40mm Type= RC Date= 2019/10/24 Station no.= 7+356
Photo (distant view)	Photo (short range view)	
		Drainage Outlet No.= MR074 Northing= 1615113.8 Easting= 509413.332 Elevation= 15.097 Dimension= D890mm T90mm Type= RC Date= 2019/10/24 Station no.= 7+197
Photo (distant view)	Photo (short range view)	
		Drainage Outlet No.= MR090 Northing= 1614909.277 Easting= 509543.156 Elevation= 13.755 Dimension= D1000mm T80mm Type= RC Date= 2019/10/24 Station no.= 6+952
Photo (distant view)	Photo (short range view)	
		Drainage Outlet No.= MR113 Northing= 1614853.833 Easting= 509281.702 Elevation= 14.038 Dimension= D100mm Type= PVC Date= 2019/7/19 Station no.= 6+241
Photo (distant view)	Photo (short range view)	
		Drainage Outlet No.= MR114 Northing= 1614867.517 Easting= 509275.363 Elevation= 13.937 Dimension= D100mm Type= PVC Date= 2019/10/25 Station no.= 6+226
Photo (distant view)	Photo (short range view)	
		Drainage Outlet No.= MR115 Northing= 1614881.145 Easting= 509269.264 Elevation= 13.991 Dimension= D100mm Type= PVC Date= 2019/10/26 Station no.= 6+214

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（23/30）

Photo (distant view)	Photo (short range view)	
		Drainage Outlet No.= MR116 Northing= 1614892.826 Easting= 509264.073 Elevation= 15.128 Dimension= D1220mm Type= RC Date= 2019/10/26 Station no.= 6+202
Photo (distant view)	Photo (short range view)	
		Drainage Outlet No.= MR117 Northing= 1614894.271 Easting= 509263.109 Elevation= 13.967 Dimension= D100mm Type= PVC Date= 2019/10/26 Station no.= 6+200
Photo (distant view)	Photo (short range view)	
		Drainage Outlet No.= MR118 Northing= 1614907.292 Easting= 509257.197 Elevation= 14.081 Dimension= D100mm Type= PVC Date= 2019/10/26 Station no.= 6+189
Photo (distant view)	Photo (short range view)	
		Drainage Outlet No.= MR119 Northing= 1614919.268 Easting= 509251.743 Elevation= 13.991 Dimension= D100mm Type= PVC Date= 2019/10/26 Station no.= 6+176
Photo (distant view)	Photo (short range view)	
		Drainage Outlet No.= MR120 Northing= 1614924.053 Easting= 509246.852 Elevation= 13.81 Dimension= D1220mm Type= RC Date= 2019/10/26 Station no.= 6+170
Photo (distant view)	Photo (short range view)	
		Drainage Outlet No.= MR120.1 Northing= 1614923.368 Easting= 509247.391 Elevation= 14.242 Dimension= D100mm Type= PVC Date= 2019/10/26 Station no.= 6+170

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（24/30）

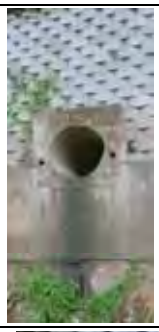
Photo (distant view)	Photo (short range view)	
		Drainage Outlet No.= MR120.2 Northing= 1614924.302 Easting= 509246.216 Elevation= 13.968 Dimension= D100mm Type= PVC Date= 2019/10/26 Station no.= 6+169
Photo (distant view)	Photo (short range view)	
		Drainage Outlet No.= MR121 Northing= 1614959.231 Easting= 509202.036 Elevation= 14.039 Dimension= D100mm Type= PVC Date= 2019/7/19 Station no.= 6+120
Photo (distant view)	Photo (short range view)	
		Drainage Outlet No.= MR122 Northing= 1614959.636 Easting= 509201.593 Elevation= 13.741 Dimension= D925mm Type= RC Date= 2019/7/19 Station no.= 6+120
Photo (distant view)	Photo (short range view)	
		Drainage Outlet No.= MR123 Northing= 1614960.008 Easting= 509201.103 Elevation= 14.003 Dimension= D100mm Type= PVC Date= 2019/7/19 Station no.= 6+119
Photo (distant view)	Photo (short range view)	
		Drainage Outlet No.= MR124 Northing= 1614963.269 Easting= 509196.981 Elevation= 19.574 Dimension= D400mm Type= SP Date= 2019/7/19 Station no.= 6+114
Photo (distant view)	Photo (short range view)	
		Drainage Outlet No.= MR124A Northing= 1614965.652 Easting= 509194.443 Elevation= 13.91 Dimension= D300mm Type= RC Date= 2019/10/26 Station no.= 6+111

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（25/30）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR125 Northing= 1615027.063 Easting= 509135.523 Elevation= 12.608 Dimension= D380mm Type= RC Date= 2019/7/19 Station no.= 6+035
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR126 Northing= 1615032.821 Easting= 509127.84 Elevation= 14.009 Dimension= D300mm Type= RC Date= 2019/9/2 Station no.= 6+025
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR127 Northing= 1615041.002 Easting= 509117.106 Elevation= 12.483 Dimension= D300mm Type= RC Date= 2019/10/25 Station no.= 6+012
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR128 Northing= 1615047.111 Easting= 509109.021 Elevation= 14.392 Dimension= D220mm Type= RC Date= 2019/10/25 Station no.= 6+002
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR129 Northing= 1615048.73 Easting= 509107.58 Elevation= 15.355 Dimension= D200mm Type= RC Date= 2019/10/25 Station no.= 6+000
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR130A Northing= 1615053.260 Easting= 509101.061 Elevation= 15.617 Dimension= D200mm Type= RC Date= 2019/10/25 Station no.= 5+992

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（26/30）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR130B Northing= 1615052.744 Easting= 509102.435 Elevation= 16.040 Dimension= D100mm Type= PVC Date= 2019/10/25 Station no.= 5+993 REMARKS: 2 PVC inside BC
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR130C Northing= 1615052.671 Easting= 509102.514 Elevation= 15.562 Dimension= D100mm Type= PVC Date= 2019/10/25 Station no.= 5+993 REMARKS: 2 PVC inside BC
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR131 Northing= 1615057.235 Easting= 509095.785 Elevation= 15.569 Dimension= D200mm Type= RC Date= 2019/10/26 Station no.= 5+985
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR132B Northing= 1615060.042 Easting= 509092.496 Elevation= 16.025 Dimension= D100mm Type= PVC Date= 2019/11/6 Station no.= 5+981 REMARKS: 3 PVC inside BC
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR132C Northing= 1615060.084 Easting= 509092.455 Elevation= 15.938 Dimension= D100mm Type= PVC Date= 2019/11/6 Station no.= 5+981 REMARKS: 3 PVC inside BC
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR132D Northing= 1615060.016 Easting= 509092.534 Elevation= 15.938 Dimension= D100mm Type= PVC Date= 2019/11/6 Station no.= 5+981 REMARKS: 3 PVC inside BC

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（27/30）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR133 Northing= 1615060.523 Easting= 509091.28 Elevation= 15.614 Dimension= D200mm Type= RC Date= 2019/10/26 Station no.= 5+980
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR134 Northing= 1615064.223 Easting= 509086.348 Elevation= 15.477 Dimension= D200mm Type= RC Date= 2019/10/26 Station no.= 5+974
Photo (distant view)  	Photo (short range view) 	Drainage Outlet No.= MR135A Northing= 1615066.791 Easting= 509082.476 Elevation= 15.821 Dimension= H200mm W200mm Type= RC Date= 2019/10/26 Station no.= 5+969
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR136 Northing= 1615070.092 Easting= 509075.923 Elevation= 15.193 Dimension= H400mm W400mm Type= BC Date= 2019/10/25 Station no.= 5+962
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR137 Northing= 1615073.223 Easting= 509069.915 Elevation= 15.429 Dimension= H300mm W300mm Type= BC Date= 2019/10/25 Station no.= 5+955

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（28/30）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR138 Northing= 1615073.475 Easting= 509069.157 Elevation= 15.442 Dimension= D250mm Type= RC Date= 2019/10/26 Station no.= 5+954
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR139 Northing= 1615075.656 Easting= 509065.111 Elevation= 15.702 Dimension= D200mm Type= RC Date= 2019/10/25 Station no.= 5+949
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR140 Northing= 1615078.387 Easting= 509055.61 Elevation= 16.214 Dimension= D150mm Type= RC Date= 2019/7/19 Station no.= 5+940
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR141 Northing= 1615092.647 Easting= 509025.359 Elevation= 16.048 Dimension= D150mm Type= RC Date= 2019/10/25 Station no.= 5+907
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR144 Northing= 1615116.41 Easting= 508978.329 Elevation= 15.79 Dimension= D460mm T70mm Type= RC Date= 2019/10/26 Station no.= 5+863
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR145 Northing= 1615117.599 Easting= 508976.764 Elevation= 16.363 Dimension= D260mm T50mm Type= RC Date= 2019/10/26 Station no.= 5+861

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（29/30）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR146 Northing= 1615118.197 Easting= 508974.369 Elevation= 16.264 Dimension= D250mm T50mm Type= RC Date= 2019/10/26 Station no.= 5+858
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR147A Northing= 1615119.112 Easting= 508966.411 Elevation= 15.422 Dimension= D120mm Type= PVC Date= 2019/10/26 Station no.= 5+852
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR148 Northing= 1615121.231 Easting= 508960.106 Elevation= 16.602 Dimension= D100mm Type= PVC Date= 1026/2019 Station no.= 5+847
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR151 Northing= 1615121.347 Easting= 508887.93 Elevation= 15.429 Dimension= 620mm Type= RC Date= 2019/10/25 Station no.= 5+788
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR151A Northing= 1614991.513 Easting= 508689.65 Elevation= 15.7 Dimension= D590mm T70mm Type= RC Date= 2019/10/25 Station no.= 5+592
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR151B Northing= 1614932.103 Easting= 508692.399 Elevation= 15.732 Dimension= D900mm T80mm Type= RC Date= 2019/10/25 Station no.= 5+548

Table 6.2.1 The Result of Drainage Survey (RIGHT BANK)（30/30）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= MR151C Northing= 1614891.907 Easting= 508698.134 Elevation= 11.326 Dimension= D600mm T80mm Type= RC Date= 2019/10/25 Station no.= 5+513
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= TR001 Northing= 1615824.933 Easting= 508748.867 Elevation= 15.226 Dimension= D400mm T50mm Type= RC Date= 2019/9/27 Station no.= 8+216

Table 6.2.2 The Result of Drainage Survey (LEFT BANK)（1/19）

Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML001 1618684.931 509912.44 12.463 D450mm T50mm RC 2019/9/6 13+340
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML002 1618666.309 509949.276 13.413 H2300mm W3100mm BC 2019/10/16 13+315
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML002.1 1618663.583 509950.105 13.399 H2300mm W3100mm BC 2019/10/16 13+312
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML003 1618626.036 509923.704 12.507 D180mm T10mm PVC 2019/10/16 13+280
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML004 1618608.07 509926.963 12.163 D900mm T100mm RC 2019/10/8 13+261
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML005 1618553.36 509935.943 11.788 H1000mm W720mm T200mm BC 2019/9/28 13+206
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML006 1618532.699 509938.925 11.829 H180mm W250mm BC 2019/10/8 13+185

Table 6.2.2 The Result of Drainage Survey (LEFT BANK)（2/19）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML007A 1618535.034 509943.517 13.830 D50mm T5mm PVC 2019/8/25 13+187 Old outlet (ML007) has been cut down and the remaining portion has been surveyed.
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML008 1618507.370 509946.135 13.473 D150mm T10mm SP 2019/10/8 13+159
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML009 1618499.037 509944.855 11.599 H1550mm W1500mm T150mm BC 2019/10/16 13+151 The drainage was still underwater during the observation today so the dimensions were not confirmed. Photos of the dimension will be added as proof.
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	NEW OUTLET ML009.1 1618493.160 509945.886 12.011 D250mm T50mm RC 2019/9/25 13+145
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	NEW OUTLET ML011.1 1618422.518 509970.920 13.525 D450mm T50mm RC 2019/9/6 13+073
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML012 1618387.516 509976.771 13.155 D600mm T80mm RC 2019/6/17 13+037

Table 6.2.2 The Result of Drainage Survey (LEFT BANK)（3/19）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	NEW OUTLET ML012.1 1618338.351 509970.233 10.862 D700mm T70mm RC 2019/6/17 12+989
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	NEW OUTLET ML012.2 1618291.53 509974.618 12.973 D400mm T50mm RC 2019/6/17 12+942
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	NEW OUTLET ML012.201 1618227.750 509981.290 13.138 D490mm T60mm RC 2019/6/17 12+878
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	NEW OUTLET ML012.3 1618173.373 509991.87 14.461 D200mm T40mm RC 2019/6/17 12+823
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML013 1618114.509 509998.443 12.435 D900mm T50mm RC 2019/10/16 12+764
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML015 1618019.477 510012.264 13.177 D600mm T80mm RC 2019/10/16 12+668

Table 6.2.2 The Result of Drainage Survey (LEFT BANK)（4/19）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML016 1617923.490 510021.853 11.576 H630mm W750mm T200mm BC 2019/9/25 12+572 There is an RC inside this drainage which is about 2 meters from the opening making it hard for measuring the dimension of the RC
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML017 1617891.291 510025.929 11.955 D920mm T10mm RC 2019/6/3 12+542
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	NEW OUTLET ML017.1 1617887.885 510025.850 12.564 H2430mm W1950mm T1230mm BC 2019/6/3 12+539
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	NEW OUTLET ML017.2 1617733.464 510011.600 12.325 H450mm W550mm RC inside BC 2019/9/25 12+388 RC inside cannot be measured because area is covered in soil.
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML018 1617710.141 510010.440 12.209 D800mm T80mm RC 2019/10/9 12+365
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks	ML019 1617588.389 510007.673 14.898 D1200mm T130mm RC 2019/10/9 12+251 Outlets ML19 and ML19.1 are not of the same/equal elevation as shown in the picture

Table 6.2.2 The Result of Drainage Survey (LEFT BANK)（5/19）

Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML019.1 1617586.600 510007.867 14.997 D1200mm T130mm RC 2019/10/9 12+249 Outlets ML19 and ML19.1 are not of the same/equal elevation as shown in the picture
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= REMARKS	ML020 1617493.886 509940.938 13.340 D900mm T100mm RC 2019/10/9 12+146) elevation is not equal to ML21 elev
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= REMARKS	ML021 1617492.854 509940.481 13.247 D900mm T100mm RC 2019/10/9 12+145) elevation is not equal to ML21 elev
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	NEW OUTLET ML021.1 1617407.683 509878.537 12.268 H1760mm W1800mm T200mm BC 2019/9/20 12+052
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks	ML022A 1617378.031 509841.442 12.033 D1100mm T100mm RC 2019/10/9 12+011 Old outlet (ML022) was extended for about 80 cm towards the river. The extended portion was the one surveyed.
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML023 1617345.336 509839.770 19.934 D120mm PVC 2019/6/13 11+996 PVC is damaged.

Table 6.2.2 The Result of Drainage Survey (LEFT BANK)（6/19）

Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML024 1617345.336 509829.385 19.979 D120mm PVC 2019/6/13 11+990 PVC is damaged.
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML025 1617345.334 509826.147 20.189 D80mm PVC 2019/6/13 11+989 PVC is damaged. Photos of the dimension will be added as proof.
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML026 1617345.327 509819.814 19.932 D120mm PVC 2019/6/13 11+983 PVC is damaged.
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML027 1617345.359 509809.984 19.754 D180mm PVC 2019/10/9 11+974 PVC is damaged.
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML028 1617345.232 509799.915 19.628 D200mm PVC 2019/10/9 11+968 PVC is damaged.
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML029A 1617345.580 509789.628 19.275 D50mm PVC 2019/10/9 11+959 Old outlet ML029 was damaged because of the new constructed stairs. It was relocated to a new drainage located in the wall. The drainage type is hard to be determined since there is no outlet but it is PVC from before and water flows from the outlet.

Table 6.2.2 The Result of Drainage Survey (LEFT BANK)（7/19）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML030A 1617349.876 509784.858 15.437 D600mm T80mm RC 2019/10/9 11+956 Old outlet ML030 was extended for about 50 cm. The extended drainage was constructed and relocated adjacent to the stairs.
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML031 1617344.936 509771.587 20.092 D100mm PVC 2019/6/13 11+945 PVC is damaged.
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML032 1617344.996 509768.385 19.844 D90mm SP 2019/10/15 11+942
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML034 1617345.032 509758.831 19.824 D250mm PVC 2019/6/13 11+933
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	NEW OUTLET ML034.1A 1617344.462 509748.596 19.732 D250mm PVC 2019/10/15 11+924
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML035 1617344.070 509731.945 20.469 D180mm PVC 2019/6/13 11+910

Table 6.2.2 The Result of Drainage Survey (LEFT BANK)（8/19）

Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML036 1617343.892 509727.978 20.283 D150mm T50mm RC 2019/10/15 11+906
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML037 1617343.779 509724.343 20.354 D50mm PVC 2019/10/9 11+903
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML038A 1617343.797 509708.596 19.258 D120mm UD 2019/10/15 11+890 Old outlet ML038 was destroyed because of the constructed stairs. It was then diverted to a new drainage adjacent to the stairs.
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML039 1617343.252 509693.412 19.714 D140mm PVC 2019/6/13 11+878 PVC is damaged.
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML040 1617343.115 509682.555 19.894 D200mm PVC 2019/10/10 11+867 PVC is damaged.
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML041 1617343.212 509679.002 20.399 D160mm PVC 2019/10/15 11+864 PVC is damaged.

Table 6.2.2 The Result of Drainage Survey (LEFT BANK)（9/19）

Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML042 1617343.410 509668.165 19.825 D100mm PVC 2019/6/13 11+856 PVC is damaged.
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML043 1617345.389 509654.465 20.142 D130mm PVC 2019/10/15 11+843 PVC is damaged.
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML044 1617349.516 509640.776 19.649 D130mm PVC 2019/6/13 11+832 PVC is damaged.
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML045 1617350.029 509638.466 20.344 D80mm PVC 2019/10/10 11+829 PVC is damaged.
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML046 1617358.714 509633.207 14.925 D800mm T100mm RC 2019/10/10 11+822 Dimension cannot be measured properly because drainage is submerged. The dimension above are estimated measurements.
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	NEW OUTLET ML046.1 1617352.196 509631.931 20.042 D150mm PVC 2019/9/20 11+823

Table 6.2.2 The Result of Drainage Survey (LEFT BANK)（10/19）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML047 1617355.429 509621.41 19.648 D100mm PVC 2019/10/10 11+815
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	NEW OUTLET ML047.1 1617357.181 509615.642 20.063 D180mm PVC 2019/9/20 11+809
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML048 1617359.478 509607.941 20.282 D180mm T30mm RC 2019/10/10 11+801
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML049 1617362.341 509600.110 20.479 D95mm T5mm SP 2019/10/10 11+793
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML050 1617363.029 509598.29 20.301 D90mm T10mm PVC 2019/10/10 11+793
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	NEW OUTLET ML050.1 1617366.285 509590.907 20.243 D150mm PVC 2019/9/20 11+786 PVC is damaged.

Table 6.2.2 The Result of Drainage Survey (LEFT BANK)（11/19）

Photo (distant view)	Photo (short range view)		NEW OUTLET
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML050.2 1617389.187 509597.199 12.726 D800mm T100mm RC 2019/9/20 11+782 The drainage is surbmerged into the land area so it is hard to measure the dimension. The dimension will be estimated from what is visible. 80 cm for the diameter and 10 cm for the thickness on both sides.
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML052 1617373.851 509576.291 20.160 D100mm PVC 2019/10/10 11+771
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML053 1617378.577 509568.070 20.384 D90mm T10mm SP 2019/10/10 11+763
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML054 1617378.872 509567.672 19.638 D100mm PVC 2019/9/20 11+763
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML055 1617383.212 509560.159 20.801 D100mm PVC 2019/6/13 11+754
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML056 1617392.829 509546.334 20.435 D120mm T20mm SP 2019/6/13 11+741

Table 6.2.2 The Result of Drainage Survey (LEFT BANK)（12/19）

Photo (distant view)	Photo (short range view)		NEW OUTLET
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML058.1 1617469.351 509470.525 14.326 D300mm RC 2019/9/23 11+638
Photo (distant view)	Photo (short range view)		NEW OUTLET
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML058.2 1617473.206 509468.437 13.594 D500mm T50mm RC 2019/9/25 11+634
Photo (distant view)	Photo (short range view)		NEW OUTLET
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML058.3 1617474.402 509467.060 13.667 D500mm T50mm RC 2019/6/13 11+632
Photo (distant view)	Photo (short range view)		NEW OUTLET
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML061.1 1617992.616 508883.679 19.005 D910mm T100mm RC 2019/10/28 10+742
Photo (distant view)	Photo (short range view)		NEW OUTLET
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML061.2 1617899.959 508843.071 18.338 D900mm T100mm RC 2019/10/28 10+607
Photo (distant view)	Photo (short range view)		NEW OUTLET
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML061.3 1617805.869 508807.453 17.111 D910mm T100mm RC 2019/10/28 10+506

Table 6.2.2 The Result of Drainage Survey (LEFT BANK)（13/19）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	NEW OUTLET ML061.4 1617708.694 508779.481 15.851 D910mm T100mm RC 2019/10/28 10+405
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML062A 1617669.324 508757.802 11.867 D1200mm T100mm RC 2019/9/25 10+361 Old outlet ML062 was a box culvert before and the drainage improvement resulted to three drainage outlets (ML062A, ML062.1B, ML062.2C) which were surveyed here.
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	NEW OUTLET ML062.1B 1617667.655 508756.604 11.929 D1200mm T100mm RC 2019/9/25 10+359
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	NEW OUTLET ML062.2C 1617666.075 508755.634 11.895 D1200mm T100mm RC 2019/9/25 10+358
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	NEW OUTLET ML062.3D 1617650.387 508763.454 13.976 D1200mm T100mm RC 2019/10/28 10+345
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML064 1617601.725 508749.523 13.412 H1640mm W2750mm T300mm (Top) BC 2019/10/17 10+292

Table 6.2.2 The Result of Drainage Survey (LEFT BANK)（14/19）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML064.1 1617578.060 508735.239 12.155 D600mm T60mm RC 2019/10/18 10+266
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML064.2 1617488.767 508714.558 11.896 H900mm T100mm RC 2019/6/13 10+169
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML065A 1617384.417 508712.362 13.078 H1060mm T100mm RC 2019/10/10 10+064 Old outlet (ML065) has been cut down and the remaining portion has been surveyed.
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML066A 1617216.607 508705.508 11.717 H3150mm W3080mm T300mm BC 2019/10/10 9+896 Old outlet (ML066) was a creek and a box culvert was constructed here.
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	NEW OUTLET ML066.101 1617219.513 508705.870 13.723 H760mm W680mm T: Top=200mm, Side=150mm BC 2019/9/23 9+899
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	NEW OUTLET ML066.4 1617106.652 508685.475 13.484 D1000mm T100mm RC 2019/8/13 9+785 Distance from BC to RC: 7 m (estimated) because of strong current in drainage RC inside BC

Table 6.2.2 The Result of Drainage Survey (LEFT BANK)（15/19）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML068 1616859.441 508558.426 12.685 H460mm W1000mm BC 2019/10/17 9+521
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML068.1 1616603.216 508367.068 11.660 D900mm T100mm RC 2019/10/12 9+177
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML069 1616445.355 508349.732 13.127 H1440mm W1310mm T200mm BC 2019/10/12 9+002
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks	ML070A 1616313.703 508386.943 12.085 D600mm T80mm RC 2019/10/12 8+848 Old outlet (ML070) was destroyed and was part of a road construction located along the centerline. A new drainage was relocated and constructed.
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks	ML071A 1616263.343 508400.069 12.397 D600mm T80mm RC 2019/10/12 8+791 Old outlet (ML071) was destroyed and was part of a road construction located along the centerline. A new drainage was relocated and constructed.
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks	ML072A 1616137.448 508500.447 14.443 D900mm T100mm RC 2019/10/14 8+611 Old outlet (ML072) was destroyed and was part of a road construction located along the centerline. A new drainage was relocated and constructed.

Table 6.2.2 The Result of Drainage Survey (LEFT BANK)（16/19）

Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks	ML073A 1616032.907 508616.549 12.443 D900mm T100mm RC 2019/10/14 8+446 Old outlet (ML073) was destroyed and was part of a road construction located along the centerline. A new drainage was relocated and constructed.
Photo (distant view)	Photo (short range view)		NEW OUTLET
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML073.1 1615977.314 508705.867 13.066 D900mm T100mm RC 2019/9/24 8+341
Photo (distant view)	Photo (short range view)		NEW OUTLET
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML073.2 1615918.695 508781.463 12.804 D900mm T100mm RC 2019/9/24 8+245
Photo (distant view)	Photo (short range view)		NEW OUTLET
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML073.3 1615854.395 508869.071 13.122 H1810mm W1430mm BC 2019/9/24 8+137
Photo (distant view)	Photo (short range view)		NEW OUTLET
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML087.1 1615680.116 509088.366 11.952 H300mm W300mm ED 2019/9/25 7+857
Photo (distant view)	Photo (short range view)		NEW OUTLET
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Renarks:	ML087.101 1615698.553 509075.290 13.699 H370mm W310mm T120 mm BC 2019/9/25 7+878 Drainage clogged and damaged

Table 6.2.2 The Result of Drainage Survey (LEFT BANK)（17/19）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	NEW OUTLET ML087.2 1615660.764 509110.377 10.808 H400mm W400mm BC 2019/7/17 7+827
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML088 1615666.214 509114.565 12.315 D250mm T50mm RC 2019/9/25 7+827
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML091A 1615651.410 509131.366 12.789 D100mm PVC 2019/10/14 7+805 Old outlet (ML091) has been cut down and the remaining portion has been surveyed.
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	NEW OUTLET ML091.1 1615648.586 509135.256 11.051 D1100m T100mm RC 2019/9/25 7+800
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML092 1615647.895 509137.023 13.436 D100mm PVC 2019/7/17 7+798
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML096 1615561.007 509267.353 17.627 D100mm T10mm PVC 2019/10/14 7+652

Table 6.2.2 The Result of Drainage Survey (LEFT BANK)（18/19）

Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks:	ML097A 1615168.637 509480.304 12.511 D770mm, T120mm RC 2019/10/16 7+216 Old outlet (ML097) has been cut down and the remaining portion has been surveyed.
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	NEW OUTLET ML097.3 1615564.777 509252.930 15.009 D1180mm RC 2019/10/14 7+658
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	NEW OUTLET ML097.4 1615335.585 509390.223 13.665 D1200mm T50mm RC 2019/8/15 7+406
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML098 1615139.331 509507.087 13.508 D1520mm T160mm RC 2019/8/30 7+178
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.= Remarks	NEW OUTLET ML098.1 1615036.696 509562.793 14.073 D80mm T4mm PVC 2019/7/19 7+061 During site visit, no RC was found behind or nearby this PVC.
Photo (distant view) 	Photo (short range view) 	Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML099 1614709.381 509646.645 11.995 D1840mm T170mm RC 2019/10/12 6+758

Table 6.2.2 The Result of Drainage Survey (LEFT BANK)（19/19）

Photo (distant view)	Photo (short range view)		NEW OUTLET
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML099.1 1614632.313 509646.342 11.489 D100mm T5mm PVC 2019/7/19 6+711
Photo (distant view)	Photo (short range view)		NEW OUTLET
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date=	ML099.2 1614630.934 509646.849 11.529 D100mm T5mm PVC 2019/7/19
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML100 1614583.790 509415.024 17.056 D620mm T100mm RC 2019/7/18 6+541
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML101 1614586.686 509381.123 17.690 D300mm T50mm RC 2019/7/18 6+513
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML102 1614593.602 509376.649 14.081 D910mm T60mm RC 2019/7/18 6+509
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML103 1614590.245 509364.147 18.231 D300mm T50mm RC 2019/7/18 6+500
Photo (distant view)	Photo (short range view)		
		Drainage Outlet No.= Northing= Easting= Elevation= Dimension= Type= Date= Station no.=	ML104 1614601.269 509333.043 16.699 D1065mm RC 2019/7/18 6+474

Table 6.2.3 Hydraulic Calculation for Probable Discharge for MARIKINA River Area (1/4)

OUTFALL DESIGNATION	STATION	Design Peak Discharge																		
		A	Time of Concentration														Tc	R_{25} 25Year Rainfall Int.	Runoff Coeff. C	DISCHARGE Q_{25}
			Overland Flow				Curb and Gutter Flow				Drain Flow Time									
			n*	L	S	To	L	S	Tg	To + Tg	n	L	R	S	Td					
		ha		m	%	mins	m	%	mins	mins		m	m	m/m	mins	mins	mins	mm/hr		m^3/s
Left Bank																				
ML104.5	5+400	3.849	0.015	48.006	0.350	7.196	50.446	0.500	1.784	8.980	0.013	212.830	0.225	0.001	4.434	13.414	232.296	0.300	0.745
ML104.4	5+600	3.692	0.015	48.006	0.350	7.196	40.446	0.500	1.430	8.626	0.013	257.543	0.225	0.001	5.365	13.991	228.153	0.300	0.702
ML104.3	5+800	2.454	0.015	23.806	0.350	5.696	39.817	0.500	1.408	7.104	0.013	220.113	0.225	0.001	4.586	11.689	246.221	0.300	0.503
ML104.2	6+160	3.687	0.015	40.694	0.350	6.810	47.350	0.500	1.674	8.484	0.013	286.568	0.225	0.001	5.970	14.455	224.996	0.300	0.691
ML104.1	6+330	3.186	0.015	40.694	0.350	6.810	47.350	0.500	1.674	8.484	0.013	146.758	0.225	0.001	3.057	11.542	247.537	0.300	0.657
ML104	6+474	0.836	0.015	34.405	0.350	6.440	12.084	0.500	0.427	6.867	0.013	411.896	0.263	0.001	8.581	15.448	218.660	0.900	0.457
ML103	6+500	0.815	0.015	39.807	0.350	6.761	46.087	0.500	1.629	8.390	0.013	133.637	0.075	0.003	2.784	11.174	250.922	0.900	0.511
ML102	6+509	1.190	0.015	31.248	0.350	6.236	45.865	0.500	1.622	7.858	0.013	144.817	0.225	0.001	3.017	10.875	253.785	0.900	0.755
ML101	6+513	0.813	0.015	38.546	0.350	6.688	53.726	0.500	1.900	8.588	0.013	134.988	0.075	0.003	2.812	11.400	248.825	0.900	0.506
ML100	6+541	2.196	0.015	26.495	0.350	5.903	49.512	0.500	1.751	7.653	0.013	215.948	0.155	0.001	4.499	12.152	242.226	0.900	1.330
ML098	7+178	8.078	0.015	116.043	0.350	9.658	85.008	0.500	3.005	12.663	0.013	203.767	0.375	0.000	4.245	16.908	210.284	0.500	2.359
ML097A	7+216	7.391	0.015	35.271	0.350	6.493	79.913	0.500	2.825	9.319	0.013	309.245	0.188	0.001	6.443	15.761	216.776	0.500	2.225
ML097.4	7+406	1.658	0.015	27.728	0.350	5.993	37.847	0.500	1.338	7.331	0.013	107.074	0.300	0.001	2.231	9.562	267.708	0.500	0.616
ML097.3	7+658	10.540	0.015	108.578	0.350	9.446	64.898	0.500	2.294	11.740	0.013	555.012	0.300	0.001	11.563	23.303	182.636	0.500	2.674
ML087A	7+680	4.318	0.015	118.925	0.350	9.737	106.399	0.500	3.762	13.499	0.013	354.656	0.250	0.001	7.389	20.887	191.706	0.750	1.724
ML087B	7+780	0.903	0.015	16.142	0.350	5.004	37.847	0.500	1.338	6.342	0.013	106.117	0.250	0.001	2.211	8.553	280.229	0.750	0.527
ML091.1	7+800	7.362	0.015	58.116	0.350	7.669	53.702	0.500	1.899	9.568	0.013	358.712	0.263	0.001	7.473	17.041	209.570	0.839	3.597
ML087.2	7+827	0.582	0.015	21.523	0.350	5.508	45.919	0.500	1.623	7.131	0.013	97.185	0.100	0.002	2.025	9.156	272.528	0.750	0.331
ML087.1	7+857	1.994	0.015	18.845	0.350	5.269	100.158	0.500	3.541	8.810	0.013	322.878	0.075	0.003	6.727	15.537	218.122	0.750	0.906
ML087C	7+880	4.279	0.015	44.628	0.350	7.023	59.987	0.500	2.121	9.144	0.013	324.022	0.250	0.001	6.750	15.894	215.990	0.750	1.925
ML087D	7+980	2.069	0.015	28.543	0.350	6.051	28.740	0.500	1.016	7.067	0.013	133.660	0.250	0.001	2.785	9.852	264.425	0.750	1.140
ML073.3	8+137	10.981	0.015	35.895	0.350	6.531	63.761	0.500	2.254	8.786	0.013	581.482	0.399	0.000	12.114	20.900	191.655	0.750	4.385
ML073.2	8+245	8.073	0.015	44.648	0.350	7.024	60.916	0.500	2.154	9.178	0.013	251.496	0.225	0.001	5.240	14.417	225.245	0.750	3.789
ML073.1	8+341	10.147	0.015	41.305	0.350	6.844	36.520	0.500	1.291	8.135	0.013	293.350	0.225	0.001	6.111	14.247	226.395	0.555	3.541
ML073A	8+446	2.993	0.015	33.035	0.350	6.353	50.629	0.500	1.790	8.143	0.013	328.749	0.225	0.001	6.849	14.992	221.498	0.750	1.381
ML072A	8+611	2.152	0.015	32.887	0.350	6.344	54.101	0.500	1.913	8.256	0.013	287.759	0.225	0.001	5.995	14.251	226.365	0.750	1.015
ML071A	8+791	4.329	0.015	32.072	0.350	6.291	19.482	0.500	0.689	6.980	0.013	282.708	0.150	0.001	5.890	12.869	236.421	0.612	1.740
ML070A	8+848	2.511	0.015	44.493	0.350	7.016	29.434	0.500	1.041	8.057	0.013	166.791	0.150	0.001	3.475	11.532	247.631	0.750	1.296
ML069	9+002	36.340	0.015	146.360	0.350	10.434	51.622	0.500	1.825	12.260	0.013	763.451	0.343	0.000	15.905	28.165	167.791	0.750	12.703
ML068.1	9+177	8.699	0.015	25.074	0.350	5.795	43.303	0.500	1.531	7.326	0.013	199.608	0.225	0.001	4.159	11.485	248.054	0.605	3.624
ML068A	9+220	1.061	0.015	15.767	0.350	4.965	22.953	0.500	0.812	5.776	0.013	111.922	0.225	0.001	2.332	8.108	286.377	0.950	0.802
ML068B	9+320	0.633	0.015	17.913	0.350	5.181	17.347	0.500	0.613	5.794	0.013	87.350	0.225	0.001	1.820	7.614	293.746	0.300	0.155
ML068C	9+420	0.854	0.015	14.816	0.350	4.863	36.919	0.500	1.305	6.168	0.013	128.217	0.225	0.001	2.671	8.839	276.483	0.750	0.492
ML068D	9+520	1.426	0.015	23.194	0.350	5.647	80.709	0.500	2.853	8.500	0.013	62.500	0.225	0.001	1.302	9.802	264.976	0.900	0.945
ML068	9+521	2.859	0.015	17.913	0.350	5.181	17.347	0.500	0.613	5.794	0.013	108.190	0.158	0.001	2.254	8.048	287.243	0.950	2.167
ML066.4	9+785	2.571	0.015	17.913	0.350	5.181	17.347	0.500	0.613	5.794	0.013	84.925	0.263	0.001	1.769	7.563	294.534	0.647	1.362
ML066A	9+896	47.678	0.015	45.730	0.350	7.080	74.595	0.500	2.637	9.718	0.013	1445.326	0.666	0.000	30.111	39.829	143.320	0.731	13.869
ML065A	10+064	11.463	0.015	12.894	0.350	4.643	22.331	0.500	0.790	5.432	0.013	94.310	0.263	0.001	1.965	7.397	297.171	0.484	4.580
ML064.2	10+169	1.639	0.015	43.747	0.350	6.977	45.184	0.500	1.597	8.574	0.013	152.926	0.225	0.001	3.186	11.760	245.597	0.300	0.335
ML064.1	10+266	13.233	0.015	32.160	0.350	6.297	43.307	0.500	1.531	7.828	0.013	189.695	0.150	0.001	3.952	11.780	245.425	0.480	4.327

Table 6.2.3 Hydraulic Calculation for Probable Discharge for MARIKINA River Area (2/4)

OUTFALL DESIGNATION	STATION	Design Peak Discharge																		
		A	Time of Concentration														Tc	R_{25} 25Year Rainfall Int.	Runoff Coeff. C	DISCHARGE Q_{25}
			Overland Flow				Curb and Gutter Flow				Drain Flow Time									
			n*	L	S	To	L	S	Tg	To + Tg	n	L	R	S	Td					
		ha		m	%	mins	m	%	mins	mins		m	m	m/m	mins	mins	mm/hr		m^3/s
ML062.3D	10+345	1.336	0.015	12.455	0.350	4.590	21.251	0.500	0.751	5.341	0.013	283.808	0.300	0.001	5.913	11.254	250.178	0.300	0.279
ML062A	10+361	0.981	0.015	48.313	0.350	7.211	102.039	0.500	3.608	10.819	0.013	1397.285	0.300	0.001	29.110	39.929	143.155	0.950	0.371
ML061.4	10+405	1.346	0.015	47.122	0.350	7.152	71.708	0.500	2.535	9.687	0.013	259.782	0.225	0.001	5.412	15.099	220.823	0.950	0.784
ML061.3	10+506	0.853	0.015	74.581	0.350	8.334	39.084	0.500	1.382	9.716	0.013	282.123	0.225	0.001	5.878	15.594	217.778	0.300	0.155
ML061.2	10+607	3.218	0.015	63.066	0.350	7.881	66.121	0.500	2.338	10.219	0.013	271.394	0.225	0.001	5.654	15.873	216.116	0.300	0.580
ML061.1	10+742	4.033	0.015	67.813	0.350	8.074	76.516	0.500	2.705	10.779	0.013	294.288	0.225	0.001	6.131	16.910	210.272	0.300	0.707
ML058.2	11+634	0.518	0.015	30.750	0.350	6.203	27.208	0.500	0.962	7.165	0.013	66.127	0.150	0.001	1.378	8.543	280.364	0.482	0.194
ML050.2	11+782	8.655	0.015	16.130	0.350	5.003	41.831	0.500	1.479	6.482	0.013	229.798	0.225	0.001	4.787	11.269	250.033	0.726	4.361
ML022A	12+011	12.105	0.015	86.991	0.350	8.773	51.212	0.500	1.811	10.584	0.013	397.480	0.263	0.001	8.281	18.865	200.483	0.790	5.322
ML021.1	12+052	0.533	0.015	71.347	0.350	8.212	117.669	0.500	4.160	12.372	0.013	422.393	0.445	0.000	8.800	21.172	190.564	0.300	0.085
ML020	12+146	26.698	0.015	79.295	0.350	8.506	61.827	0.500	2.186	10.692	0.013	773.491	0.225	0.001	16.114	26.807	171.560	0.734	9.337
ML019	12+251	1.778	0.015	36.749	0.350	6.583	14.283	0.500	0.505	7.088	0.013	132.863	0.300	0.001	2.768	9.856	264.380	0.300	0.392
ML018	12+365	2.381	0.015	55.159	0.350	7.537	38.274	0.500	1.353	8.890	0.013	162.708	0.188	0.001	3.390	12.280	241.158	0.900	1.436
ML017.2	12+388	3.322	0.015	52.952	0.350	7.435	14.283	0.500	0.505	7.940	0.013	134.817	0.059	0.005	2.809	10.749	255.024	0.900	2.118
ML017.1	12+539	4.364	0.015	103.190	0.350	9.287	60.088	0.500	2.124	11.411	0.013	369.408	0.541	0.000	7.696	19.107	199.363	0.702	1.696
ML017	12+542	0.324	0.015	18.275	0.350	5.215	10.803	0.500	0.382	5.597	0.013	146.408	0.225	0.001	3.050	8.647	278.975	0.750	0.188
ML016	12+572	1.527	0.015	45.869	0.350	7.088	71.766	0.500	2.537	9.625	0.013	104.089	0.171	0.001	2.169	11.793	245.304	0.719	0.748
ML015	12+668	1.293	0.015	9.971	0.350	4.262	42.928	0.500	1.518	5.779	0.013	134.056	0.150	0.001	2.793	8.572	279.971	0.693	0.697
ML013	12+764	0.910	0.015	14.022	0.350	4.775	75.322	0.500	2.663	7.438	0.013	116.136	0.225	0.001	2.420	9.857	264.365	0.689	0.460
ML012.3	12+823	0.388	0.015	10.803	0.350	4.377	18.275	0.500	0.646	5.023	0.013	27.710	0.050	0.006	0.577	5.600	331.671	0.512	0.183
ML012.201	12+878	0.261	0.015	10.803	0.350	4.377	18.275	0.500	0.646	5.023	0.013	30.320	0.113	0.002	0.632	5.655	330.429	0.495	0.119
ML012.2	12+942	0.320	0.015	32.389	0.350	6.311	25.370	0.500	0.897	7.208	0.013	25.353	0.113	0.002	0.528	7.737	291.859	0.509	0.132
ML012.1	12+989	8.574	0.015	47.354	0.350	7.163	49.159	0.500	1.738	8.901	0.013	566.050	0.188	0.001	11.793	20.694	192.494	0.735	3.368
ML012	13+037	0.210	0.015	23.526	0.350	5.673	28.702	0.500	1.015	6.688	0.013	25.318	0.150	0.001	0.527	7.216	300.145	0.727	0.128
ML011.1	13+073	0.334	0.015	45.975	0.350	7.093	15.190	0.500	0.537	7.630	0.013	17.861	0.113	0.002	0.372	8.002	287.905	0.700	0.187
ML009	13+151	2.338	0.015	44.558	0.350	7.019	32.107	0.500	1.135	8.155	0.013	243.395	0.381	0.000	5.071	13.225	233.696	0.903	1.370
ML005	13+206	2.338	0.015	47.461	0.350	7.169	32.370	0.500	1.144	8.313	0.013	274.540	0.209	0.001	5.720	14.033	227.866	0.906	1.340
ML004	13+261	1.316	0.015	12.161	0.350	4.553	45.354	0.500	1.604	6.157	0.013	265.592	0.225	0.001	5.533	11.690	246.216	0.875	0.787
ML001	13+340	0.208	0.015	5.796	0.350	3.557	6.183	0.500	0.219	3.775	0.013	22.740	0.113	0.002	0.474	4.249	368.491	0.300	0.064
Right Bank																			
MR151C	5+513	0.135	0.015	5.614	0.350	3.519	11.784	0.500	0.417	3.936	0.013	30.431	0.150	0.001	0.634	4.570	358.547	0.750	0.101
MR151B	5+548	1.524	0.015	34.622	0.350	6.453	28.994	0.500	1.025	7.478	0.013	236.438	0.225	0.001	4.926	12.404	240.135	0.750	0.762
MR151A	5+592	0.300	0.015	20.562	0.350	5.424	22.178	0.500	0.784	6.208	0.013	44.187	0.150	0.001	0.921	7.129	301.597	0.750	0.189
MR151	5+788	0.822	0.015	21.532	0.350	5.508	20.268	0.500	0.717	6.225	0.013	156.539	0.150	0.001	3.261	9.486	268.584	0.900	0.552
MR144	5+863	0.667	0.015	15.288	0.350	4.914	12.822	0.500	0.453	5.367	0.013	126.198	0.113	0.002	2.629	7.997	287.988	0.900	0.480
MR141	5+907	0.598	0.015	17.557	0.350	5.146	24.598	0.500	0.870	6.016	0.013	121.061	0.038	0.009	2.522	8.538	280.429	0.900	0.419
MR140	5+940	0.572	0.015	12.185	0.350	4.556	18.773	0.500	0.664	5.220	0.013	110.069	0.038	0.009	2.293	7.513	295.323	0.900	0.422
MR137	5+955	0.254	0.015	16.285	0.350	5.019	21.793	0.500	0.770	5.789	0.013	120.069	0.075	0.003	2.501	8.291	283.802	0.900	0.180
MR136	5+962	0.210	0.015	13.267	0.350	4.687	13.165	0.500	0.465	5.153	0.013	103.829	0.100	0.002	2.163	7.316	298.493	0.900	0.157
MR134	5+974	0.013	0.015	22.097	0.350	5.556	9.413	0.500	0.333	5.889	0.013	95.815	0.050	0.006	1.996	7.885	289.628	0.900	0.009
MR131	5+985	0.013	0.015	3.441	0.350	2.989	5.769	0.500	0.204	3.193	0.013	16.153	0.050	0.006	0.337	3.530	394.609	0.900	0.013

Table 6.2.3 Hydraulic Calculation for Probable Discharge for MARIKINA River Area (3/4)

OUTFALL DESIGNATION	STATION	Design Peak Discharge																		
		A	Time of Concentration														Tc	R_{25} 25Year Rainfall Int.	Runoff Coeff. C	DISCHARGE Q_{25}
			Overland Flow				Curb and Gutter Flow				Drain Flow Time									
			n*	L	S	To	L	S	Tg	To + Tg	n	L	R	S	Td					
		ha		m	%	mins	m	%	mins	mins		m	m	m/m	mins	mins	mins	mm/hr		m^3/s
MR130A	5+992	0.012	0.015	3.441	0.350	2.989	5.769	0.500	0.204	3.193	0.013	16.153	0.050	0.006	0.337	3.530	394.609	0.900	0.012	
MR130B	5+993	0.012	0.015	3.441	0.350	2.989	5.769	0.500	0.204	3.193	0.013	16.153	0.025	0.015	0.337	3.530	394.609	0.900	0.012	
MR130C	5+993	0.012	0.015	3.441	0.350	2.989	5.769	0.500	0.204	3.193	0.013	16.153	0.025	0.015	0.337	3.530	394.609	0.900	0.012	
MR129	6+000	0.018	0.015	3.441	0.350	2.989	5.769	0.500	0.204	3.193	0.013	16.153	0.050	0.006	0.337	3.530	394.609	0.900	0.018	
MR127	6+012	0.683	0.015	22.804	0.350	5.615	23.277	0.500	0.823	6.438	0.013	108.669	0.075	0.003	2.264	8.702	278.264	0.900	0.475	
MR124A	6+111	0.707	0.015	17.680	0.350	5.158	26.348	0.500	0.932	6.090	0.013	115.528	0.075	0.003	2.407	8.496	280.985	0.900	0.497	
MR122	6+120	0.830	0.015	26.239	0.350	5.884	25.720	0.500	0.909	6.793	0.013	129.149	0.225	0.001	2.691	9.484	268.614	0.950	0.589	
MR120	6+170	2.355	0.015	61.576	0.350	7.819	62.159	0.500	2.198	10.016	0.013	265.098	0.300	0.001	5.523	15.539	218.107	0.950	1.355	
MR116	6+202	2.773	0.015	81.602	0.350	8.588	18.943	0.500	0.670	9.258	0.013	303.567	0.300	0.001	6.324	15.582	217.848	0.950	1.594	
MR115	6+214	0.111	0.015	24.606	0.350	5.759	14.966	0.500	0.529	6.288	0.013	36.084	0.025	0.015	0.752	7.040	303.117	0.900	0.084	
MR090	6+952	4.410	0.015	91.552	0.350	8.924	16.129	0.500	0.570	9.494	0.013	251.271	0.263	0.001	5.235	14.729	223.190	0.950	2.597	
MR074	7+197	1.619	0.015	25.108	0.350	5.798	26.243	0.500	0.928	6.726	0.013	194.914	0.225	0.001	4.061	10.786	254.653	0.900	1.030	
MR073	7+356	1.327	0.015	13.631	0.350	4.730	12.578	0.500	0.445	5.174	0.013	203.748	0.150	0.001	4.245	9.419	269.369	0.900	0.893	
MR072.1	7+399	1.599	0.015	18.700	0.350	5.255	18.473	0.500	0.653	5.909	0.013	214.345	0.150	0.001	4.466	10.374	258.820	0.900	1.035	
MR072	7+509	1.277	0.015	14.701	0.350	4.850	14.959	0.500	0.529	5.379	0.013	256.428	0.150	0.001	5.342	10.722	255.294	0.900	0.815	
MR071	7+523	1.845	0.015	76.429	0.350	8.403	82.470	0.500	2.916	11.318	0.013	258.684	0.150	0.001	5.389	16.708	211.376	0.900	0.975	
MR069	7+732	1.363	0.015	20.530	0.350	5.422	180.048	0.500	6.366	11.787	0.013	178.227	0.113	0.002	3.713	15.500	218.343	0.900	0.744	
MR067.1	7+779	0.486	0.015	10.816	0.350	4.379	15.797	0.500	0.559	4.937	0.013	119.384	0.113	0.002	2.487	7.424	296.734	0.900	0.361	
MR067A	7+840	9.578	0.015	78.146	0.350	8.465	58.649	0.500	2.074	10.539	0.013	372.706	0.300	0.001	7.765	18.303	203.148	0.743	4.013	
MR066A	7+872	0.064	0.015	10.098	0.350	4.280	10.328	0.500	0.365	4.645	0.013	27.364	0.086	0.003	0.570	5.215	340.938	0.900	0.055	
MR066B	7+872	0.146	0.015	7.626	0.350	3.897	9.357	0.500	0.331	4.228	0.013	71.686	0.050	0.006	1.493	5.722	328.924	0.900	0.120	
MR065	7+890	0.164	0.015	13.038	0.350	4.660	8.821	0.500	0.312	4.972	0.013	69.960	0.075	0.003	1.458	6.430	314.224	0.900	0.128	
MR064	7+912	0.158	0.015	13.399	0.350	4.703	9.495	0.500	0.336	5.038	0.013	67.152	0.075	0.003	1.399	6.437	314.070	0.900	0.124	
MR063	7+935	0.115	0.015	22.520	0.350	5.591	10.158	0.500	0.359	5.951	0.013	65.132	0.063	0.004	1.357	7.307	298.630	0.900	0.086	
MR062	7+936	0.124	0.015	18.434	0.350	5.230	9.068	0.500	0.321	5.551	0.013	52.735	0.075	0.003	1.099	6.650	310.068	0.900	0.096	
MR060	7+960	0.106	0.015	8.896	0.350	4.103	9.495	0.500	0.336	4.438	0.013	62.903	0.093	0.003	1.310	5.749	328.317	0.900	0.087	
MR061	7+960	0.100	0.015	8.100	0.350	3.976	13.275	0.500	0.469	4.446	0.013	60.158	0.075	0.003	1.253	5.699	329.429	0.900	0.083	
MR059	7+993	0.562	0.015	24.629	0.350	5.761	17.153	0.500	0.606	6.367	0.013	105.684	0.063	0.004	2.202	8.569	280.014	0.900	0.393	
MR058.1	8+128	0.925	0.015	24.216	0.350	5.728	14.194	0.500	0.502	6.230	0.013	62.735	0.150	0.001	1.307	7.537	294.943	0.900	0.682	
MR057	8+199	0.071	0.015	10.843	0.350	4.382	7.410	0.500	0.262	4.644	0.013	26.710	0.150	0.001	0.556	5.201	341.291	0.900	0.061	
MR056	8+245	0.335	0.015	14.678	0.350	4.848	14.722	0.500	0.521	5.368	0.013	58.438	0.075	0.003	1.217	6.586	311.254	0.900	0.261	
MR055	8+312	11.631	0.015	131.198	0.350	10.061	34.857	0.500	1.232	11.293	0.013	739.671	0.375	0.000	15.410	26.703	171.858	0.950	5.275	
MR054	8+328	0.829	0.015	25.715	0.350	5.844	35.851	0.500	1.268	7.112	0.013	133.631	0.063	0.004	2.784	9.896	263.938	0.950	0.577	
MR053	8+443	0.212	0.015	16.285	0.350	5.019	12.015	0.500	0.425	5.443	0.013	29.059	0.075	0.003	0.605	6.049	321.856	0.950	0.180	
MR048	8+492	0.271	0.015	16.285	0.350	5.019	12.015	0.500	0.425	5.443	0.013	69.599	0.150	0.001	1.450	6.893	305.665	0.950	0.218	
MR047	8+507	0.202	0.015	13.168	0.350	4.676	14.745	0.500	0.521	5.197	0.013	70.786	0.225	0.001	1.475	6.672	309.663	0.950	0.165	
MR047.1	8+521	0.284	0.015	13.955	0.350	4.767	20.959	0.500	0.741	5.508	0.013	77.882	0.150	0.001	1.623	7.130	301.573	0.950	0.226	
MR047.2	8+525	0.007	0.015	2.861	0.350	2.811	2.160	0.500	0.076	2.887	0.013	7.919	0.025	0.015	0.165	3.052	415.823	0.950	0.008	
MR043.39	8+563	6.217	0.015	54.967	0.350	7.528	127.243	0.500	4.499	12.027	0.013	332.920	0.225	0.001	6.936	18.963	200.027	0.950	3.282	
MR032.501	8+603	7.200	0.015	145.803	0.350	10.421	98.019	0.500	3.465	13.887	0.013	519.713	0.263	0.001	10.827	24.714	177.916	0.950	3.380	

Table 6.2.3 Hydraulic Calculation for Probable Discharge for MARIKINA River Area (4/4)

OUTFALL DESIGNATION	STATION	Design Peak Discharge																		
		A	Time of Concentration														Tc	R_{25} 25Year Rainfall Int.	Runoff Coeff. C	DISCHARGE Q_{25}
			Overland Flow				Curb and Gutter Flow				Drain Flow Time									
			n*	L	S	To	L	S	Tg	To + Tg	n	L	R	S	Td					
		ha		m	%	mins	m	%	mins	mins		m	m	m/m	mins	mins	mins	mm/hr		m^3/s
MR030	8+665	0.041	0.015	8.392	0.350	4.024	12.163	0.500	0.430	4.454	0.013	19.711	0.113	0.002	0.411	4.864	350.143	0.950	0.038	
MR029	8+671	2.721	0.015	51.095	0.350	7.347	42.458	0.500	1.501	8.848	0.013	250.604	0.225	0.001	5.221	14.069	227.614	0.950	1.635	
MR028	8+674	0.185	0.015	9.865	0.350	4.246	20.525	0.500	0.726	4.972	0.013	30.755	0.150	0.001	0.641	5.613	331.385	0.950	0.162	
MR027	8+684	1.207	0.015	27.652	0.350	5.987	25.085	0.500	0.887	6.874	0.013	231.703	0.113	0.002	4.827	11.701	246.114	0.950	0.784	
MR025.1	9+120	4.095	0.015	21.183	0.350	5.478	55.817	0.500	1.973	7.452	0.013	138.460	0.340	0.000	2.885	10.336	259.211	0.500	1.474	
MR025	9+202	40.543	0.015	191.285	0.350	11.408	189.571	0.500	6.702	18.111	0.013	834.358	0.262	0.001	17.382	35.493	151.089	0.732	12.454	
MR024	9+291	10.221	0.015	28.264	0.350	6.031	43.084	0.500	1.523	7.554	0.013	427.847	0.562	0.000	8.913	16.468	212.703	0.710	4.290	
MR023	9+453	0.544	0.015	14.104	0.350	4.784	15.166	0.500	0.536	5.320	0.013	14.104	0.225	0.001	0.294	5.614	331.362	0.900	0.450	
MR021.3	9+569	0.548	0.015	12.826	0.350	4.635	21.367	0.500	0.755	5.390	0.013	174.265	0.263	0.001	3.631	9.021	274.195	0.300	0.125	
MR021.301	9+570	1.485	0.015	10.190	0.350	4.293	15.828	0.500	0.560	4.852	0.013	59.334	0.263	0.001	1.236	6.088	321.037	0.718	0.951	
MR021.302	9+571	0.911	0.015	24.554	0.350	5.755	54.235	0.500	1.917	7.672	0.013	89.511	0.300	0.001	1.865	9.537	267.991	0.481	0.326	
MR021.2	9+638	1.518	0.015	63.165	0.350	7.885	12.892	0.500	0.456	8.341	0.013	285.950	0.225	0.001	5.957	14.298	226.045	0.704	0.671	
MR021.1	9+774	2.698	0.015	41.869	0.350	6.875	14.728	0.500	0.521	7.396	0.013	288.714	0.263	0.001	6.015	13.411	232.315	0.593	1.031	
MR021	9+840	1.612	0.015	35.006	0.350	6.477	23.869	0.500	0.844	7.321	0.013	209.342	0.188	0.001	4.361	11.682	246.284	0.671	0.740	
MR020	9+886	1.539	0.015	26.302	0.350	5.888	34.211	0.500	1.210	7.098	0.013	166.595	0.225	0.001	3.471	10.569	256.828	0.681	0.747	
MR019	9+903	0.606	0.015	12.917	0.350	4.646	17.409	0.500	0.616	5.261	0.013	33.150	0.150	0.001	0.691	5.952	323.901	0.750	0.409	
MR018	10+221	38.969	0.015	161.389	0.350	10.780	152.028	0.500	5.375	16.155	0.013	867.703	1.009	0.000	18.077	34.232	153.602	0.728	12.099	
MR017	10+292	16.123	0.015	40.280	0.350	6.787	48.283	0.500	1.707	8.494	0.013	814.496	0.375	0.000	16.969	25.463	175.559	0.636	4.998	
MR015.2	10+375	11.730	0.015	81.040	0.350	8.568	68.850	0.500	2.434	11.003	0.013	1141.257	0.188	0.001	23.776	34.779	152.497	0.723	3.593	
MR015.1	10+414	1.908	0.015	18.010	0.350	5.190	47.540	0.500	1.681	6.871	0.013	197.289	0.188	0.001	4.110	10.981	252.759	0.660	0.884	
MR015.101	10+536	5.636	0.015	42.672	0.350	6.919	83.379	0.500	2.948	9.867	0.013	451.670	0.188	0.001	9.410	19.277	198.593	0.748	2.326	
MR015A	10+569	0.212	0.015	24.463	0.350	5.748	15.173	0.500	0.536	6.284	0.013	14.431	0.188	0.001	0.301	6.585	311.272	0.530	0.097	
MR014	10+610	0.742	0.015	21.376	0.350	5.495	23.899	0.500	0.845	6.340	0.013	89.081	0.118	0.002	1.856	8.196	285.130	0.950	0.558	
MR010	10+726	9.146	0.015	107.484	0.350	9.414	77.423	0.500	2.737	12.151	0.013	371.089	0.087	0.003	7.731	19.882	195.914	0.950	4.728	
MR009.1	10+804	6.348	0.015	73.089	0.350	8.278	43.687	0.500	1.545	9.823	0.013	234.222	0.450	0.000	4.880	14.703	223.361	0.945	3.720	
MR009A	10+935	0.660	0.015	28.726	0.350	6.064	26.658	0.500	0.943	7.006	0.013	88.565	0.150	0.001	1.845	8.852	276.329	0.300	0.152	
MR007 & MR008	10+964	11.987	0.015	91.917	0.350	8.936	72.125	0.500	2.550	11.486	0.013	589.822	0.300	0.001	12.288	23.774	181.019	0.760	4.579	
MR004.3	13+010	0.607	0.015	13.791	0.350	4.748	10.415	0.500	0.368	5.116	0.013	39.164	0.113	0.002	0.816	5.932	324.316	0.300	0.164	
MR004.1	13+033	0.014	0.015	5.352	0.350	3.463	5.144	0.500	0.182	3.645	0.013	29.336	0.013	0.037	0.611	4.256	368.250	0.750	0.011	
MR004A	13+046	3.261	0.015	94.561	0.350	9.021	71.359	0.500	2.523	11.543	0.013	341.650	0.263	0.001	7.118	18.661	201.436	0.742	1.353	
MR003.105	13+075	0.023	0.015	4.099	0.350	3.169	5.766	0.500	0.204	3.373	0.013	21.023	0.013	0.037	0.438	3.811	383.694	0.300	0.007	
MR003.10	13+128	0.383	0.015	5.384	0.350	3.470	8.243	0.500	0.291	3.762	0.013	58.070	0.075	0.003	1.210	4.971	347.242	0.695	0.257	
MR003.5	13+158	0.037	0.015	7.179	0.350	3.820	7.460	0.500	0.264	4.083	0.013	12.687	0.013	0.037	0.264	4.348	365.334	0.750	0.028	
MR003.1	13+215	0.186	0.015	7.179	0.350	3.820	7.460	0.500	0.264	4.083	0.013	12.687	0.150	0.001	0.264	4.348	365.334	0.750	0.142	
MR003	13+236	0.134	0.015	6.630	0.350	3.720	9.010	0.500	0.319	4.038	0.013	27.609	0.113	0.002	0.575	4.613	357.257	0.750	0.100	
MR002A	13+283	0.099	0.015	5.818	0.350	3.561	10.122	0.500	0.358	3.919	0.013	22.827	0.113	0.002	0.476	4.395	363.865	0.750	0.075	
MR001A	13+284	0.653	0.015	5.818	0.350	3.561	10.122	0.500	0.358	3.919	0.013	22.827	0.113	0.002	0.476	4.395	363.865	0.750	0.495	

Table 14.1 Number of Affected Structures and Its Values for Probable Flood (W/o Phase IV and Marikina Dam)

Return Period	2-year		5-year		10-year		20-year		30-year		50-year		100-year	
Type of Asset	No. of Affected Structures	Value of Structures (Mil. P)	No. of Affected Structures	Value of Structures (Mil. P)	No. of Affected Structures	Value of Structures (Mil. P)	No. of Affected Structures	Value of Structures (Mil. P)	No. of Affected Structures	Value of Structures (Mil. P)	No. of Affected Structures	Value of Structures (Mil. P)	No. of Affected Structures	Value of Structures (Mil. P)
Residential Unit	29,456	939	60,112	1,916	127,499	4,063	202,043	6,438	258,795	8,247	318,151	10,139	384,442	12,251
Fishing	2	6	3	12	11	38	18	61	22	76	26	91	30	102
Manufacturing	261	1,205	539	2,469	1,130	5,210	1,774	8,236	2,262	10,611	2,745	13,770	3,265	19,096
Electricity, Gas and Water	1	214	4	854	11	2,544	22	5,068	31	7,209	39	8,944	46	10,677
Construction	17	89	37	199	66	349	101	539	132	698	161	837	196	988
Wholesale/Retail Trade and Repair Services	1,593	2,439	3,084	4,722	6,907	10,575	10,943	16,745	13,897	21,248	16,839	25,616	19,646	29,547
Hotels and Restaurants	366	157	759	325	1,729	739	2,750	1,175	3,496	1,493	4,229	1,798	4,917	2,072
Transport, Storage and Communications	79	462	146	850	391	2,282	628	3,662	788	4,593	954	5,546	1,087	6,294
Financial Intermediation	125	384	254	783	606	1,870	971	2,994	1,233	3,795	1,492	4,564	1,728	5,217
Real Estate, Renting & Business Activities	351	1,103	741	2,331	1,747	5,495	2,820	8,869	3,609	11,347	4,360	13,661	5,039	15,678
Education	63	72	130	149	286	329	463	532	598	685	731	831	867	972
Health and Social Work	154	134	305	265	662	575	1,065	925	1,367	1,186	1,661	1,435	1,950	1,671
Other Service Activities	194	183	390	369	866	818	1,362	1,287	1,723	1,628	2,086	1,968	2,436	2,292
Total	**32,662**	**7,386**	**66,504**	**15,243**	**141,910**	**34,887**	**224,960**	**56,530**	**287,953**	**72,816**	**353,474**	**89,200**	**425,649**	**106,858**

Source: Study Team

Table 14.2 Number of Affected Structures and Its Values for Probable Flood (W/ Phase IV)

Return Period	2-year		5-year		10-year		20-year		30-year		50-year		100-year	
Type of Asset	No. of Affected Structures	Value of Structures (Mil. P)	No. of Affected Structures	Value of Structures (Mil. P)	No. of Affected Structures	Value of Structures (Mil. P)	No. of Affected Structures	Value of Structures (Mil. P)	No. of Affected Structures	Value of Structures (Mil. P)	No. of Affected Structures	Value of Structures (Mil. P)	No. of Affected Structures	Value of Structures (Mil. P)
Residential Unit	23,563	751	43,500	1,386	55,343	1,764	65,903	2,100	75,845	2,417	108,744	3,465	163,948	5,225
Fishing	2	5	2	8	3	9	3	9	3	9	6	22	10	35
Manufacturing	210	977	381	1,761	480	2,311	562	2,788	639	3,231	905	4,560	1,355	7,352
Electricity, Gas and Water	1	120	1	220	1	315	2	395	2	550	4	924	11	2,476
Construction	13	68	25	131	33	175	40	211	46	244	54	288	81	423
Wholesale/Retail Trade and Repair Services	1,340	2,051	2,264	3,466	2,784	4,250	3,209	4,890	3,562	5,420	5,354	8,151	8,015	12,126
Hotels and Restaurants	306	131	525	224	663	283	775	330	860	366	1,267	539	1,928	816
Transport, Storage and Communications	71	411	111	646	131	763	146	850	155	900	277	1,611	420	2,439
Financial Intermediation	106	326	175	540	213	654	245	750	272	831	427	1,306	659	2,000
Real Estate, Renting & Business Activities	296	930	492	1,547	618	1,941	714	2,240	785	2,460	1,180	3,698	1,851	5,780
Education	51	59	90	103	111	127	131	149	151	171	221	252	343	387
Health and Social Work	128	111	221	192	276	239	331	286	378	326	542	469	812	698
Other Service Activities	162	153	278	262	345	325	400	378	446	421	657	620	985	928
Total	**26,248**	**6,094**	**48,065**	**10,488**	**61,001**	**13,157**	**72,460**	**15,376**	**83,144**	**17,347**	**119,639**	**25,905**	**180,416**	**40,682**

Source: Study Team

Table 14.3 Number of Affected Structures and Its Values for Probable Flood (W/ Phase IV and Marikina Dam)

Return Period	2-year		5-year		10-year		20-year		30-year		50-year		100-year	
Type of Asset	No. of Affected Structures	Value of Structures (Mil. P)	No. of Affected Structures	Value of Structures (Mil. P)	No. of Affected Structures	Value of Structures (Mil. P)	No. of Affected Structures	Value of Structures (Mil. P)	No. of Affected Structures	Value of Structures (Mil. P)	No. of Affected Structures	Value of Structures (Mil. P)	No. of Affected Structures	Value of Structures (Mil. P)
Residential Unit	22,255	709	36,976	1,178	46,304	1,476	56,742	1,808	60,191	1,918	66,292	2,113	75,450	2,404
Fishing	2	5	2	8	2	9	3	9	3	9	3	10	3	12
Manufacturing	200	915	326	1,494	408	1,869	497	2,301	526	2,438	575	2,675	645	3,136
Electricity, Gas and Water	1	119	1	209	1	287	1	347	2	367	2	409	2	485
Construction	12	64	21	109	27	146	35	186	37	198	40	215	44	234
Wholesale/Retail Trade and Repair Services	1,298	1,989	2,037	3,120	2,467	3,778	2,924	4,476	3,063	4,687	3,350	5,126	3,758	5,735
Hotels and Restaurants	298	127	477	204	591	252	706	302	741	316	811	346	906	386
Transport, Storage and Communications	70	408	106	621	123	719	139	813	144	838	158	923	180	1,050
Financial Intermediation	103	318	159	491	190	587	223	687	233	718	256	787	288	885
Real Estate, Renting & Business Activities	290	913	457	1,437	561	1,766	665	2,091	693	2,180	757	2,379	843	2,645
Education	49	56	78	89	95	109	114	131	121	139	133	152	151	172
Health and Social Work	123	107	196	171	241	209	289	251	306	265	336	292	379	329
Other Service Activities	157	148	248	234	303	287	362	342	380	359	416	393	465	439
Total	**24,857**	**5,878**	**41,085**	**9,367**	**51,313**	**11,494**	**62,701**	**13,743**	**66,438**	**14,433**	**73,129**	**15,821**	**83,116**	**17,912**

Source: Study Team